

MATERIALS LICENSE

Amendment No. 11

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.

398365

Licensee

1. University of Wisconsin - Eau Claire

2. Garfield and Park Avenue
Eau Claire, WI 54702-4004In accordance with application dated
March 28, 19953. License Number 48-08895-01 is renewed in
its entirety to read as follows:

4. Expiration Date October 31, 2001

5. Docket or
Reference No. 030-011586. Byproduct, Source, and/or
Special Nuclear Material

A. Phosphorus-32

B. Phosphorus-33

C. Sulfur-35

D. Iodine-125

E. Calcium-45

F. Iodine-131

G. Cesium-137

H. Cobalt-60

I. Hydrogen-3

J. Carbon-14

7. Chemical and/or Physical
Form

A. Pre-Labelled Kits

B. Pre-Labelled Kits

C. Pre-Labelled Kits

D. Pre-Labelled Kits

E. Any

F. Any

G. Any

H. Sealed sources
(Nuclear Chicago
Model RR-61)

I. Any

J. Any

8. Maximum Amount that Licensee
May Possess at Any One Time
Under This License

A. 3 millicuries total

B. 1 millicurie total

C. 5 millicuries total

D. 500 microcuries
total

E. 1 millicurie total

F. 1 millicurie total

G. 5 millicuries total

H. One source not to
exceed 5
millicuries

I. 1 millicurie total

J. 1 millicurie total

9. Authorized Use:

A. through D. To be used for research and development as defined in 10 CFR 30.4,
teaching, and training of students.

E. through J. For storage only incident to disposal.

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MATERIALS LICENSE
SUPPLEMENTARY SHEET

License Number

48-08895-01

Docket or Reference Number

030-01158

Amendment No. 11

CONDITIONS

10. Licensed material shall be used only at the licensee's facilities located at the Chemistry and Biology Departments in the L.E. Phillips Science Hall, Eau Claire, Wisconsin.
11. A. Licensed material listed in Item 6 above is authorized for use by, or under the supervision of, the following individual(s) for the materials and uses indicated:
- | | |
|--------------------------|--|
| John E. Woodruff, Ph.D. | All |
| Leo A. Ochrymowycz | All |
| Allen A. Denio, Ph.D. | All |
| Michael R. Weil | All |
| John K. Lim, Ph.D. | Phosphorus-32, Carbon-14 and Hydrogen-3 |
| Lloyd W. Turtinen, Ph.D. | All |
| Robert J. Eierman, Ph.D. | Carbon-14, Hydrogen-3 and Cesium-137 |
| Scott C. Hartsel, Ph.D. | Carbon-14 and Hydrogen-3 |
| Thao Yang, Ph.D. | Phosphorus-32, Phosphorus-33 and Sulfur-35 |
| Rudy G. Buiser, Ph.D. | Phosphorus-32, Phosphorus-33 and Sulfur-35 |
| Anne M. Geraghty, Ph.D. | Phosphorus-32, Phosphorus-33 and Sulfur-35 |
- B. The Radiation Safety Officer for this license is Lloyd W. Turtinen, Ph.D.
12. 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 specified by the certificate of registration referred to in 10 CFR 32.210.
- B. In the absence of a certificate from a transferor indicating that a leak test has been made within 6 months prior to the transfer, a sealed source or detector cell received from another person shall not be put into use until tested.
- C. Sealed sources need not be leak tested if: 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 transferred 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.

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- D. The leak test shall be capable of detecting the presence of 0.005 microcurie of radioactive material on the test sample. If the test reveals the presence of 0.005 microcurie or more of removable contamination, a report shall be filed with the U.S. Nuclear Regulatory Commission in accordance with 10 CFR 30.50(b)(2), and the source shall be removed immediately 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 III, ATTN: Chief, Nuclear Materials Safety Branch, 801 Warrenville Road, Lisle, Illinois 60532-4351. The report shall specify the source involved, the test results, and corrective action taken.
- E. Tests for leakage and/or contamination shall be performed by the licensee or by other persons specifically licensed by the Commission or an Agreement State to Perform such services.
13. The Radiation Safety Officer has the authority to stop any activity which he/she deems necessary to protect health and safety and to comply with regulatory requirements and conditions of the NRC License.
14. The licensee is authorized to hold radioactive material with a physical half-life of less than 90 days 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.
- B. Before disposal as ordinary trash, byproduct material shall be surveyed at the container surface with the appropriate survey meter 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.
- C. A record of each 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. Radioactive waste possessed under this license shall be stored in accordance with the statements, representations, and procedures included with the licensee's waste storage plan described in the licensee's letter dated September 30, 1996.
16. Licensed material shall not be used in or on human beings.

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**MATERIALS LICENSE
SUPPLEMENTARY SHEET**

License Number

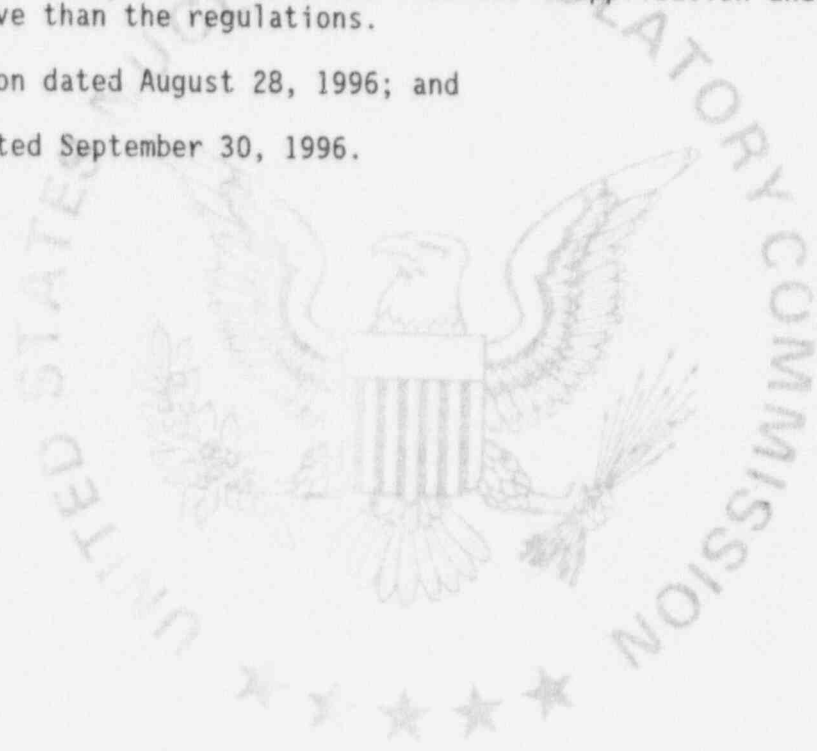
48-08895-01

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17. The licensee shall conduct a physical inventory every 6 months to account for all sources and/or devices received and possessed under the license.
18. Sealed sources containing licensed material shall not be opened.
19. 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 U.S. 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 August 28, 1996; and
 - B. Letter dated September 30, 1996.



FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Date 10/22/96

By

James Mullins
Nuclear Materials Licensing Branch, Region III

COPY

(FOR LFMS USE)
INFORMATION FROM LTS

BETWEEN:

LICENSE FEE MANAGEMENT BRANCH, ARM
AND
REGIONAL LICENSING SECTIONS

PROGRAM CODE: 01120
STATUS CODE: 2
FEE CATEGORY: EX 3P
EXP. DATE: 19950430
FEE COMMENTS: 170.11(A)(4)
DECOM FIN ASSUR REQ: Y

LICENSE FEE TRANSMITTAL

A. REGION

1. APPLICATION ATTACHED
APPLICANT/LICENSEE: WISCONSIN-EAU CLAIRE, UNIVERSITY OF
RECEIVED DATE: 950330
DOCKET NO: 3001158
CONTROL NO.: 398365
LICENSE NO.: 48-08895-01
ACTION TYPE: RENEWAL

2. FEE ATTACHED
AMOUNT:
CHECK NO.: B

3. COMMENTS

SIGNED
DATE

Gene Sullivan
3-31-95

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

1. FEE CATEGORY AND AMOUNT: EX 3P **FEE EXEMPT**
2. CORRECT FEE PAID. APPLICATION MAY BE PROCESSED FOR:
AMENDMENT ✓
RENEWAL ✓
LICENSE ✓

3. OTHER

SIGNED
DATE

SC 4/4/95

RECEIVED
APR 07 1995
REGION III

1995 APR -3 PM 12:55

APPLICATION FOR MATERIAL LICENSE

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 9 HOURS. SUBMITTAL OF THE APPLICATION IS NECESSARY TO DETERMINE THAT THE APPLICANT IS QUALIFIED AND THAT ADEQUATE PROCEDURES EXIST TO PROTECT THE PUBLIC HEALTH AND SAFETY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0120), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

INSTRUCTIONS: SEE THE APPROPRIATE LICENSE APPLICATION GUIDE FOR DETAILED INSTRUCTIONS FOR COMPLETING APPLICATION. SEND TWO COPIES OF THE ENTIRE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BELOW.

APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

DIVISION OF INDUSTRIAL AND MEDICAL NUCLEAR SAFETY
OFFICE OF NUCLEAR MATERIALS SAFETY AND SAFEGUARD
U.S. NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555-0001

ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS:

IF YOU ARE LOCATED IN:

CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, MAINE, MARYLAND,
MASSACHUSETTS, NEW HAMPSHIRE, NEW JERSEY, NEW YORK, PENNSYLVANIA,
RHODE ISLAND, OR VERMONT, SEND APPLICATIONS TO:

LICENSING ASSISTANT SECTION
NUCLEAR MATERIALS SAFETY BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406-1415

ALABAMA, FLORIDA, GEORGIA, KENTUCKY, MISSISSIPPI, NORTH CAROLINA, PUERTO
RICO, SOUTH CAROLINA, TENNESSEE, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA,
SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING SECTION
U.S. NUCLEAR REGULATORY COMMISSION, REGION II
101 MARIETTA STREET, NW, SUITE 2900
ATLANTA, GA 30323-0199

IF YOU ARE LOCATED IN:

ILLINOIS, INDIANA, IOWA, MICHIGAN, MINNESOTA, MISSOURI, OHIO, OR WISCONSIN,
SEND APPLICATIONS TO:

MATERIALS LICENSING SECTION
U.S. NUCLEAR REGULATORY COMMISSION, REGION III
801 WARRENVILLE RD
LISLE, IL 60532-4351

ALASKA, ARIZONA, ARKANSAS, CALIFORNIA, COLORADO, HAWAII, IDAHO, KANSAS,
LOUISIANA, MONTANA, NEBRASKA, NEVADA, NEW MEXICO, NORTH DAKOTA,
OKLAHOMA, OREGON, PACIFIC TRUST TERRITORIES, SOUTH DAKOTA, TEXAS, UTAH,
WASHINGTON, OR WYOMING, SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING SECTION
U.S. NUCLEAR REGULATORY COMMISSION, REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TX 76011-8064

PERSONS LOCATED IN AGREEMENT STATES SEND APPLICATIONS TO THE U.S. NUCLEAR REGULATORY COMMISSION ONLY IF THEY WISH TO POSSESS AND USE LICENSED MATERIAL IN STATES SUBJECT TO U.S. NUCLEAR REGULATORY COMMISSION JURISDICTIONS.

1 THIS IS AN APPLICATION FOR (Check appropriate item)

- ☐ A NEW LICENSE
☐ B AMENDMENT TO LICENSE NUMBER _____
☒ C RENEWAL OF LICENSE NUMBER 48-08895-01

2 NAME AND MAILING ADDRESS OF APPLICANT (include Zip code)

University of Wisconsin-Eau Claire
Garfield and Park Avenue
Eau Claire, WI 54702

3 ADDRESS(ES) WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED

At the licensee's Chemistry and Biology Departments in
the L.E. Phillips Science Hall on the University
Campus

4 NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

Lloyd W. Turtinen, Ph.D.

TELEPHONE NUMBER
715-836-3506

SUBMIT ITEMS 5 THROUGH 11 ON 8-1/2 X 11" PAPER. THE TYPE AND SCOPE OF INFORMATION TO BE PROVIDED IS DESCRIBED IN THE LICENSE APPLICATION GUIDE.

5 RADIOACTIVE MATERIAL

a. Element and mass number; b. chemical and/or physical form; and c. maximum amount
which will be possessed at any one time.

6 PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED

7 INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR
TRAINING EXPERIENCE

8 TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS

9 FACILITIES AND EQUIPMENT

10 RADIATION SAFETY PROGRAM

11 WASTE MANAGEMENT

12 LICENSEE FEES (See 10 CFR 170 and Section 170.31)

FEE CATEGORY 170.11 (4A)

AMOUNT
ENCLOSED \$

13 CERTIFICATION: (Must be completed by applicant) THE APPLICANT UNDERSTANDS THAT ALL STATEMENTS AND REPRESENTATIONS MADE IN THIS APPLICATION ARE BINDING UPON THE APPLICANT.

THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF OF THE APPLICANT, NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PARTS 30, 32, 33, 34, 35, 36, 39 AND 40, AND THAT ALL INFORMATION CONTAINED HEREIN IS TRUE AND CORRECT TO THE BEST OF THEIR KNOWLEDGE AND BELIEF.

WARNING: 18 U.S.C. SECTION 1001 ACT OF JUNE 25, 1948 62 STAT. 749 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION.

CERTIFYING OFFICER - TYPED/PRINTED NAME AND TITLE

Marjorie R. Smelstor, Vice Chancellor

SIGNATURE

Marjorie R. Smelstor

DATE

3-28-95

FOR NRC USE ONLY

TYPE OF FEE FEE LOG FEE CATEGORY AMOUNT RECEIVED CHECK NUMBER COMMENTS

Renewal

APR 6 II

EX-38

FEE EXEMPT

DATE

4/4/95

APPROVED BY

SC

RECEIVED

MAR 30 1995

REGION III



UNIVERSITY OF WISCONSIN-EAU CLAIRE
EAU CLAIRE, WI 54702-4004

Department of Biology
(715) 836-4166
FAX: (715) 836-5089

March 24, 1995

United States Nuclear Regulatory Commission
Region III, Material Licensing Section
801 Warrensville Road
Lisle, Illinois 60532-4351

Dear Sir/Madam:

We are applying for renewal of our material license #48-08895-01 which expires on April 30, 1995. It is my understanding following my phone conversation with Ms. Shirley Crutchfield on March 22, 1995 that our university is exempt from a license fee based upon part 170.11 A4 of the United States Nuclear Commission Rules and Regulations.

Sincerely yours,

Lloyd W. Turtinen, Ph.D.
Radiation Safety Officer
Department of Biology

#5. Radioactive Material

<u>Byproduct Material</u>	<u>Chemical and/or Physical Form</u>	<u>Maximum Amount That Licensee May Possess at Any One Time</u>
Cobalt-60	Any	500 microcuries
Cesium-137	Any	5 millicuries
Iodine-131	Any	5 millicuries
Iodine-125	Any	5 millicuries
Calcium-45	Any	5 millicuries
Phosphorus-32	Any	5 millicuries
Sulfur-35	Any	5 millicuries
Chromium-51	Any	5 millicuries
Iron-59	Any	5 millicuries
Carbon-14	Any	5 millicuries
Hydrogen-3	Any	5 millicuries
Cobalt-60	Sealed source (Nuclear Chicago Model RR-61)	One source not to exceed 5 millicuries

#6. Purpose(s) For Which Licensed Material Will Be Used

- A. Teaching and training of students
- B. Laboratory research studies
- C. Instrument calibration

#7. Individual(s) Responsible For Radiation Safety Program and Their Training and Experience

Dr. Lloyd W. Turtinen will be the Radiation Safety officer in the Department of Biology and Chemistry.

A. Dr. Lloyd W. Turtinen

<u>Type of Training</u>	<u>Where Trained</u>	<u>Duration</u>	<u>On The Job</u>		<u>Formal Course</u>	
Radioisotope Safety Course	Walter Reed Army Institute of Research (WRAIR) Washington, DC	3 weeks	yes	no	<u>yes</u>	no
Radioisotope Users Course	WRAIR	6 weeks	yes	no	<u>yes</u>	no
Certificate through US Army	WRAIR					
Laboratory Research	Univ. of KY	1979-83	<u>yes</u>	no	yes	no
Laboratory Research	Univ. of Tenn.	1983-84	<u>yes</u>	no	yes	no
Laboratory Research	Univ. of MN	1984-88	<u>yes</u>	no	yes	no
Radioisotope Safety Exam	Univ. of MN	1984				

Isotope	Max. Amt.	Where Experience Gained	Duration	Use
⁵¹ Cr	2 mCi/yr	WRAIR	1974-75	Radioactive Micropheres Cellular Uptake
	5 mCi/yr	Univ of Tenn	1983-84	
³ H	5 mCi/yr	Univ of KY	1979-83	Research
	5 mCi/yr	Univ of Tenn	1983-84	Research
	5 mCi/yr	Univ of MN	1984-88	Research
¹⁴ C	1 mCi/yr	Univ of KY	1979-83	Research
	1 mCi/yr	Univ of MN	1984-88	Research
³⁵ S	5 mCi/yr	Univ of KY	1979-85	Research
	5 mCi/yr	Univ of Tenn	1983-84	Research
	5 mCi/yr	Univ of MN	1984-88	Research
¹²⁵ I	5 mCi/yr	Univ of MN	1984-88	Research
	1 mCi/yr	Univ of KY	1979-83	Research
³² P	10 mCi/yr	Univ of KY	1979-83	Research
	10 mCi/yr	Univ of MN	1984-88	Research

#8. Training for Individuals Working In Or Frequenting Restricted Areas

A. Dr. John Woodruff

Type of Training	Where Trained	Duration	On The Job		Formal Course	
			yes	no	yes	no
a. Principles and practices of radiation protection	Oregon State Univ	1 year	yes	no	<u>yes</u>	no
b. Radioactivity measurement standardization and monitoring techniques and instruments	Oregon State Univ.	1 year	yes	no	<u>yes</u>	no
c. Mathematics and calculations basic to the use and measurement of radioactivity	Oregon State Univ.	1 year	yes	no	<u>yes</u>	no
d. Biological effects of radiation	Oregon State Univ.	1 year	yes	no	<u>yes</u>	no

Isotope	Max. Amt.	Where Experience Gained	Duration	Use
⁶⁰ Co	1 curie	Oregon State, EC	25 years	Classroom
²² Na	trace	Oregon State	1 year	Classroom
³⁶ Cl	trace	Oregon State	1 year	Classroom
¹⁴ C	1 mCi	Oregon State, EC, Ohio	29 years	Classroom, Research
²⁸ Al	trace	Oregon State	1 year	Classroom
¹¹⁶ In	trace	Oregon State	25 years	Classroom
³² P	1 mCi	Oregon State, EC	25 years	Classroom
⁴⁵ Ca	1 mCi	Oregon State, EC	25 years	Classroom

Isotope	Max. Amt.	Where Experience Gained	Duration	Use
¹³⁷ Cs	1 Ci	Oregon State, EC	25 years	Classroom
⁵⁴ Mn	trace	Oregon State	1 year	Classroom
³ H	1 mCi	Oregon State, EC	25 years	Classroom
²³⁸ U	trace	Oregon State	1 day	Classroom
²⁴¹ Am	trace	Oregon State	1 year	Classroom
²¹⁰ Pb	trace	Oregon State	1 term	Classroom
¹³¹ I	trace	Oregon State	1 year	Classroom
²⁴ Na	trace	Oregon State	1 year	Classroom
¹⁹⁸ Au	1 mCi	Oregon State, EC	25 years	Classroom
¹³³ Ba	trace	Oregon State	1 term	Classroom
²⁷ Mg	trace	Oregon State	1 term	Classroom
⁵⁶ Mn	trace	Oregon State	1 term	Classroom
⁴² K	trace	Oregon State	1 term	Classroom
³⁸ Cl	trace	Oregon State	1 term	Classroom
⁸⁶ Rb	trace	Oregon State	1 term	Classroom
⁸² Br	trace	Oregon State	1 term	Classroom
⁷⁶ As	trace	Oregon State	1 term	Classroom
^{110m} Ag	trace	Oregon State	1 term	Classroom
¹⁵² Eu	trace	Oregon State	1 term	Classroom
¹⁰⁹ Pd	trace	Oregon State	1 term	Classroom

Dr. Woodruff took the following two courses at the Ohio State University:

The use of Radioactive Tracers in Plant and Soil Research
Physiological Methods

and during the 1968-1969 academic year and the summer of 1969 he took the following courses at the Oregon State University, Radiation Center at Corvallis Oregon:

<u>Course #</u>	<u>Course</u>
GS451	Radiation Biophysics
GS507	Radiation Health Physics
Ch419	Radioactive Tracer Methods
GS452	Cellular Radiation Biology
GS454	Cellular Radiation Biology Lab
Ch528	Elementary Neutron Activation Analysis
GS453	Vertebrate Radiation Biology
Ch527	Advanced Radiotracer Methodology
GS507	Research

B. Dr. Michael R. Weil

<u>Type of Training</u>	<u>Where Trained</u>	<u>Duration</u>	<u>On The Job</u>		<u>Formal Course</u>	
			<u>yes</u>	<u>no</u>	<u>yes</u>	<u>no</u>
Principles & practices of radiation training	St. Louis University	2 yrs	<u>yes</u>	no	<u>yes</u>	no
Radioactive, etc.	St. Louis University	2 yrs	<u>yes</u>	no	<u>yes</u>	no
	Woods Hole, Marine Laboratory	1 week	<u>yes</u>	no	<u>yes</u>	no
	St. Louis University	2 yrs	<u>yes</u>	no	<u>yes</u>	no
	Woods Hole Marine Lab.	1 week	<u>yes</u>	no	<u>yes</u>	no

<u>Isotope</u>	<u>Max. Amt.</u>	<u>Where Experience Gained</u>	<u>Duration</u>	<u>Use</u>
¹⁴ C	<10uCi	St. Louis University	2 years	Classroom
³ H	<10uCi	St. Louis University	2 years	Classroom, Research
³ H	trace	Woods Hole	1 week	Classroom
¹²⁵ I	<10uCi	St. Louis University	2 years	Classroom, Research
¹²⁵ I	trace	Woods Hole	1 week	Classroom
³⁵ S	trace	Woods Hole	1 week	Classroom

Dr. Weil received informal training while teaching Animal Physiology at St. Louis University and while doing his graduate research. Additionally, he took the course Liquid Scintillation Counting in Biology and Medicine at Woods Hole Marine Laboratory.

C. Dr. John K. Lim

<u>Type of Training</u>	<u>Where Trained</u>	<u>Duration</u>	<u>On The Job</u>		<u>Course</u>	
Measurement and handling of radioisotopes	Oak Ridge Institute for Nuclear Studies, Oak Ridge, Tennessee	3 mo.	<u>yes</u>	<u>no</u>	<u>yes</u>	<u>no</u>
Use of radioisotopes in biological studies	Oak Ridge Institute for Nuclear Studies, Oak Ridge, Tennessee	3 mo.	<u>yes</u>	<u>no</u>	<u>yes</u>	<u>no</u>
Cytological and membrane filter hybridization of radioactive cloned DNA	National Institute of Environmental Health Sciences, Research Triangle Park, NC	15 mo.	<u>yes</u>	<u>no</u>	<u>yes</u>	<u>no</u>

Isotope	Max. Amt.	Where Experience Gained	Duration	Use
³ H	1 mCi	Eau Claire, WI	20 years	Classroom, Research
³² P	2 mCi	Eau Claire, WI NIEHS, N.C.	7 years	Research
³⁵ S	1 mCi	NIEHS, N.C.	7 years	Research
¹²⁵ I	trace	NIEHS, N.C.	1 year	Research

Dr. Lim, as a research geneticist, used ³²P and ³H on a daily basis at the National Institute of Environmental Health Sciences, and is routinely using these isotopes for isolation and characterization of DNA molecules.

D. Dr. Allen A. Denio

	Where Trained	Duration	On The Job	Formal Course
a.	Dept. of Chemistry, Univ. of New Hampshire, Durham, N.H.	1958-62	<u>yes</u> no	<u>yes</u> <u>no</u>
b.	Same as (a) Argonne National Lab.	1958-62 1967 & 1968	<u>yes</u> no	<u>yes</u> <u>no</u>
c.	Same as (a)	1958-62	<u>yes</u> no	<u>yes</u> no
d.	Same as (a)	1958-62	<u>yes</u> no	<u>yes</u> <u>no</u>

Isotope	Max. Amt.	Where Experience Gained	Duration	* Use
Co-60	148 Curies	Univ. of New Hampshire	1958-62	Gamma Source for solution radiation chem. Workshops
Cs-137	Several	Argonne Nat. Lab	1967-68	
Tl-204 Ca-45	microcuries			Beta-Spectrometry Mossbauer Effect

E. Dr. Robert J. Eierman

Type of Training	Where Trained	Duration	On The Job	Formal Course
a. Principles & Practices of Radiation Protection	Oregon State Univ, Corvallis, OR	2 sem.	<u>yes</u> no	<u>yes</u> no
b. Radioactivity measurement, standardization and monitoring techniques	Oregon State Univ, Corvallis, OR	2 sem.	<u>yes</u> no	<u>yes</u> no
c. Mathematics and Calculations basic to the use and measurement of radioactivity	Oregon State Univ, Corvallis, OR	2 sem.	<u>yes</u> no	<u>yes</u> no

d. Biological Effects of Radiation . Oregon State Univ, 1 sem. yes no yes no
Corvallis, OR

Isotope	Max. Amt.	Where		Duration	Use
		Experience Gained			
C ¹⁴	100 uCi	Oregon State University		2 sem.	Graduate level course
H ³	10 uCi	Oregon State University		2 sem.	Graduate level course
Cs ¹³⁷	5 uCi	Oregon State University		2 sem.	Graduate level course

F. Dr. Scott C. Hartsel - Radionuclide Experience

Type of Training	Where Trained	Duration	On The Job		Formal Course	
			yes	no	yes	no
a. Radiation Safety and Handling Course	Ohio State Univ	1 sem.	yes	<u>no</u>	<u>yes</u>	no
b. Receptor Assays	Univ of Virginia	2.5 yrs	<u>yes</u>	no	yes	<u>no</u>

Isotope	Max. Amt.	Where		Duration	Use
		Experience Gained			
¹⁴ C	Up to 1 mCi	Ohio State UW-Eau Claire		10 yrs	Academic research and training
³ H	Up to 1 mCi	Univ of Virginia		5 yrs	Academic research

G. Dr. Leo A. Ochrymowycz

	Where trained	Duration	On the Job		Formal Course	
			yes	no	yes	<u>no</u>
a.	University of WI-Eau Claire	1970-77	yes	no	yes	<u>no</u>

Isotope	Max. Amt.	Where		Duration	Use
		Experience Gained			
Hg ²⁰³	1.0 millicurie	Univ. WI-Eau Claire		1976-77	Biodistribution under influence of carrying ligand in mice

H. Dr. Thao Yang

	Where trained	Duration	On the Job		Formal Course	
			yes	no	yes	<u>no</u>
a.	University of KY-Lexington	1990-91	yes	no	yes	<u>no</u>

Isotope	Max. Amt.	Where		Duration	Use
		Experience Gained			
³² P	1.0 millicurie	Univ. of KY-Lexington		1990-91	protein building

#9. Facilities and Equipment

A. Isotope Storage Facilities

The Biology Department is equipped with a radioactive storage room, room 386, which was constructed of high density concrete block walls, a lead lined door, a lead lined floor, and a lead storage safe which has 1½ inch thick lead walls. This room is used for the storage of isotopes purchased by the department.

Radioactive sources, in the Chemistry Department, are stored in a lead lined storage chest kept in a large iron safe. Newly received radioisotopes are stored in an area surrounded by lead bricks in room 456.

B. Instructional and Research Facilities

A few laboratories in the Biology Department will be used for instruction or research involving the use of isotopes. Each laboratory is equipped with a designated "hot" sink, a fume hood and proper facilities for temporarily storing low levels of radioactive materials. Each laboratory will be provided with shielding materials that are necessary for use in that laboratory depending upon the levels and types of isotopes being used. Presently, some isotopes are used in the following laboratories:

Phillips 181, 183, 185, 307, 308, 366, 374, and 376.

Room 307 of the L.E. Phillips Science Hall is the counting room which houses the radiation equipment used in Biology and Chemistry. This room is used exclusively as a counting room.

C. Radioactive Waste Storage Facilities

Rooms 356 and 388 are radioactive waste storage rooms. Some waste is also temporarily stored in the laboratories where they are used and then finally transferred to the designated waste storage facilities.

D. Equipment

Type of Instruments	Number Available	Radiation Detected	Sensitivity Range	Window Thickness	Use
Nuclear-Chicago Survey Meter Model 2652	2		0-100 mr/hr	1.5-2mg/cm ²	Monitoring
Nuclear-Chicago Model 1620 Lab Monitor	1		0-100,000 cpm	1.5-2.0	Monitoring
Nuclear-Chicago Model 8731 Lab Monitor	1		0-1M cpm	1.5-2.0	Measuring Monitoring
Reactor Experiments, Inc. Digi/Microdose Exposure Dosimeter	1		0-100mr/hr	1.5-2.0	Monitoring
Packard PL Tricarb Liquid Scint. Spectrometer	1	C ¹⁴ , H ³ others	-	-	General use
Nuclear-Chicago Model 4338 Automatic Planchet System	1		-	-	General use

Type of Instruments	Number Available	Radiation Detected	Sensitivity Range	Window Thickness	Use
Beckman LS3801 Liquid Scintillation Spectrometer	1		-	-	General use
Ludlum Model 2 Survey Method	2		0-50 mr/hr	1.5-2mg/cm ²	Monitoring

#10. Radiation Safety Program

A. Personnel Monitoring

- 1) Although no student or laboratory personnel are expected to receive more than a small fraction of the permissible dosage, measurements will be taken to be sure this is true. The radiation safety officer or instructor will open all of the radioactive packages received according to procedures outlined in part B of this section and the instructor will dilute the isotopes to a safe concentration before the students use them in the instructional laboratories.

In the Radiobiology Laboratory the students are using very low levels of radioactivity. The instructor of the class wears a film badge and the laboratory is monitored with 3 film badges placed in critical places in the laboratory.

In the Recombinant DNA Techniques course the instructor and each student wears a film badge.

Each person using isotopes in the research laboratories will wear a film badge while working with isotopes.

Presently both the Biology and Chemistry Departments have a film badge service contract with ICN Dosimetry Service of Irvine California. The film badges are serviced on a monthly basis and records are maintained for each film badge.

B. Survey Procedures

- 1) Each survey meter used in monitoring the laboratories will be calibrated by the radiation safety officer of the department using a calibrated standard supplied with the instrument. This will be done on a monthly basis during the time the instrument is being used. If the instrument requires an electronic calibration and this cannot be performed within the department, it will be returned to the factory for calibration on a yearly basis and the certificate of calibration filed with the radiation safety officer of the department.
- 2) All laboratory areas will be surveyed weekly during the time isotopes are being used in the area.
- 3) The survey will consist of:
 - a. A measurement with a survey meter sufficiently sensitive to detect 0.1 mR/hr.
 - b. A series of wipe tests to measure contamination levels. The method for performing wipe tests will be sufficiently sensitive to detect 100 dpm.

- 4) A permanent record will be kept of all survey results, including negative results. The record will include:
 - a. Location, date, and type of equipment used.
 - b. Name of person conducting the survey.
 - c. Drawing of area surveyed, identifying relevant features.
 - d. Measured exposure rates, keyed to location on drawing (point out rates that require corrective action).
 - e. Detected contamination levels, keyed to locations on drawing.
 - f. Corrective action taken in the case of contamination or excessive exposure rates, reduced contamination levels or exposure rates after corrective action, and any appropriate comments.
- 5) The area will be cleaned if the contamination level exceeds 100 dpm/100 cm² as indicated by the wipe test.

C. Ordering and Receiving Radioactive Materials

1. No requisition for radioactive materials in the Departments of Biology and Chemistry will be approved unless the one requesting the radioactive materials is authorized by our NRC License to use radioactive materials.
2. The following procedure is to be followed in ordering radioactive materials:
 - a. Fill out and submit the proper requisition form to the radiation safety officer of your department.
 - b. The person requesting the isotope should attach a sheet to the requisition form bearing the following information:
 - 1) Name of the person requesting the isotope.
 - 2) How the isotope will be used when received.
 - 3) The area of the department where you propose to use the isotope.
 - c. The radiation safety officer will approve the requisition if it meets the license requirements and forward it to the department chairman or appropriate person for processing after making a copy of the requisition to keep on file.
 - 1) The radiation safety officer shall keep a file of all isotope requisitions.
3. Receiving radioactive materials
 - a. The faculty member receiving the radioactive material shall fill out and file with the radiation safety officer, a Radioactive Shipment Receipt Report form for each isotope received.
 - 1) The radiation safety officer shall keep a file of all Radioactive Shipment Receipt Report Forms.
 - 2) The radiation safety officer shall keep a log book in which a record of all the isotopes received is kept. The record shall contain:
 - a) The isotope received
 - b) The date of receipt
 - c) The amount and form of the isotope received
 - d) The person receiving the isotope
 - e) Disposition of the isotope with dates
 - b. Procedures for opening packages containing radioactive materials
 - 1) Visual inspect package for any sign of damage (e.g., wetness, crushed). If damage is noted, stop procedure and notify Radiation Safety officer.
 - 2) Measure exposure rate at 3 feet from package surface--record. If >10 mR/hr--stop procedure and notify Radiation Safety Officer.
 - 3) Measure surface exposure rate and record. If > 200 mR/hr--stop procedure and notify Radiation Safety Officer.
 - 4) Put on gloves.

- 5) Open the outer package (following manufacturer's directions, if supplied) and remove packing slip. Open inner package to verify contents (compare requisition, packing slips, and label on bottle) check integrity of final source container (inspect for breakage of seals or vials, loss of liquid, discoloration of packing material). Check also that shipment does not exceed possession limits.
- 6) Wipe external surface of final source container with moistened cotton swab or filter paper held with forceps, assay and record.
- 7) Monitor the packing material and packages for contamination before discarding:
 - a) if contaminated, treat as radioactive waste.
 - b) if not, obliterate radiation labels before discarding in regular trash.
- 8) File a copy of this report with the radiation safety officer.

D. Laboratory Rules for the use of Radioactive Material

1. Special tongs will be available for handling hot sources.
2. Diluting of mCi samples received from commercial suppliers will be done by the instructor. Only faculty personnel will handle mCi amounts of radioactive materials, student use will be restricted to uCi amounts.
3. Wear laboratory coats, or other protective clothing at all times in areas where radioactive materials are used.
4. Wear disposable gloves at all times while handling radioactive materials.
5. Wear safety glasses at all times while handling hard beta or gamma emitting radioactive materials.
6. Monitor hands and clothing for contamination after each procedure or before leaving the area.
7. Do not eat, drink, smoke, or apply cosmetics in any area where radioactive material is stored or used.
8. Dispose of radioactive waste only in specially designated receptacles.
9. Never pipette by mouth.
10. Confine radioactive solutions in covered containers plainly identified and labelled with name of compound, radionuclide, date, activity, and radiation level if applicable.
11. Always transport radioactive material in shielded containers.
12. All work with $^{14}\text{CO}_2$ and H^{14}CO_3 will be done in the fume hood.
13. Wash all contaminated glassware in the sink designated "hot sink".

E. Emergency Procedures

1. Minor Spills:
 - a. NOTIFY: Notify persons in the area that a spill has occurred.
 - b. PREVENT THE SPREAD: Cover the spill with absorbent paper.
 - c. CLEAN UP: Use disposable gloves and remote handling tongs. Carefully fold the absorbent paper and pad. Insert into a plastic bag and dispose of in the radioactive waste container. Include all other contaminated materials such as disposable gloves.
 - d. SURVEY: With a G.M. Survey Meter, check the area around the spill, your hands and clothing for contamination.
 - e. REPORT: Report incident to the Radiation Safety Officer.

2. Major Spills:

- a. CLEAR THE AREA: Notify all persons not involved in the spill to vacate the room.
- b. PREVENT THE SPREAD: Cover the spill with absorbent pads, but do not attempt to clean it up. Confine the movement of all personnel potentially contaminated to prevent the spread.
- c. SHIELD THE SOURCE. If possible, the spill should be shielded, but only if it can be done without further contamination or without significantly increasing your radiation exposure.
- d. CLOSE THE ROOM. Leave the room and lock the door(s) to prevent entry.
- e. CALL FOR HELP. Notify the Radiation Safety Officer immediately.
- f. PERSONNEL DECONTAMINATION. Contaminated clothing should be removed and stored for further evaluation by the Radiation Safety Officer. If the spill is on the skin, flush thoroughly and then wash with mild soap and lukewarm water.

F. Identification of Areas Where Radioactive Materials Are Used or Stored

1. Each room where isotopes are being used shall be properly identified.
 - a. The door to each room in which radioactive materials are being used shall bear a radioactive sign signifying that the area is a radiation area or contains radioactive materials depending upon the level of radiation in the room as set forth by NRC regulations.
 - b. Each container containing radioactive material shall be properly labeled and the immediate area in which it is being used should be properly labeled.
2. Each storage area shall be properly identified and all isotopes stored in such a way that they do not become a health hazard to those in the area.

G. Disposal of Radioactive Materials

Disposal of all radioactive materials will conform to the rules and regulations as set forth in part 20 sections 20.301, 20.302, 20.303, 20.305, 20.306 and 20.311 of the United States Nuclear Regulatory Commission Rules and Regulations.

OCT 23 1996

Lloyd W. Turtinen, Ph.D.
Radiation Safety Officer
University of Wisconsin - Eau Claire
Garfield and Park Avenue
Eau Claire, WI 54702-4004

Dear Dr. Turtinen:

Enclosed is Amendment No. 11 renewing your NRC Material License No. 48-08895-01 in accordance with your request.

Please review the enclosed document carefully and be sure that you understand all conditions. If there are any errors or questions, please notify the U.S. Nuclear Regulatory Commission, Region III office at (630) 829-9887 so that we can provide appropriate corrections and answers.

Please be advised that your license expires at the end of the day, in the month, and year stated in the license. Unless your license has been terminated, you must conduct your program involving byproduct materials in accordance with the conditions of your NRC license, representations made in your license application, and NRC regulations. In particular, note that you must:

1. Operate in accordance with NRC regulations 10 CFR Part 19, "Notices, Instructions and Reports to Workers; Inspections," 10 CFR Part 20, "Standards for Protection Against Radiation," and other applicable regulations.
2. Notify NRC, in writing, within 30 days:
 - a. When the Radiation Safety Officer permanently discontinues performance of duties under the license or has a name change; or
 - b. When the licensee's mailing address changes (no fee is required if the location of byproduct material remains the same).
3. In accordance with 10 CFR 30.36(b) and/or license condition, notify NRC, promptly, in writing, and request termination of the license when you decide to terminate all activities involving materials authorized under the license.
4. Request and obtain a license amendment before you:
 - a. Change Radiation Safety Officers;

398365

- b. Order byproduct material in excess of the amount, or radionuclide, or form different than authorized on the license;
 - c. Add or change the areas of use or address or addresses of use identified in the license application or on the license; or
 - d. Change ownership of your organization.
5. Submit a complete renewal application with proper fee or termination request at least 30 days before the expiration date of your license. You will receive a reminder notice approximately 90 days before the expiration date. Possession of byproduct material after your license expires is a violation of NRC regulations. A license will not normally be renewed, except on a case-by-case basis, in instances where licensed material has never been possessed or used.

In addition, please note that NRC Form 313 requires the applicant, by his/her signature, to verify that the applicant understands that all statements contained in the application are true and correct to the best of the applicant's knowledge. The signatory for the application should be the licensee or certifying official rather than a consultant.

You will be periodically inspected by NRC. Failure to conduct your program in accordance with NRC regulations, license conditions, and representations made in your license application and supplemental correspondence with NRC will result in enforcement action against you. This could include issuance of a notice of violation, or 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. Since serious consequences to employees and the public can result from failure to comply with NRC requirements, prompt and vigorous enforcement action will be taken when dealing with licensees who do not achieve the necessary meticulous attention to detail and the high standard of compliance which NRC expects of its licensees.

Sincerely,

Original Signed By
James R. Mullauer, M.H.S.
Health Physicist
Nuclear Materials Licensing Branch

License No.: 48-08895-01
Docket No.: 030-01158

Enclosure: Amendment No. 11

DOCUMENT NAME: M:\03001158.CL6

To receive a copy of this document, indicate in the box: "C" = Copy without attachment/enclosure "E" = Copy with attachment/enclosure "N" = No copy

OFFICE	DNMS/RW								
NAME	JMULLAUER:jaw								
DATE	10/2/96								

OFFICIAL RECORD COPY



UNIVERSITY OF WISCONSIN-EAU CLAIRE
EAU CLAIRE, WI 54702-4004

Department of Biology
(715) 836-4166
FAX: (715) 836-5089

September 30, 1996

Mr. James R. Mullauer, M.H.S.
Health Physicist
Nuclear Materials Licensing Branch
Nuclear Regulatory Commission
Region III
801 Warrenville Road
Lisle, Illinois 60532-4351

Dear Mr. Mullauer:

Pursuant to our phone discussion on September 10, 1996, I am submitting the following information relevant to our NRC License No. 48-08895-01 renewal (control Number 398365).

1. The following authorized radioisotopes and amounts are authorized for storage. It is our intent to dispose of these by December 1997: Calcium 45- 1 MCi, Iodine 131- 1 MCi, Cesium 137- 5 MCi, hydrogen 3 - 1 MCi, carbon 14 - 1 MCi..

a. Please delete Chromium 51 and Iron 59 from our license.

2. In our possession request for the following isotopes Phosphorus 32, Phosphorus 33, Sulfur 35, and Iodine 125, the physical form of these should be worded as *prelabelled kits* instead of *bound and non-volatile*.

3. The isotopes listed in #2 are to be used for research and development, teaching and training of students per the provisions of 10 CFR 30.4.

4. Amendment No. 10 Statement 14 'Individuals who work in or whose duties may require them to work in restricted areas or in the vicinity of licensed materials, shall be instructed in the items specified in 10 CFR 19.12 at the time of initial employment and at least annually thereafter'.

5. In 10 E. 1. of our renewal application, please add 'A record of annual survey instrument calibration will be maintained by the RSO'.

6. Isotopes with a half life of 90 days or less will be disposed of after storage for at least 10 half-lives (see enclosure).

Sincerely,

Lloyd W. Turtinen, PhD
Associate Professor of Biology
Radiation Safety Officer

Encl.

RECEIVED

OCT 07 1996

REGION III

Pm: 10-1-96

OCT 07 1996



Enclosure 1

Amendment request for decay-in-storage of radioactive materials with half-lives greater than 65 days

For renewal of NRC License No. 48-08895-01, University of Wisconsin-Eau Claire

1. Identification of Waste to be Stored

- a. None at this time
- b. *Radioisotope-* ^{35}S
Estimated volume for DIS- 5 gallons-liquid, 12 cubic feet-other waste
Estimated activity for DIS- 2.5 MCi
- c. (1) All class A (see 1b. above)
(2) Liquid, and solid waste (paper, plastic)
(3) Waste processing: None
(4) Some scintillation fluors
- d. The type of material (half-life greater than 65 days) currently being held for for DIS includes:
 1. ^{35}S solid- 100 μCi
 ^{35}S liquid- 500 μCi
- e. None
- f. **Solid wastes** (paper, plastic etc. are double-bagged, sealed up and identified with the amount of isotope present. These are placed on individual shelf cubby-holes in room for decay of 10 half-lives. **Liquid wastes** for each isotope are separated and stored in 5 gallon polypropylene capped drums.

2. Physical Description of Storage Area

- a. Room 388 in Phillips Hall is used solely for DIS. Features include an automatic carbon dioxide flooding system in case of fire, a raised cement barrier in front of the door to contain any liquid spills in the room, and individual shelves for DIS (Fig. 1). Packages and containers are easily visible for inspection. While additional shielding is not anticipated for most packages, those with higher amount of radioactivity will be shielded with plexiglas in the shelf unit.
- b. There is approximately 223 cubic feet of DIS storage space utilizing the shelf units **A**, **B**, and **C** as shown in Fig. 1. The annual amount of radioactive materials generated for DIS at this time is approximately 20 cubic feet for all isotopes (ie. ^{32}P and ^{35}S).

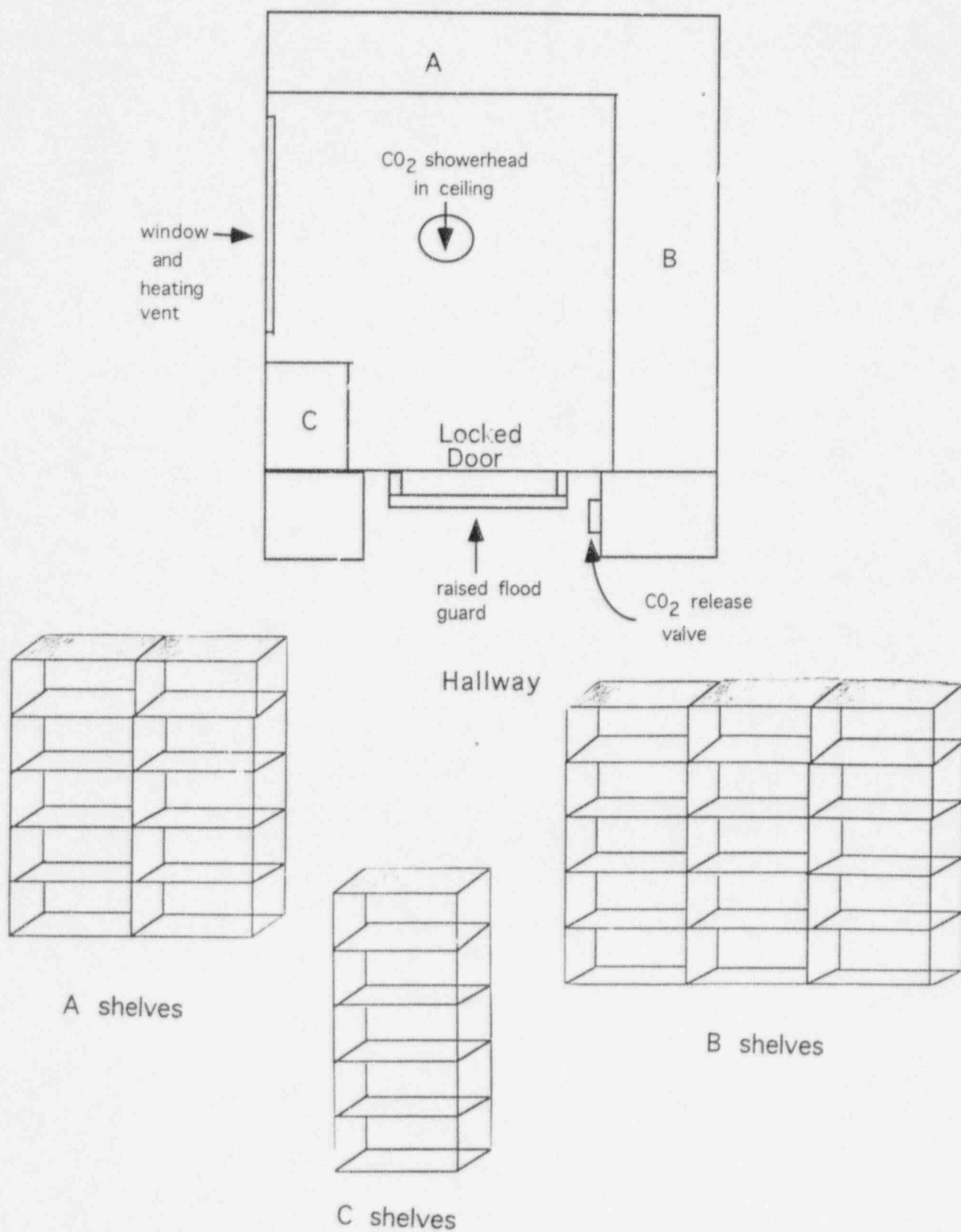


Fig. 1. DIS room 388

- c. Phillips Hall is a four story science university brick building. The DIS area is located in a heated room on the third floor.
- d. Room 388 is a limited access room. Only authorized users will have access to this room.
- e. The ventilation system is similar to other adequately ventilated rooms in Phillips Hall.
- f. In Room 388 there is an automatic carbon dioxide flooding system for fire protection.
- g. Room 388 is inside Phillips Hall is under the same environmental controls as the other rooms. There will be no extremes of temperature and humidity.
- h. Because of the substantial higher elevation of Phillips Hall in relation to the Chippewa River, and the fact that the DIS area is on the third floor, flood problems are unlikely. Tornado vulnerability is no more or less than other university brick buildings. There has never been a reported hurricane in Eau Claire, WI.

3. Packaging and Container Integrity:

a. **For solid waste** (paper, small plastic, tips, etc.) 6-8 mil heavy-duty polypropylene will be used for DIS of ^{32}P and ^{35}S . All solid materials will be double bagged for extra security. The life expectancy of the plastic bags in the Room 388 environment greatly exceeds 10 half lives of either isotope. Extra care will be taken to ensure the sharp pipettes tips or other sharp material is either extra bagged or boxed in separate cardboard so the integrity of the DIS bags is maintained.

Liquid waste (aqueous solutions) will be stored in heavy duty 5 gallon polypropylene capped drums.

b. All material will be inspected monthly for any signs of leakage and recorded in an inspection log. Any leakage will be stopped/ and or material transferred to a new receptacle. Furthermore, room 388 has been designed with a sealed cement leakage barrier 4 inches high outside the locked door preventing any radioactive liquid from entering the hallway.

c. Not anticipated as necessary

4. Radiation Protection:

a. Room 388 is posted as a radioisotope area. Recorded radiation surveys of packages and containers, the storage areas, floor etc. will be done monthly to ensure radioactivity is not leaving the room.

b. Coordination of local fire, police, and medical departments involves a chain of command or responsibility involving the RSO, the campus safety officer, the campus police chief. This coordination is part of a larger University Safety Plan approved in 1995.

c. Currently all isotopes for DIS are recorded in a log book with the date of initial storage, the type and amount in microcuries, and an identification number. We hope to eventually switch to a spreadsheet program which will automatically calculate the remaining microcuries based on half-life of each isotope so we don't exceed our possession limits.

5. Disposal Procedures

a. Both segregated liquid waste and solid waste will be decayed for a minimum of 10 half-lives. **Decayed solid waste** will be monitored in a low background area using a survey meter with a probe held within 1 cm of the solid waste material. If there is no indication of radioactivity above background levels, the primarily paper and plastic waste will be discarded as trash.

Approximately 10-100 μ l of the solution from each **decayed liquid waste** container will be surveyed using liquid scintillation counting. If background levels are attained, the liquid will be sewered if non hazardous aqueous waste, otherwise it will be handled as hazardous liquid material.

Records of each disposal will be maintained.

6. Training:

a. All inspections, most handling, surveying, and emergency response will be handled by the RSO or the tri-campus environmental health and safety specialist. Additionally, some packaging and handling of waste may be handled by experienced radioisotope users listed in our license.

7. Financial Assurance

a. Resources from the state of Wisconsin will cover costs

8. Emergency Preparedness:

a. Not applicable

CONVERSATION RECORD

TIME

DATE

10 a.m. 9/10/96

☐ VISIT☐ CONFERENCE☒ TELEPHONE☐ INCOMING☒ OUTGOING

NAME OF PERSON(S) CONTACTED OR IN CONTACT

ORGANIZATION (OFFICE, DEPT. ETC.)

TELEPHONE NO.

Lloyd Turtinen, Ph.D., RSO
University of WI, Eau Claire
715-836-4166

SUBJECT

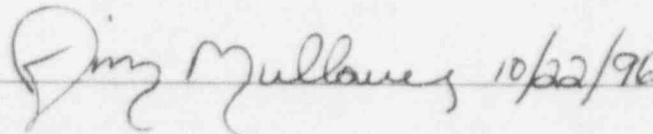
Renewal Application dated 8/28/96

SUMMARY

I spoke with Lloyd to request the following additional information:

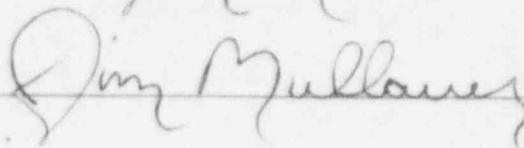
- ✓ 1. Request to lower the possession limits for those isotopes for storage only. See license!
- ✓ 2. Commit to disposing all unwanted materials by 12/97.
- ✓ 3. Request Pre-labelled kits
- ✓ 4. Commit to initial and annual training.
- ✓ 5. Commit to keeping GM cal records.

This action is certified by

 10/22/96

ACTION REQUIRED

Response due in 20 days.



NAME OF PERSON DOCUMENTING CONVERSATION

SIGNATURE

DATE

James R. Mullauer

ACTION TAKEN

SIGNATURE

TITLE

DATE



UNIVERSITY OF WISCONSIN-EAU CLAIRE
EAU CLAIRE, WI 54702-4004

Department of Biology
(715) 836-4166
Fax: (715) 836-5089

August 27, 1996

Mr. James R. Mullauer, M.H.S.
Health Physicist
Nuclear Materials Licensing Branch
Nuclear Regulatory Commission
Region III
801 Warrenville Road
Lisle, Illinois 60532-4351

Dear Mr. Mullauer:

Pursuant to our recent discussion, I am enclosing clarification of our answers to your request for additional information on our NRC License No. 48-08895-01 renewal (control Number 398365). **By each numbered topic in your letter dated June 13, 1996, I list the page and section in our revised renewal application** that addresses your concern. Please note that our renewal application was originally dated and sent March 28, 1995. Because you requested additional information on almost every topic in your June 13, 1996 letter, and our needs and personnel changed since our initial submission, our renewal application needed to be modified over the summer. Our latest modification of our renewal will contain a new NRC Form 313 cover page and a more recent date from our certifying officer as you requested.

Furthermore, **any new information or modification from our original March 28, 1995** submission of our renewal application is highlighted in gray to help you see our effort to meet NRC regulations.

Please let me know what if any additional information is necessary to renew our NRC license. Thank you.

Sincerely yours,

Lloyd W. Turtinen, PhD
Associate Professor of Biology

RECEIVED
SEP 06 1996
REGION III

SEP 06 1996

(7-86)
10 CFR 30, 32, 33
34, 35, 36, 39 and 40

APPLICATION FOR MATERIAL LICENSE

Estimated burden per response to comply with this information collection request: 7 hours. Submittal of the application is necessary to determine that the applicant is qualified and that adequate procedures exist to protect the public health and safety. Forward comments regarding burden estimate to the Information and Records Management Branch (T-6 F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0120), Office of Management and Budget, Washington, DC 20503. NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

INSTRUCTIONS: SEE THE APPROPRIATE LICENSE APPLICATION GUIDE FOR DETAILED INSTRUCTIONS FOR COMPLETING APPLICATION. SEND TWO COPIES OF THE ENTIRE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BELOW.

APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

DIVISION OF INDUSTRIAL AND MEDICAL NUCLEAR SAFETY
OFFICE OF NUCLEAR MATERIALS SAFETY AND SAFEGUARDS
U.S. NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555-0001

ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS:

IF YOU ARE LOCATED IN:

CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, MAINE, MARYLAND,
MASSACHUSETTS, NEW HAMPSHIRE, NEW JERSEY, NEW YORK, PENNSYLVANIA,
RHODE ISLAND, OR VERMONT, SEND APPLICATIONS TO:

LICENSING ASSISTANT SECTION
NUCLEAR MATERIALS SAFETY BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406-1415

ALABAMA, FLORIDA, GEORGIA, KENTUCKY, MISSISSIPPI, NORTH CAROLINA, PUERTO
RICO, SOUTH CAROLINA, TENNESSEE, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA,
SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING SECTION
U.S. NUCLEAR REGULATORY COMMISSION, REGION II
101 MARIETTA STREET, NW, SUITE 2900
ATLANTA, GA 30323-0199

IF YOU ARE LOCATED IN:

ILLINOIS, INDIANA, IOWA, MICHIGAN, MINNESOTA, MISSOURI, OHIO, OR WISCONSIN,
SEND APPLICATIONS TO:

MATERIALS LICENSING SECTION
U.S. NUCLEAR REGULATORY COMMISSION, REGION III
801 WARRENVILLE RD.
LISLE, IL 60532-4351

ALASKA, ARIZONA, ARKANSAS, CALIFORNIA, COLORADO, HAWAII, IDAHO, KANSAS,
LOUISIANA, MONTANA, NEBRASKA, NEVADA, NEW MEXICO, NORTH DAKOTA,
OKLAHOMA, OREGON, PACIFIC TRUST TERRITORIES, SOUTH DAKOTA, TEXAS, UTAH,
WASHINGTON, OR WYOMING, SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING SECTION
U.S. NUCLEAR REGULATORY COMMISSION, REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TX 76011-8064

PERSONS LOCATED IN AGREEMENT STATES SEND APPLICATIONS TO THE U.S. NUCLEAR REGULATORY COMMISSION ONLY IF THEY WISH TO POSSESS AND USE LICENSED MATERIAL IN STATES SUBJECT TO U.S. NUCLEAR REGULATORY COMMISSION JURISDICTIONS.

1. THIS IS AN APPLICATION FOR (Check appropriate item)

- ☐ A. NEW LICENSE
☐ B. AMENDMENT TO LICENSE NUMBER _____
☒ C. RENEWAL OF LICENSE NUMBER 48-08895-01

2. NAME AND MAILING ADDRESS OF APPLICANT (Include Zip code)

University of Wisconsin-Eau Claire
Park and Garfield Ave.
Eau Claire, WI 54702

3. ADDRESS(ES) WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED

At the licensee's Chemistry and Biology Departments
in the L. E. Phillips Science Hall at the University of
WI-Eau Claire

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

Lloyd W. Turtinen, Ph.D.

TELEPHONE NUMBER
715-836-3506

SUBMIT ITEMS 5 THROUGH 11 ON 8-1/2 X 11" PAPER. THE TYPE AND SCOPE OF INFORMATION TO BE PROVIDED IS DESCRIBED IN THE LICENSE APPLICATION GUIDE.

5. RADIOACTIVE MATERIAL

a. Element and mass number; b. chemical and/or physical form; and c. maximum amount
which will be possessed at any one time

6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED

7. INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING EXPERIENCE

8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS

9. FACILITIES AND EQUIPMENT

10. RADIATION SAFETY PROGRAM

11. WASTE MANAGEMENT

12. LICENSEE FEES (See 10 CFR 170 and Section 170.21)

FEE CATEGORY 170.11 (4A) AMOUNT
ENCLOSED \$

13. CERTIFICATION (Must be completed by applicant) THE APPLICANT UNDERSTANDS THAT ALL STATEMENTS AND REPRESENTATIONS MADE IN THIS APPLICATION ARE BINDING UPON THE APPLICANT.

THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF OF THE APPLICANT, NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PARTS 30, 32, 33, 34, 35, 36, 39 AND 40, AND THAT ALL INFORMATION CONTAINED HEREIN IS TRUE AND CORRECT TO THE BEST OF THEIR KNOWLEDGE AND BELIEF.

WARNING: 18 U.S.C. SECTION 1001 ACT OF JUNE 25, 1948 62 STAT. 749 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION.

CERTIFYING OFFICER - TYPED/PRINTED NAME AND TITLE

Marjorie R. Smelstor, Vice Chancellor

SIGNATURE

Marjorie R. Smelstor

DATE

8-28-96

FOR NRC USE ONLY

TYPE OF FEE	FEE LOG	FEE CATEGORY	AMOUNT RECEIVED	CHECK NUMBER	COMMENTS
			\$		
APPROVED BY				DATE	

5. Radioactive Material Possession Request for renewal application (modified from original renewal application) dated 3/28/95

<u>Element and Mass Number</u>	<u>Chemical and/or Physical Form</u>	<u>Maximum amount that licensee may possess at any one time</u>
Phosphorus-32	bound and non-volatile	3 μ Ci *
Phosphorus-33	bound and non-volatile	1 mCi *
Sulfur-35	bound and non-volatile	5 mCi
Iodine-125	bound and non-volatile	500 μ Ci

* licensee will only order and use 500 μ Ci stocks at any one time

The following are isotopes on the original license that will not be requested in the future. Some have been shipped or decayed while others are still in our possession. *We eventually plan to drop these from our license.*

<u>Element and Mass Number</u>	<u>Chemical and/or Physical Form</u>	<u>Status</u>
Cesium-137	some sealed sources	stored (not used) ^a
Calcium-45	waste	decaying
Chromium-51	----	decayed ^b
Iron-59	----	decayed
Carbon-14	Scin. vials, various contained forms, waste	ship at future date
Hydrogen-3	Scin. vials, some various contained forms, waste	ship at future date
Cobalt-60	Sealed source, lab wastes	sealed sources stored (not used)
Iodine-131	waste	decaying
Iodine-125	----	shipped ^c

^a stored source that is not being used is exempt from periodic wipe test

^b decayed in storage > 10 half-lives and trashed

^c Shipped to Barnwell, S. C. disposal site, 6/96 (see Bill of Lading enclosed)

6. Purpose (s) for which licensed material will be used

- A. Laboratory research
- B. Teaching and training of students.

7. Individual(s) responsible for the radiation safety program and their training and experience

A. Dr. Lloyd W. Turtinen will be the Radiation Safety Officer for the Department of Biology and Chemistry

<u>Type of Training</u>	<u>Where Trained</u>	<u>Duration</u>	<u>On The Job</u>		<u>Formal Course</u>	
Radioisotope Safety Course	Walter Reed Army Institute of Research (WRAIR) Washington, DC	3 weeks	yes	no	<u>yes</u>	no
Radioisotope Users Course	WRAIR	6 weeks	yes	no	<u>yes</u>	no
Certificate through US Army	WRAIR					
Laboratory Research	Univ. of KY	1979-83	<u>yes</u>	no	yes	no
Laboratory Research	Univ. of Tenn.	1983-84	<u>yes</u>	no	yes	no
Laboratory Research	Univ. of MN	1984-88	<u>yes</u>	no	yes	no
Radioisotope Safety Exam	Univ. of MN	1984				

<u>Isotope</u>	<u>Max. Amt.</u>	<u>Where Experience Gained</u>	<u>Duration</u>	<u>Use</u>
⁵¹ Cr	2 mCi/yr	WRAIR	1974-75	Radioactive Microspheres
	5 mCi/yr	Univ of TN	1983-84	Cellular Uptake
³ H	5 mCi/yr	Univ of KY	1979-83	Research
	5 mCi/yr	Univ of Tenn	1983-84	Research
	5 mCi/yr	Univ of MN	1984-88	Research
¹⁴ C	1 mCi/yr	Univ of KY	1979-83	Research
	1 mCi/yr	Univ of MN	1984-88	Research
³⁵ S	5 mCi/yr	Univ of KY	1979-85	Research
	5 mCi/yr	Univ of Tenn	1983-84	Research
	5 mCi/yr	Univ of MN	1984-88	Research
¹²⁵ I	5 mCi/yr	Univ of MN	1984-88	Research
	1 mCi/yr	Univ of KY	1979-83	Research
³² P	10 mCi/yr	Univ of KY	1979-83	Research
	10 mCi/yr	Univ of MN	1984-88	Research

B. Dr. Michael R. Weil

<u>Type of Training</u>	<u>Where Trained</u>	<u>Duration</u>	<u>On The Job</u>		<u>Formal Course</u>	
Principles & practices of radiation training Radioactive, etc.	St. Louis University	2 yrs	<u>yes</u>	no	yes	no
	St. Louis University	2 yrs	<u>yes</u>	no	yes	no
	Woods Hole, Marine Laboratory	1 week	yes	no	<u>yes</u>	no
	St. Louis University	2 yrs	<u>yes</u>	no	yes	no
	Woods Hole Marine Laboratory	1 week	yes	no	<u>yes</u>	no

Isotope	Max. Amt.	Where Experience Gained	Duration	Use
^{14}C	<10uCi	St. Louis University	2 years	Classroom
^3H	<10uCi	St. Louis University	2 years	Classroom, Research
^3H	trace	Woods Hole	1 week	Classroom
^{125}I	<10uCi	St. Louis University	2 years	Classroom, Research
^{125}I	trace	Woods Hole	1 week	Classroom
^{35}S	trace	Woods Hole	1 week	Classroom

Dr. Weil received informal training while teaching Animal Physiology at St. Louis University and while doing his graduate research. Additionally, he took the course Liquid Scintillation Counting in Biology and Medicine at Woods Hole Marine Laboratory.

C. Dr. John K. Lim

Type of Training	Where Trained	Duration	On The Job		Formal Course	
Measurement and handling for radioisotopes	Oak Ridge Institute for Nuclear Studies, Oak Ridge, Tennessee	3 mo.	yes	<u>no</u>	<u>yes</u>	no
Use of radioisotopes in biological studies	Oak Ridge Institute for Nuclear Studies, Oak Ridge, Tennessee	3 mo.	yes	<u>no</u>	<u>yes</u>	no
Cytological and membrane filter hybridization of radioactive cloned DNA	National Institute of Environmental Health Sciences, Research Triangle Park, NC	15 mo.	<u>yes</u>	no	yes	no

Isotope	Max. Amt.	Where Experience Gained	Duration	Use
^3H	1 mCi	Eau Claire, WI	20 years	Classroom, Research
^{32}P	2 mCi	Eau Claire, WI	7 years	Research
^{35}S	1 mCi	NIEHS, N.C.	7 years	Research
^{125}I	trace	NIEHS, N.C.	1 year	Research

Dr. Lim, as a research geneticist, used ^{32}P and ^3H on a daily basis at the National Institute of Environmental Health Sciences, and is routinely using these isotopes for isolation and characterization of DNA molecules.

D. Dr. Robert J. Eierman

Type of Training	Where Trained	Duration	On The Job		Formal Course	
a. Principles & Practices of Radiation Protection	Oregon State Univ, Corvallis, OR	2 sem.	yes	no	<u>yes</u>	no

- b. Radioactivity measurement standardization and monitoring techniques Oregon State Univ, Corvallis, OR 2 sem. yes no yes no
- c. Mathematics & Calculations basic to the use and measurement of radioactivity Oregon State Univ, Corvallis, OR 2 sem. yes no yes no
- d. Biological Effects of Radiation Oregon State Univ, Corvallis, OR 1 sem. yes no yes no

Isotope	Max. Amt.	Where Experience Gained	Duration	Use
C ¹⁴	100 uCi	Oregon State University	2 sem.	Graduate level course
H ³	10 uCi	Oregon State University	2 sem.	Graduate level course
Cs ¹³⁷	5 uCi	Oregon State University	2 sem.	Graduate level course

E. Dr. Scott C. Hartsel

Type of Training	Where Trained	Duration	On The Job	Formal Course
a. Radiation Safety and Handling Course	Ohio State Univ.	1 sem.	yes no	<u>yes</u> no
b. Receptor Assays	Univ of Virginia	2.5 yrs	<u>yes</u> no	yes <u>no</u>

Isotope	Max. Amt.	Where Experience Gained	Duration	Use
¹⁴ C	Up to 1 mCi	Ohio State UW-Eau Claire	10 yrs	Academic research and training
³ H	Up to 1 mCi	Univ of Virginia	5 yrs	Academic research

F. Dr. Leo A. Ochrymowycz

Where Trained	Duration	On The Job	Formal Course
a. University of WI-Eau Claire	1970-77	yes no	yes <u>no</u>

Isotope	Max. Amt.	Where Experience Gained	Duration	Use
Hg ²⁰³	1.0 millicurie	Univ of WI-Eau Claire	1976-77	Biodistribution under influence of carrying ligand in mice

G. Dr. Thao Yang

Where Trained	Duration	On The Job	Formal Course
a. University of KY-Lexington	1990-91	yes no	yes <u>no</u>

<u>Isotope</u>	<u>Max. Amt.</u>	<u>Where Experience Gained</u>	<u>Duration</u>	<u>Use</u>
³² P	1.0 millicurie	Univ. of KY-Lexington	1990-91	protein building

H. Dr. Rudy G. Buiser

<u>Type of Training</u>	<u>Where Trained</u>	<u>Duration</u>	<u>On the Job</u>	<u>Formal Course</u>
Radioisotope Safety Training	Parke-Davis Pharmaceuticals, Ann Arbor, MI	2 days		Yes
Laboratory Research	Parke-Davis	1993-1995	yes	
Radiation Safety Course and Exam	University of Rochester Rochester, NY	1 week		no
Laboratory Research	Univ. of Rochester	1989-1993	yes	

<u>Isotope</u>	<u>Max. Amt.</u>	<u>Where Exp. Gained</u>	<u>Duration</u>	<u>Use</u>
³ H	5 mCi/yr	Univ. of Rochester	1989-1993	Research
³⁵ S	5 mCi/yr 5 mCi/yr	Univ. of Rochester Parke-Davis	1989-1993 1993-1995	Research Research
³² P	10mCi/yr 10mCi/yr	Univ. of Rochester Parke-Davis	1989-1993 1993-1995	Research Research

I. Dr. Anne M. Geraghty

<u>Type of Training</u>	<u>Where Trained</u>	<u>Duration</u>	<u>On the Job</u>	<u>Formal Course</u>
Radioisotope Users course	Univ. of IA Hospitals	1 day		yes

Basic Radiation Safety course	Iowa St. Univ.	2 days		yes
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Laboratory Research	V.A. Hospital Iowa City, IA	1985-86	yes	
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Laboratory Research	Iowa St. Univ.	1986-94	yes	
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<u>Isotope</u>	<u>Max. Amt.</u>	<u>Where Exp. Gained</u>	<u>Duration</u>	<u>Use</u>
³ H	5 mCi/yr	V.A.Hospital-Iowa City	1985-86	Research
³⁵ S	5 mCi/yr	Iowa St. Univ.	1986-94	Research
³² P	10mCi/yr	Iowa St. Univ.	1986-94	Research

7a. Licensed material in #5 is authorized for use by and under the supervision of the followings individuals for the following isotopes:

Lloyd W. Turtinen	All
Michael R. Weil	All
John K. Lim	All
Robert Eierman	All
Scott C. Hartsel	Sulfur 35
Leo Orchymowyc	All
Thao Yang	phosphorus 32, 33, Sulfur 35
Rudy Buiser	All
Anne Geraghty	All

8. Training for ancillary personnel involved in radionuclide work

a. There are two group of personnel: 1) general maintenance and security personnel, and 2) students involved in radioisotope work either in a classroom or research environment.

b. In group 1, all individuals receive 'Chemical right to know training' which includes radiation safety training. All radioisotope work areas are posted so individuals are aware of the location of radioisotopes.

c. Students working in laboratories with radioisotopes receive individual training from the experienced user. Most students will in addition receive training in the Radioisotope User section of the Recombinant DNA Techniques course. Students are tested on their knowledge of this material during this course. Any additional training or instruction deemed necessary by the user will be given to the student prior to working with radioactive material. Records of each student receiving radiation safety training will be kept on file by the RSO with a list of topics covered, dates, instructor, and signed by both instructor and student.

9. Facilities and Equipment

A. Isotope Storage Facilities

The Biology Department is equipped with a radioactive storage room, room 386, which was constructed of high density concrete block walls, a lead lined door, a lead lined floor, and a lead storage safe which has 1 1/4 inch thick lead walls. This room is used for the room temperature storage of isotopes purchased by the department. In addition, isotopes including ^{32}P and ^{35}S compounds that need to be frozen will be stored in a locked freezer(s) at -20°C in lead shielded containers.

B. Instructional and Research Facilities

A few laboratories in the Biology Department will be used for instruction or research involving isotopes. Each laboratory is equipped with a designated "hot" sink, a fume hood and proper facilities for temporarily storing low levels of radioactive materials. Each laboratory will be provided with shielding materials that are necessary for use in that laboratory depending upon the levels and types of isotopes being used. Presently, some isotopes are used in the following laboratories:

Phillips 307, 308, 366, 374, and 376.

Room 307 of the L.E. Phillips Science Hall is the counting room which houses the radiation equipment used in Biology and Chemistry. This room is used exclusively as a counting room.

C. Radioactive Waste Decay -in-Storage Facilities

Rooms 356 and 388 are locked limited access radioactive waste storage rooms. Room 388 also has a raised perimeter so no leakage into the hallway can occur. All radioisotopes will be logged into the decay log for storage for at least 10 half-lives. Some waste is also temporarily stored in the laboratories where they are used and then finally transferred to the designated waste storage facilities.

D. Equipment

Type of Instruments	Number Available	Radiation Detected	Sensitivity Range	Window Thickness	Use
Beckman LS3801 Liquid Scintillation Spectrometer	1		-	-	General Use
Ludlum Model 2 Survey Method	2		0-50 mr/hr	1.5-2mg/cm ²	Monitoring

#10 Radiation Safety Program

The radiation safety program at the University of Wisconsin-Eau Claire consists of an Tri-campus Environmental Health and Radiation Safety Specialist, Henry Grote; a Radiation Safety Officer, Dr. Lloyd Turtinen, and qualified users in the department of biology and chemistry. The program will follow established rules and protocols(A-I) that comply with NRC regulations. Generally, only 1-3 individuals regularly use radioisotopes.

A. Duties of the Radiation Safety Officer (RSO)

1. To assess radiobiological hazards and prescribe and ensure the implementation of appropriate radiation safety precautions.
2. Approve and log in all incoming radioisotopes. Ensure that the use of licensed material is by or under the direct supervision of individuals specifically listed on your license.
3. To ensure that all users (where appropriate) wear personnel monitoring equipment when using licensed materials
4. To ensure that licensed materials are properly secured against unauthorized removal at all times when not in use.
5. To monitor and log out of radioactive waste
6. To perform routine inspections of all laboratories using or storing licensed materials.
7. To ensure that the terms and conditions of your license are met, and that all required records are maintained.

B. Management Control

As required by 10 CFR 20.1101 (c) we the licensee will review the radiation protection program content and implementation at least annually.

1. The RSO and the Tri-campus Environmental and Radiation Safety Specialist (ERSS) will inform any and all radioisotope users of NRC regulations, provisions of the license, and compliance procedures.

Each academic year the RSO and ESS will also inform all users of any new regulations and remind users of current provisions and procedures in the institutional license.

2. The performance of the RSO and any staff (generally students who will perform routine swab tests) will be reviewed by the Tri-campus Environmental and Radiation Safety Specialist, Henry Grote on an annual basis. Mr. Grote besides being the chief consultant and advisor on safety issues for the three campuses in the UW system is also the RSO for UW River Falls. His review of the RSO and staff will be reported to the director of Risk Management at UWEC.

3. Audits by the RSO and staff will be routinely done to determine user compliance to NRC regulations and Radiation Safety Program procedures. These random audits will inspect the users' record keeping, safety procedures, and swabs of radioactive work areas. Any deficiencies will be communicated immediately to the user. Failure to correct such deficiencies will result in suspension of user privileges.

C. Material Control Inventory and Records

1. No requisition for radioactive materials will be approved unless the one requesting the radioactive materials is authorized by our NRC License to use radioactive materials.

All radioactive material must be requested through the RSO as described in the procedure below. The RSO will record the type of isotope and the amount in the computer spreadsheet. The spreadsheet will also keep a record of the amount isotope in decaying in storage so the possession limits are not exceeded

2. The following procedure is to be followed in ordering radioactive materials:

- a. Fill out and submit the proper requisition form to the radiation safety officer of your department.
- b. The person requesting the isotope should attach a sheet to the requisition form bearing the following information:
 - 1) Name of the person requesting the isotope.
 - 2) How the isotope will be used when received.
 - 3) The area of the department where you propose to use the isotope.
- c. The radiation safety officer will approve the requisition if it meets the license requirements and forward it to the department chair or appropriate person for processing after making a copy of the requisition to keep on file.
 - 1) The radiation safety officer shall keep a file of all isotope requisitions.
3. Receiving radioactive materials
 - a. The faculty member receiving the radioactive material shall fill out and file with the radiation safety officer, a Radioactive Shipment Receipt Report form for each isotope received.
 - 1) The radiation safety officer shall keep a file of all Radioactive Shipment Receipt Report Forms.
 - 2) The Radiation safety officer shall keep a log book in which a record of all the isotopes received is kept. The record shall contain:
 - a) The isotope received
 - b) The date of receipt
 - c) The amount and form of the isotope received
 - d) The person receiving the isotope
 - e) Disposition of the isotope with dates
 - b. Procedures for opening packages containing radioactive materials
 - 1) Visual inspect package for any sign of damage (e.g., wetness, crushed). If damage is noted, stop procedure and notify Radiation Safety Officer.
 - 2) Measure exposure rate at 3 feet from package surface--record. If >10 mR/hr--stop procedure and notify Radiation Safety Officer.
 - 3) Measure surface exposure rate and record. If > 200 mR/hr--stop procedure and notify Radiation Safety Officer.
 - 4) Put on gloves.

- 5) Open the outer package (following manufacturer's directions, if supplied) and remove packing slip. Open inner package to verify contents (compare requisition, packing slips, and label on bottle) check integrity of final source container (inspect for breakage of seals or vials, loss of liquid, discoloration of packing material). Check also that shipment does not exceed possession limits.
- 6) Wipe external surface of final source container with moistened cotton swab or filter paper held with forceps, assay and record.
- 7) Monitor the packing material and packages for contamination before discarding:
 - a) if contaminated, treat as radioactive waste.
 - b) if not, obliterate radiation labels before discarding in regular trash.
- 8) File a copy of this report with the radiation safety officer.

D. Personnel Monitoring

1. The RSO or instructor will open all of the radioactive packages received according to procedures outlined in part C of this section and the lab instructor or investigator will dilute the isotopes when necessary to reduce exposure to students in teaching laboratories. Mostly ^{35}S and ^{32}P in contained and non-volatile forms will be used. Currently the Recombinant DNA Techniques is the only course using radioisotopes. The instructor and each student wears a film badge. Each person using isotopes in the research laboratories will also wear a film badge when working with isotopes.

2. Presently we have a film badge service contract with ICN Dosimetry Service of Irvine, California. The film badges are serviced on a monthly basis and records are maintained for each film badge.

3. When ^{32}P is being use (bound and non-volatile) and 500 μCi concentrated stock, the following procedures will be mandatory:

a. All individuals will wear film badges

b. low density shielding (ie. plexiglass) will be used for external protection and to keep Bremsstrahlung radiation at a minimum.

c. a radiation survey and wipe test for radioactive contamination will be done after each use.

4. In our application, no nonbound or volatile forms of iodine 131, iodine 125, carbon 14, or tritiated organic compounds are requested. Therefore, no bioassay or biomonitoring program is anticipated. Furthermore, with the occasional use of non-volatile and bound iodine 125, less than 500 μCi will be used at any one time.

E. Survey Instrument Calibration

1. Calibration of our survey instruments will be done every 12 months. Survey instruments will be hand delivered or shipped to Radiation Calibration, Univ. of Wisconsin-Madison, Medical Physics, 1300 Univ. Ave., Madison, WI 53706. Tel: 608-262-6320. NRC Lic # 48-09843-18.

F. Area Monitoring

This will be the user's responsibility along with occasional verification by the RSO

- 1) All laboratory areas will be surveyed weekly during the time isotopes are being used in the area.
- 2) The survey will consist of:
 - a. A measurement with a survey meter sufficiently sensitive to detect 0.1 mR/hr.

- b. A series of wipe tests to measure contamination levels. The method for performing wipe tests will be sufficiently sensitive to detect 100 dpm.
- 3) A permanent record will be kept of all survey results, including negative results. The record will include:
 - a. Location, date, and type of equipment used.
 - b. Name of person conducting the survey.
 - c. Drawing of area surveyed, identifying relevant features.
 - d. Measured exposure rates, keyed to location on drawing (point out rates that require corrective action).
 - e. Detected contamination levels, keyed to locations on drawing.
 - f. Corrective action taken in the case of contamination or excessive exposure rates, reduced contamination levels or exposure rates after corrective action, and any appropriate comments.
- 4) The area will be cleaned if the contamination level exceeds 100 dpm/100 cm² as indicated by the wipe test.

G. Laboratory Rules for the use of Radioactive Material

1. Diluting of mCi samples received from commercial suppliers will be done by the instructor. Only faculty personnel will handle mCi amounts of radioactive materials, student use will be restricted to μ Ci amounts.
2. Wear laboratory coats, or other protective clothing at all times in areas where radioactive materials are used.
3. Wear disposable gloves at all times while handling radioactive materials.
4. Wear safety glasses at all times while handling hard beta or gamma emitting radioactive materials.
5. Monitor hands and clothing for contamination after each procedure or before leaving the area.
6. Do not eat, drink, smoke, or apply cosmetics in any area where radioactive material is stored or used.
7. Dispose of radioactive waste only in specially designated receptacles.
8. Never pipette by mouth.
9. Confine radioactive solutions in covered containers plainly identified and labeled with name of compound, radionuclide, date, activity, and radiation level if applicable.
10. Always transport radioactive material in shielded containers.
11. Wash all contaminated glassware in the sink designated "hot sink".

H. Emergency Procedures

1. Minor Spills:
 - a. NOTIFY: Notify persons in area that a spill has occurred.
 - b. PREVENT THE SPREAD: Cover the spill with absorbent paper.
 - c. CLEAN UP: Use disposable gloves and remote handling tongs. Carefully fold the absorbent paper and pad. Insert into a plastic bag and dispose of in the radioactive waste container. Include all other contaminated materials such as disposable gloves.
 - d. SURVEY: With a Survey Meter, check the area around the spill, your hands and clothing for contamination.
 - e. REPORT: Report incident to the Radiation Safety Officer.
2. Major Spills:
 - a. CLEAR THE AREA: Notify all persons not involved in the spill to vacate the room.

- b. **PREVENT THE SPREAD:** Cover the spill with absorbent pads, but do not attempt to clean it up. Confine the movement of all personnel potentially contaminated to prevent the spread.
- c. **SHIELD THE SOURCE:** If possible, the spill should be shielded, but only if it can be done without further contamination or without significantly increasing your radiation exposure.
- d. **CLOSE THE ROOM.** Leave the room and lock the door(s) to prevent entry.
- e. **CALL FOR HELP.** Notify the Radiation Safety Officer immediately.
- f. **PERSONNEL DECONTAMINATION.** Contaminated clothing should be removed and stored for further evaluation by the Radiation Safety Officer. If the spill is on the skin, flush thoroughly and then wash with mild soap and lukewarm water.

I. Identification of Areas Where Radioactive Materials Are Used or Stored

- 1. Each room where isotopes are being used shall be properly identified.
 - a. The door to each room in which radioactive materials are being used shall bear a radioactive sign signifying that the area is a radiation area or contains radioactive materials depending upon the level of radiation in the room as set forth by NRC regulations.
 - b. Each container containing radioactive material shall be properly labeled and the immediate area in which it is being used should be properly labeled.
- 2. Each storage area shall be properly identified and all isotopes stored in such a way that they do not become a health hazard to those in the area.

11. Waste Management

A. Effluent Monitoring-It is anticipated that minimal sewage disposal will be necessary. We will use only short-lived radioisotopes and decay in storage to a minimum of 10 half-lives.

B. Decay-in-Storage disposal procedures

- 1. Radioactive waste will be temporarily stored in labelled containers in designated radioisotope use rooms until transferred to room 386 for further decay. The amount and the time in decay will be recorded in a log.
- 2. The radioactive waste will be held in storage for at least 10 half-lives
- 3. Following decay, the waste will be surveyed in a low background area with all the shielding removed.
- 4. All radioactive labels will be removed from decayed materials and the solid waste will be disposed with normal trash, non-toxic aqueous solutions poured down the drain, and organic solvents handled as normal toxic wastes.
- 5. Disposal of all radioactive materials will conform to the rules and regulations as set forth in part 20 sections 20.2001, 20.2002, 20.2003, 20.2004, 20.2005, 20.2006, and 20.2007 or the United States Nuclear Regulatory Commission Rules and Regulations.



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION III
801 WARRENVILLE ROAD
LISLE, ILLINOIS 60532-4351

RECEIVED UW-EC

JUN 17 1996

VICE CHANCELLOR'S OFFICE

Must reply within 20 days

JUN 13 1996

RECEIVED UW-EC

JUN 21 1996

DEAN, COLLEGE OF
ARTS & SCIENCES

Marjorie R. Smelstor
Vice Chancellor
University of Wisconsin-Eau Claire
Garfield and Park Avenue
Eau Claire, WI 54702

Dear Ms. Smelstor:

We have reviewed your application dated March 28, 1995, for renewal of your NRC License No. 48-08895-01 and find that we will need the following additional information in order to continue our review.

1. Authorized Place of Use

✓ Your current license lists the Chemistry and Biology Departments at Garfield and Park Avenues as the authorized place of use. Your renewal application lists L.E. Phillips Science Hall as the place of use. Please confirm that these facilities are the same and that the place of use has not changed.

see
item 2+3
form 313

2. Authorized Users

✓ Please clarify what materials you wish Dr. Thao Yang to be listed for. From our review of his training and experience, Dr. Yang can be listed phosphorus-32 and other similar beta emitters. Please also confirm that you wish to delete Drs. Gleiter, Ochrymowycz, Weil and McKee.

p.6
7a.

3. Duties of the Radiation Safety Officer (RSO) and Management Control

✓ a. Please provide a description of the duties and responsibilities of your Radiation Safety Officer. The typical duties of a Radiation Safety Officer would be:

- (1) To assess radiological hazards and prescribe, and ensure the implementation of, appropriate radiation safety precautions.
- (2) To ensure that the use of licensed material is by or under the direct supervision of individuals specifically listed on your license.
- (3) To ensure that all users (where appropriate) wear personnel monitoring equipment when using licensed materials.
- (4) To ensure that licensed materials are properly secured against unauthorized removal at all times when not in use.

p.7
10A.1-7

- (5) To perform routine inspections of all laboratories using or storing licensed materials.
 - (6) To ensure that the terms and conditions of your license are met, and that all required records are maintained.
- b. 10 CFR 20.1101(c) requires that the licensee review the radiation protection program content and implementation at least annually. Please provide a description of your program for performing the required annual review. It should include the following criteria:
- (1) Senior management oversight of the radiation protection program. Specify, the mechanisms that will be used by senior management to ensure that they are aware of NRC regulations, the provisions of the license, and the compliance status of the institution's licensed program. p.7
10.B.1
 - (2) Review of the Radiation Safety Officer and staff performance. Specify, the minimum qualifications for an individual who will perform this review, and confirm that the results will be reported to senior management. p.8
10.B.2
 - (3) Audits by the Radiation Safety Officer and staff to determine user compliance with the requirements of the NRC license and your radiation protection program. Audits should include such topics as: reviews of users' inventory and survey records, evaluation of users' radiation safety procedures through observation and discussion, and performance of independent work area surveys. p.8
10.B.3

4. Training

In your application, you didn't describe a training program for ancillary personnel (maintenance, security, etc.) and personnel involved in radionuclide work. Please describe a program that will:

- a. be of sufficient scope to ensure that all personnel using licensed materials, or frequenting areas where licensed materials are used, receive proper instruction in accordance with 10 CFR 19.12 (enclosed); and
- b. assure that personnel are instructed before assuming duties with, or in the vicinity of licensed materials and retrained at least annually.

The training given to each group should be commensurate with the duties and responsibilities of the group and need not be the same for each group.

5. Survey Instrument Calibration

If you propose to calibrate your own radiation survey and monitoring instruments, please provide a detailed description of your planned calibration procedures. The description of calibration procedures need to include, as a minimum:

- a. The manufacturer and model number of the source(s) to be used.
- b. The nuclide and activity of the licensed material contained in the source.
- c. The accuracy of the source(s). Traceability of the source to a primary standard should be provided.
- d. The step-by-step procedures, including associated radiation safety procedures. These procedures should include a two-point calibration of each scale of each instrument with the points separated by at least 50% of the scale.
- e. The name(s) and pertinent experience of person(s) who will perform the calibrations.
- f. Calibration of survey instruments every 12 months is an acceptable frequency to the NRC.

N/A

p. 9
10.E.1

Appendix B of the enclosed regulatory guide may be helpful in preparing your response and provides procedures that are acceptable to the NRC.

6. Personnel Monitoring

In support of your request for more than one millicurie of phosphorus-32, submit special safety instructions to be provided to individuals. Your procedures should include:

p. 9
10D1-4

- a. the use of low density shielding (e.g., plexiglass) in order to keep Bremsstrahlung radiation at a minimum,
- b. a mandatory radiation survey and wipe test for radioactive contamination after each use,
- c. the use of finger extremity monitors for procedures that involve one millicurie or more,
- d. a dry run prior to the performance of unfamiliar procedures in order to preclude unexpected complications. In addition, it is recommended that the radiation protection officer be present during new procedures, and

- e. the use of eye protection for procedures that involve 10 millicuries or more.

7. Bioassays

- a. Please describe your bioassay program, including the type of bioassay (thyroid counts, urine counts, whole body counts, etc), the criteria and the frequency for performing bioassays, and the type of action taken when positive results are obtained. It is recommended that bioassay procedures be considered for personnel using millicurie quantities of tritiated organic compounds, carbon-14, iodine-131, and iodine-125 in noncontained forms.
- b. Your application did not specify the instrument used in your bioassay program for determining activity in the thyroid. Please specify your instrumentation and calibration procedures, including the type of phantom you will use.
- c. Please specify the criteria used to set the type and frequency at which routine surveys for airborne licensed materials are performed (e.g., breathing zone and general work area air sampling, hood and room ventilation air flow rate measurement, and stack effluent sampling). Describe the instrumentation that will be used for sample collection and analysis, the calibration method and frequency for each, and specify the lower limit of detection and action levels for each.
- d. In support of your request for more than one millicurie of radioiodine, submit special safety instructions to be provided to individuals. Your procedures should include:
- (1) A mandatory radiation survey and wipe test for radioactive contamination after each use.
 - (2) Bioassay procedures for individuals working with millicurie quantities of radioiodine.
 - (3) The use of vented hoods for iodination and for the storage of millicurie quantities of radioiodine.
 - (4) A dry run prior to the performance of unfamiliar procedures in order to preclude unexpected complications. In addition, it is recommended that the radiation protection officer be present during new procedures.
 - (5) Procedures for measuring the concentration of radioiodine from the hoods where material is stored and where iodinations are performed.

N/A

p. 9
10.2.3a-c

- e. Your equipment should include a survey instrument with a thin sodium iodide crystal detector probe to detect iodine-125 contamination. Please specify the instrument that will be used for this purpose.

8. Area Monitoring

✓ It is recommended that areas where radioactive materials are used be checked for contamination to avoid its spread to other areas. Please confirm that these areas will be checked for contamination after each use of radioactive material and specify how the area will be monitored.

p. 9-10
107-G

9. Effluent Monitoring

✓ 10 CFR 20.2003(a)(1) requires that a licensee may discharge licensed material into sanitary sewerage if the material is readily soluble (or is readily dispersible biological material). Information Notice 94-07 (enclosed) provides methods for determining compliance with this requirement which are acceptable to the NRC. Please review this Information Notice and provide specific information as to how you will assure that your releases to the sanitary sewerage system will meet the solubility criteria in 10 CFR 20.2003(a)(1). If you wish, you may indicate that you will use one of the methods described in Information Notice 94-07. Otherwise, describe your alternative methodology including the models, calculations, analytical techniques, and quality control measurements as well as the records that will be maintained.

p. 11
11.A.

10. Sealed Sources

Please provide the following information regarding the leak testing of your sealed sources:

p. 1
see 5

- ✓ a. A description of the procedure for leak testing the source.
- b. The instrumentation used to measure activity on the wipe and the lower limit of detectability for this instrumentation.

If you elect to have another person perform the leak test, please submit the name of the person and the applicable NRC or Agreement State license number. If this person is not licensed, please submit a description of their procedure and instrumentation as requested above.

11. Material Control and Inventory

p. 7.
10A.2, A.7

- ✓ a. Please describe your licensed material inventory, control and accountability program. Your inventory and control system should have the capability to assure that licensed material possession limits are not exceeded and that material is accountable throughout the institution at any given time.

p. 8.
10C.
p. 11.
11B.1

- b. Please provide your procedures for transfer and transportation of licensed material between authorized users at your facility, and your procedures for transfer and transportation of licensed material to other licensees. Describe your program to control such transfers, including update of material inventory and audits of users' procedures.

p. 10
10.6.10

12. Records

Please confirm that you will maintain records of the following activities:

- a. radiation safety training, including initial and retraining, list of topics covered, the amount of time spent, the date(s), and the instructor(s) and student(s) names,
- b. results of audits and surveys performed by the Radiation Safety Officer and staff,
- c. decay-in-storage waste records, including the date licensed material is placed into storage, and the date and results of surveys performed when disposed,
- d. receipt and transfer of licensed material,
- e. licensed material inventory, and
- * f. calibration of radiation monitoring instruments and equipment.

p. 6
8. a-c.

p. 8
10. C. 1-2

p. 9
10. E

13. General Laboratory Safety Instructions

✓ Please confirm that licensed material will be secured when not under the constant surveillance and immediate control of the authorized users.

p. 6
9. A.

14. Waste Disposal

- a. Please provide your procedures for disposal of licensed radioactive waste by decay-in-storage. Your procedures need to provide assurance that you will:
- (1) hold the radioactive waste in storage for at least 10 half-lives,
 - (2) survey the waste in a low background area with a low-level survey meter with all the shielding removed,
 - (3) not dispose of the waste as normal trash unless the radiation level is at background,

p. 7
9. C.
p. 4.
11. B.

- (4) remove or deface the radioactive material labels or otherwise indicate that containers no longer hold radioactive materials, and
- (5) you will maintain records of these waste disposal surveys.

"Guidance to Licensees Regarding Requests to Dispose of Radioactive Waste by Decay-In-Storage" (enclosed) may be helpful in preparing your response.

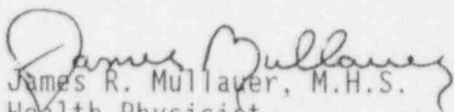
- b. Your procedures for waste disposal references outdated regulations in the old 10 CFR Part 20. The regulations in 10 CFR Part 20 were revised on January 1, 1994. Please review the new 10 CFR Part 20 (enclosed) and reference the appropriate parts of the new Part 20.

p.11
11.B.5

We will continue our review of your application upon receipt of this information. Please reply in duplicate, within 20 days, and refer to Control Number 398365.

If you have any questions or require clarification on any of the information stated herein, you may contact me at (708) 829-9873.

Sincerely,


James R. Mullaver, M.H.S.
Health Physicist
Nuclear Materials Licensing Branch

License No. 48-08895-01
Docket No. 030-01158



UNIVERSITY OF WISCONSIN - EAU CLAIRE
EAU CLAIRE, WI 54702-4004

Department of Biology
(715) 836-4166 FAX 715-836-5089

July 30, 1996

Mr. James R. Mullauer, M.H.S.
Health Physicist
Nuclear Materials Licensing Branch
Nuclear Regulatory Commission
Region III
801 Warrenville Road
Lisle, Illinois 60532-4351

Dear Mr. Mullauer:

Included is the following pages is the additional information requested by you for renewal of our NRC License No. 48-08895-01, Control Number 398365. The following pages should replace the same pages from the original renewal dated March 28, 1995 as additional information has been added and changes have been made since then. Some of these changes include the deletion and addition of qualified users, and modifications in the radioactive material possession request.

I have tried to provide all the additional information that you have requested, while at the same time down-sizing our program to better fit our needs. I have also included the Bill of Lading of the most recent shipment of isotopes to Barnwell, S.C. disposal site. We do plan on shipping more isotope waste in September. Please let me know if any additional information is necessary to meet NRC regulations. Thank you for providing me with an extension to work on this renewal.

Sincerely,

Lloyd W. Turtinen

Lloyd W. Turtinen, PhD
Associate Professor of Biology
tel: 715-836-3506, 836-2315

encl.

PM: 8-1-96

RECEIVED

AUG 5 - 1996

REGION III

AUG 5 1996

APPLICATION FOR MATERIAL LICENSE

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 9 HOURS. SUBMITTAL OF THE APPLICATION IS NECESSARY TO DETERMINE THAT THE APPLICANT IS QUALIFIED AND THAT ADEQUATE PROCEDURES EXIST TO PROTECT THE PUBLIC HEALTH AND SAFETY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0120), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

INSTRUCTIONS: SEE THE APPROPRIATE LICENSE APPLICATION GUIDE FOR DETAILED INSTRUCTIONS FOR COMPLETING APPLICATION. SEND TWO COPIES OF THE ENTIRE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BELOW.

APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

DIVISION OF INDUSTRIAL AND MEDICAL NUCLEAR SAFETY
OFFICE OF NUCLEAR MATERIALS SAFETY AND SAFEGUARDS
U.S. NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555-0001

ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS:

IF YOU ARE LOCATED IN:

CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, MAINE, MARYLAND,
MASSACHUSETTS, NEW HAMPSHIRE, NEW JERSEY, NEW YORK, PENNSYLVANIA,
RHODE ISLAND, OR VERMONT, SEND APPLICATIONS TO:

LICENSING ASSISTANT SECTION
NUCLEAR MATERIALS SAFETY BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406-1415

ALABAMA, FLORIDA, GEORGIA, KENTUCKY, MISSISSIPPI, NORTH CAROLINA, PUERTO
RICO, SOUTH CAROLINA, TENNESSEE, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA,
SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING SECTION
U.S. NUCLEAR REGULATORY COMMISSION, REGION II
101 MARIETTA STREET, NW, SUITE 2900
ATLANTA, GA 30323-0199

IF YOU ARE LOCATED IN:

ILLINOIS, INDIANA, IOWA, MICHIGAN, MINNESOTA, MISSOURI, OHIO, OR WISCONSIN,
SEND APPLICATIONS TO:

MATERIALS LICENSING SECTION
U.S. NUCLEAR REGULATORY COMMISSION, REGION III
801 WARRENVILLE RD
LISLE, IL 60532-4351

ALASKA, ARIZONA, ARKANSAS, CALIFORNIA, COLORADO, HAWAII, IDAHO, KANSAS,
LOUISIANA, MONTANA, NEBRASKA, NEVADA, NEW MEXICO, NORTH DAKOTA,
OKLAHOMA, OREGON, PACIFIC TRUST TERRITORIES, SOUTH DAKOTA, TEXAS, UTAH,
WASHINGTON, OR WYOMING, SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING SECTION
U.S. NUCLEAR REGULATORY COMMISSION, REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TX 76011-8064

PERSONS LOCATED IN AGREEMENT STATES SEND APPLICATIONS TO THE U.S. NUCLEAR REGULATORY COMMISSION ONLY IF THEY WISH TO POSSESS AND USE LICENSED MATERIAL IN STATES SUBJECT TO U.S. NUCLEAR REGULATORY COMMISSION JURISDICTIONS.

1. THIS IS AN APPLICATION FOR (Check appropriate item)

- ☐ A. NEW LICENSE
☐ B. AMENDMENT TO LICENSE NUMBER _____
☒ C. RENEWAL OF LICENSE NUMBER 48-08895-01

2. NAME AND MAILING ADDRESS OF APPLICANT (Include Zip code)

University of Wisconsin-Eau Claire
Garfield and Park Avenue
Eau Claire, WI 54702

3. ADDRESS(ES) WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED

At the licensee's Chemistry and Biology Departments in
the L.E. Phillips Science Hall on the University
Campus

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

Lloyd W. Turtinen, Ph.D.

TELEPHONE NUMBER
715-836-3506

SUBMIT ITEMS 5 THROUGH 11 ON 8-1/2 X 11" PAPER. THE TYPE AND SCOPE OF INFORMATION TO BE PROVIDED IS DESCRIBED IN THE LICENSE APPLICATION GUIDE.

5. RADIOACTIVE MATERIAL.
a. Element and mass number; b. chemical and/or physical form; and c. maximum amount which will be possessed at any one time.

6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED.

7. INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING EXPERIENCE.

8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS.

9. FACILITIES AND EQUIPMENT.

10. RADIATION SAFETY PROGRAM.

11. WASTE MANAGEMENT.

12. LICENSEE FEES (See 10 CFR 170 and Section 170.31)

FEE CATEGORY 170.11 (4A) AMOUNT ENCLOSED \$

13. CERTIFICATION. (Must be completed by applicant) THE APPLICANT UNDERSTANDS THAT ALL STATEMENTS AND REPRESENTATIONS MADE IN THIS APPLICATION ARE BINDING UPON THE APPLICANT.

THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF OF THE APPLICANT, NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PARTS 30, 32, 33, 34, 35, 36, 39 AND 40, AND THAT ALL INFORMATION CONTAINED HEREIN IS TRUE AND CORRECT TO THE BEST OF THEIR KNOWLEDGE AND BELIEF.

WARNING: 18 U.S.C. SECTION 1001 ACT OF JUNE 25, 1948 62 STAT. 749 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION.

CERTIFYING OFFICER - TYPED/PRINTED NAME AND TITLE

Marjorie R. Smelstor, Vice Chancellor

SIGNATURE

Marjorie R. Smelstor

DATE

3-28-96

FOR NRC USE ONLY

TYPE OF FEE	FEE LOG	FEE CATEGORY	AMOUNT RECEIVED	CHECK NUMBER	COMMENTS
APPROVED BY			\$		
				DATE	

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REGION III

PM: 8-1-96

5. Radioactive Material Possession Request for renewal application

<u>Element and Mass Number</u>	<u>Chemical and/or Physical Form</u>	<u>Maximum amount that licensee may possess at any one time</u>
Phosphorus-32	bound and non-volatile	1 MCi *
Phosphorus-33	bound and non-volatile	500 μ Ci
Sulfur-35	bound and non-volatile	1 MCi
Iodine-125	bound and non-volatile	500 μ Ci

* licensee will only order 500 μ Ci stocks at any one time

The following are isotopes on the original license that will not be requested in the future. Some have been shipped or decayed while others are still in our possession.

<u>Element and Mass Number</u>	<u>Chemical and/or Physical Form</u>	<u>Status</u>
Cesium-137	some sealed sources	stored (not used) ^a
Calcium-45	waste	decaying
Chromium-51	----	decayed ^b
Iron-59	----	decayed
Carbon-14	Scin. vials, various contained forms, waste	ship at future date
Hydrogen-3	Scin. vials, some various contained forms, waste	ship at future date
Cobalt-60	Sealed source, lab wastes	sealed sources stored (not used)
Iodine-131	waste	decaying
Iodine-125	----	shipped ^c

^a stored source that is not being used is exempt from periodic wipe test

^b decayed in storage > 10 half-lives and trashed

^c Shipped to Barnwell, S. C. disposal site, 6/96 (see Bill of Lading enclosed)

6. Purpose (s) for which licensed material will be used

- A. Laboratory research
- B. Teaching and training of students.

7. Individual(s) responsible for the radiation safety program and their training and experience

A. Dr. Lloyd W. Turtinen will be the Radiation Safety Officer for the Department of Biology and Chemistry

<u>Type of Training</u>	<u>Where Trained</u>	<u>Duration</u>	<u>On The Job</u>		<u>Formal Course</u>	
Radioisotope Safety Course	Walter Reed Army Institute of Research (WRAIR) Washington, DC	3 weeks	yes	no	<u>yes</u>	no
Radioisotope Users Course	WRAIR	6 weeks	yes	no	<u>yes</u>	no
Certificate through US Army	WRAIR					
Laboratory Research	Univ. of KY	1979-83	<u>yes</u>	no	yes	no
Laboratory Research	Univ. of Tenn.	1983-84	<u>yes</u>	no	yes	no
Laboratory Research	Univ. of MN	1984-88	<u>yes</u>	no	yes	no
Radioisotope Safety Exam	Univ. of MN	1984				

<u>Isotope</u>	<u>Max. Amt.</u>	<u>Where Experience Gained</u>	<u>Duration</u>	<u>Use</u>
51Cr	2 mCi/yr	WRAIR	1974-75	Radioactive Micropheres
	5 mCi/yr	Univ of TN	1983-84	Cellular Uptake
3H	5 mCi/yr	Univ of KY	1979-83	Research
	5 mCi/yr	Univ of Tenn	1983-84	Research
	5 mCi/yr	Univ of MN	1984-88	Research
14C	1 mCi/yr	Univ of KY	1979-83	Research
	1 mCi/yr	Univ of MN	1984-88	Research
35S	5 mCi/yr	Univ of KY	1979-85	Research
	5 mCi/yr	Univ of Tenn	1983-84	Research
	5 mCi/yr	Univ of MN	1984-88	Research
125I	5 mCi/yr	Univ of MN	1984-88	Research
	1 mCi/yr	Univ of KY	1979-83	Research
32p	10 mCi/yr	Univ of KY	1979-83	Research
	10 mCi/yr	Univ of MN	1984-88	Research

B. Dr. Michael R. Weil

<u>Type of Training</u>	<u>Where Trained</u>	<u>Duration</u>	<u>On The Job</u>		<u>Formal Course</u>	
Principles & practices of radiation training Radioactive, etc.	St. Louis University	2 yrs	<u>yes</u>	no	yes	no
	St. Louis University	2 yrs	<u>yes</u>	no	yes	no
	Woods Hole, Marine Laboratory	1 week	yes	no	<u>yes</u>	no
	St. Louis University	2 yrs	<u>yes</u>	no	yes	no
	Woods Hole Marine Laboratory	1 week	yes	no	<u>yes</u>	no

Isotope	Max. Amt.	Where Experience Gained	Duration	Use
^{14}C	<10uCi	St. Louis University	2 years	Classroom
^3H	<10uCi	St. Louis University	2 year	Classroom, Research
^3H	trace	Woods Hole	1 week	Classroom
^{125}I	<10uCi	St. Louis University	2 years	Classroom, Research
^{125}I	trace	Woods Hole	1 week	Classroom
^{35}S	trace	Woods Hole	1 week	Classroom

Dr. Weil received informal training while teaching Animal Physiology at St. Louis University and while doing his graduate research. Additionally, he took the course Liquid Scintillation Counting in Biology and Medicine at Woods Hole Marine Laboratory.

C. Dr. John K. Lim

<u>Type of Training</u>	<u>Where Trained</u>	<u>Duration</u>	<u>On The Job</u>		<u>Formal Course</u>	
			yes	no	yes	no
Measurement and handling for radioisotopes	Oak Ridge Institute for Nuclear Studies, Oak Ridge, Tennessee	3 mo.	yes	<u>no</u>	<u>yes</u>	no
Use of radioisotopes in biological studies	Oak Ridge Institute for Nuclear Studies, Oak Ridge, Tennessee	3 mo.	yes	<u>no</u>	<u>yes</u>	no
Cytological and membrane filter hybridization of radioactive cloned DNA	National Institute of Environmental Health Sciences, Research Triangle Park, NC	15 mo.	<u>yes</u>	no	yes	no

Isotope	Max. Amt.	Where Experience Gained	Duration	Use
^3H	1 mCi	Eau Claire, WI	20 years	Classroom, Research
^{32}P	2 mCi	Eau Claire, WI	7 years	Research
^{35}S	1 mCi	NIEHS, N.C.	7 years	Research
^{125}I	trace	NIEHS, N.C.	1 year	Research

Dr. Lim, as a research geneticist, used ^{32}P and ^3H on a daily basis at the National Institute of Environmental Health Sciences, and is routinely using these isotopes for isolation and characterization of DNA molecules.

D. Dr. Robert J. Eierman

	<u>Type of Training</u>	<u>Where Trained</u>	<u>Duration</u>	<u>On The Job</u>		<u>Formal Course</u>	
				yes	no	yes	no
a.	Principles & Practices of Radiation Protection	Oregon State Univ, Corvallis, OR	2 sem.	yes	no	<u>yes</u>	no

- b. Radioactivity measurement standardization and monitoring techniques Oregon State Univ, Corvallis, OR 2 sem. yes no yes no
- c. Mathematics & Calculations basic to the use and measurement of radioactivity Oregon State Univ, Corvallis, OR 2 sem. yes no yes no
- d. Biological Effects of Radiation Oregon State Univ, Corvallis, OR 1 sem. yes no yes no

Isotope	Max. Amt.	Where Experience Gained	Duration	Use
C ¹⁴	100 uCi	Oregon State University	2 sem.	Graduate level course
H ³	10 uCi	Oregon State University	2 sem.	Graduate level course
Cs ¹³⁷	5 uCi	Oregon State University	2 sem.	Graduate level course

E. Dr. Scott C. Hartsel

Type of Training	Where Trained	Duration	On The Job	Formal Course
a. Radiation Safety and Handling Course	Ohio State Univ.	1 sem.	yes no	<u>yes</u> no
b. Receptor Assays	Univ of Virginia	2.5 yrs	<u>yes</u> no	yes <u>no</u>

Isotope	Max. Amt.	Where Experience Gained	Duration	Use
¹⁴ C	Up to 1 mCi	Ohio State UW-Eau Claire	10 yrs	Academic research and training
³ H	Up to 1 mCi	Univ of Virginia	5 yrs	Academic research

F. Dr. Leo A. Ochrymowycz

Where Trained	Duration	On The Job	Formal Course
a. University of WI-Eau Claire	1970-77	yes no	yes <u>no</u>

Isotope	Max. Amt.	Where Experience Gained	Duration	Use
Hg ²⁰³	1.0 millicurie	Univ of WI-Eau Claire	1976-77	Biodistribution under influence of carrying ligand in mice

G. Dr. Thao Yang

Where Trained	Duration	On The Job	Formal Course
a. University of KY-Lexington	1990-91	yes no	yes <u>no</u>

<u>Isotope</u>	<u>Max. Amt.</u>	<u>Where Experience Gained</u>	<u>Duration</u>	<u>Use</u>
³² P	1.0 millicurie	Univ. of KY-Lexington	1990-91	protein building

H. Dr. Rudy G. Buiser

<u>Type of Training</u>	<u>Where Trained</u>	<u>Duration</u>	<u>On the Job</u>	<u>Formal Course</u>
Radioisotope Safety Training	Parke-Davis Pharmaceuticals, Ann Arbor, MI	2 days		Yes
Laboratory Research	Parke-Davis	1993-1995	yes	
Radiation Safety Course and Exam	University of Rochester Rochester, NY	1 week		no
Laboratory Research	Univ. of Rochester	1989-1993	yes	

<u>Isotope</u>	<u>Max. Amt.</u>	<u>Where Exp. Gained</u>	<u>Duration</u>	<u>Use</u>
³ H	5 mCi/yr	Univ. of Rochester	1989-1993	Research
³⁵ S	5 mCi/yr	Univ. of Rochester	1989-1993	Research
	5 mCi/yr	Parke-Davis	1993-1995	Research
³² P	10mCi/yr	Univ. of Rochester	1989-1993	Research
	10mCi/yr	Parke-Davis	1993-1995	Research

I. Dr. Anne M. Geraghty

<u>Type of Training</u>	<u>Where Trained</u>	<u>Duration</u>	<u>On the Job</u>	<u>Formal Course</u>
Radioisotope Users course	Univ. of IA Hospitals	1 day		yes
Basic Radiation Safety course	Iowa St. Univ.	2 days		yes
Laboratory Research	V.A. Hospital Iowa City, IA	1985-86	yes	
Laboratory Research	Iowa St. Univ.	1986-94	yes	

<u>Isotope</u>	<u>Max. Amt.</u>	<u>Where Exp. Gained</u>	<u>Duration</u>	<u>Use</u>
³ H	5 mCi/yr	V.A.Hospital-Iowa City	1985-86	Research
³⁵ S	5 mCi/yr	Iowa St. Univ.	1986-94	Research
³² P	10mCi/yr	Iowa St. Univ.	1986-94	Research

7a. Licensed material in #5 is authorized for use by and under the supervision of the following individuals for the following isotopes:

Lloyd W. Turtinen	All
Michael R. Weil	All
John K. Lim	All
Robert Eierman	All
Scott C. Hartsel	Sulfur 35
Leo Orchymowyc	All
Thao Yang	phosphorus 32, 33, Sulfur 35
Rudy Buiser	All
Anne Geraghty	All

8. Training for ancillary personnel involved in radionuclide work

a. There are two group of personnel: 1) general maintenance and security personnel, and 2) students involved in radioisotope work either in a classroom or research environment.

b. In group 1, all individuals receive 'Chemical right to know training' which includes radiation safety training. All radioisotope work areas are posted so individuals are aware of the location of radioisotopes.

c. Students working in laboratories with radioisotopes receive individual training from the experienced user. Most students will in addition receive training in the Radioisotope User section of the Recombinant DNA Techniques course. Students are tested on their knowledge of this material during this course. Any additional training or instruction deemed necessary by the user will be given to the student prior to working with radioactive material. Records of each student receiving radiation safety training will be kept on file by the RSO with a list of topics covered, dates, instructor, and signed by both instructor and student.

9. Facilities and Equipment

A. Isotope Storage Facilities

The Biology Department is equipped with a radioactive storage room, room 386, which was constructed of high density concrete block walls, a lead lined door, a lead lined floor, and a lead storage safe which has 1 1/4 inch thick lead walls. This room is used for the room temperature storage of isotopes purchased by the department. In addition, isotopes including ^{32}P and ^{35}S compounds that need to be frozen will be stored in a locked freezer(s) at -20°C in lead shielded containers.

B. Instructional and Research Facilities

A few laboratories in the Biology Department will be used for instruction or research involving isotopes. Each laboratory is equipped with a designated "hot" sink, a fume hood and proper facilities for temporarily storing low levels of radioactive materials. Each laboratory will be provided with shielding materials that are necessary for use in that laboratory depending upon the levels and types of isotopes being used. Presently, some isotopes are used in the following laboratories:

Phillips 307, 308, 366, 374, and 376.

Room 307 of the L.E. Phillips Science Hall is the counting room which houses the radiation equipment used in Biology and Chemistry. This room is used exclusively as a counting room.

C. Radioactive Waste Decay -in-Storage Facilities

Rooms 356 and 388 are locked limited access radioactive waste storage rooms. Room 388 also has a raised perimeter so no leakage into the hallway can occur. All radioisotopes will be logged into the decay log for storage for at least 10 half-lives. Some waste is also temporarily stored in the laboratories where they are used and then finally transferred to the designated waste storage facilities.

D. Equipment

Type of Instruments	Number Available	Radiation Detected	Sensitivity Range	Window Thickness	Use
Beckman LS3801 Liquid Scintillation Spectrometer	1		-	-	General Use
Ludlum Model 2 Survey Method	2		0-50 mr/hr	1.5-2mg/cm ²	Monitoring

#10 Radiation Safety Program

The radiation safety program at the University of Wisconsin-Eau Claire consists of an Tri-campus Environmental Health and Radiation Safety Specialist, Henry Grote; a Radiation Safety Officer, Dr. Lloyd Turtinen, and qualified users in the department of biology and chemistry. The program will follow established rules and protocols(A-I) that comply with NRC regulations. Generally, only 1-3 individuals regularly use radioisotopes.

A. Duties of the Radiation Safety Officer (RSO)

1. To assess radiobiological hazards and prescribe and ensure the implementation of appropriate radiation safety precautions.
2. Approve and log in all incoming radioisotopes. Ensure that the use of licensed material is by or under the direct supervision of individuals specifically listed on your license.
3. To ensure that all users (where appropriate) wear personnel monitoring equipment when using licensed materials
4. To ensure that licensed materials are properly secured against unauthorized removal at all times when not in use.
5. To monitor and log out of radioactive waste
6. To perform routine inspections of all laboratories using or storing licensed materials.
7. To ensure that the terms and conditions of your license are met, and that all required records are maintained.

B. Management Control

As required by 10 CFR 20.1101 (c) we the licensee will review the radiation protection program content and implementation at least annually.

1. The RSO and the Tri-campus Environmental and Radiation Safety Specialist (ERSS) will inform any and all radioisotope users of NRC regulations, provisions of the license, and compliance procedures. Each academic year the RSO and ESS will also inform all users of any new regulations and remind users of current provisions and procedures in the institutional license.

2. The performance of the RSO and any staff (generally students who will perform routine swab tests) will be reviewed by the Tri-campus Environmental and Radiation Safety Specialist, Henry Grote on an annual basis. Mr. Grote besides being the chief consultant and advisor on safety issues for the three campuses in the UW system is also the RSO for UW River Falls. His review of the RSO and staff will be reported to the director of Risk Management at UWEC.

3. Audits by the RSO and staff will be routinely done to determine user compliance to NRC regulations and Radiation Safety Program procedures. These random audits will inspect the users' record keeping, safety procedures, and swabs of radioactive work areas. Any deficiencies will be communicated immediately to the user. Failure to correct such deficiencies will result in suspension of user privileges.

C. Material Control Inventory and Records

1. No requisition for radioactive materials will be approved unless the one requesting the radioactive materials is authorized by our NRC License to use radioactive materials.

All radioactive material must be requested through the RSO as described in the procedure below. The RSO will record the type of isotope and the amount in the computer spreadsheet. The spreadsheet will also keep a record of the amount isotope in decaying in storage so the possession limits are not exceeded

2. The following procedure is to be followed in ordering radioactive materials:

- a. Fill out and submit the proper requisition form to the radiation safety officer of your department.
- b. The person requesting the isotope should attach a sheet to the requisition form bearing the following information:
 - 1) Name of the person requesting the isotope.
 - 2) How the isotope will be used when received.
 - 3) The area of the department where you propose to use the isotope.
- c. The radiation safety officer will approve the requisition if it meets the license requirements and forward it to the department chair or appropriate person for processing after making a copy of the requisition to keep on file.
 - 1) The radiation safety officer shall keep a file of all isotope requisitions.
3. Receiving radioactive materials
 - a. The faculty member receiving the radioactive material shall fill out and file with the radiation safety officer, a Radioactive Shipment Receipt Report form for each isotope received.
 - 1) The radiation safety officer shall keep a file of all Radioactive Shipment Receipt Report Forms.
 - 2) The Radiation safety officer shall keep a log book in which a record of all the isotopes received is kept. The record shall contain:
 - a) The isotope received
 - b) The date of receipt
 - c) The amount and form of the isotope received
 - d) The person receiving the isotope
 - e) Disposition of the isotope with dates
 - b. Procedures for opening packages containing radioactive materials
 - 1) Visual inspect package for any sign of damage (e.g., wetness, crushed). If damage is noted, stop procedure and notify Radiation Safety Officer.
 - 2) Measure exposure rate at 3 feet from package surface--record. If >10 mR/hr--stop procedure and notify Radiation Safety Officer.
 - 3) Measure surface exposure rate and record. If > 200 mR/hr--stop procedure and notify Radiation Safety Officer.
 - 4) Put on gloves.
 - 5) Open the outer package (following manufacturer's directions, if supplied) and remove packing slip. Open inner package to verify contents (compare requisition, packing slips, and label on bottle) check integrity of final source container (inspect for breakage of seals or vials, loss of liquid, discoloration of

packing material). Check also that shipment does not exceed possession limits.

- 6) Wipe external surface of final source container with moistened cotton swab or filter paper held with forceps, assay and record.
- 7) Monitor the packing material and packages for contamination before discarding:
 - a) if contaminated, treat as radioactive waste.
 - b) if not, obliterate radiation labels before discarding in regular trash.
- 8) File a copy of this report with the radiation safety officer.

D. Personnel Monitoring

1. The RSO or instructor will open all of the radioactive packages received according to procedures outlined in part C of this section and the lab instructor or investigator will dilute the isotopes when necessary to reduce exposure to students in teaching laboratories. Mostly ^{35}S and ^{32}P in contained and non-volatile forms will be used. Currently the Recombinant DNA Techniques is the only course using radioisotopes. The instructor and each student wears a film badge. Each person using isotopes in the research laboratories will also wear a film badge when working with isotopes.

2. Presently we have a film badge service contract with ICN Dosimetry Service of Irvine, California. The film badges are serviced on a monthly basis and records are maintained for each film badge.

3. When ^{32}P is being use (bound and non-volatile) and 500 μCi concentrated stock, the following procedures will be mandatory:

- a. All individuals will wear film badges
- b. low density shielding (ie. plexiglass) will be used for external protection and to keep Bremsstrahlung radiation at a minimum.
- c. a radiation survey and wipe test for radioactive contamination will be done after each use.

4. In our application, **no** nonbound or volatile forms of iodine 131, iodine 125, carbon 14, or tritiated organic compounds are requested. Therefore, no bioassay or biomonitoring program is anticipated.

Furthermore, with the occasional use of non-volatile and bound iodine 125, less than 500 μCi will be used at any one time.

E. Survey Instrument Calibration

1. Calibration of our survey instruments will be done every 12 months. Survey instruments will be hand delivered or shipped to Radiation Calibration, Univ. of Wisconsin-Madison, Medical Physics, 1300 Univ. Ave., Madison, WI 53706. Tel: 608-262-6320.

F. Area Monitoring

This will be the user's responsibility along with occasional verification by the RSO

- 1) All laboratory areas will be surveyed weekly during the time isotopes are being used in the area.
- 2) The survey will consist of:
 - a. A measurement with a survey meter sufficiently sensitive to detect 0.1 mR/hr.
 - b. A series of wipe tests to measure contamination levels. The method for performing wipe tests will be sufficiently sensitive to detect 100 dpm.
- 3) A permanent record will be kept of all survey results, including negative results. The record will include:
 - a. Location, date, and type of equipment used.
 - b. Name of person conducting the survey.

- c. Drawing of area surveyed, identifying relevant features.
 - d. Measured exposure rates, keyed to location on drawing (point out rates that require corrective action).
 - e. Detected contamination levels, keyed to locations on drawing.
 - f. Corrective action taken in the case of contamination or excessive exposure rates, reduced contamination levels or exposure rates after corrective action, and any appropriate comments.
- 4) The area will be cleaned if the contamination level exceeds 100 dpm/100 cm² as indicated by the wipe test.

G. Laboratory Rules for the use of Radioactive Material

1. Diluting of mCi samples received from commercial suppliers will be done by the instructor. Only faculty personnel will handle mCi amounts of radioactive materials, student use will be restricted to μ Ci amounts.
2. Wear laboratory coats, or other protective clothing at all times in areas where radioactive materials are used.
3. Wear disposable gloves at all times while handling radioactive materials.
4. Wear safety glasses at all times while handling hard beta or gamma emitting radioactive materials.
5. Monitor hands and clothing for contamination after each procedure or before leaving the area.
6. Do not eat, drink, smoke, or apply cosmetics in any area where radioactive material is stored or used.
7. Dispose of radioactive waste only in specially designated receptacles.
8. Never pipette by mouth.
9. Confine radioactive solutions in covered containers plainly identified and labeled with name of compound, radionuclide, date, activity, and radiation level if applicable.
10. Always transport radioactive material in shielded containers.
11. Wash all contaminated glassware in the sink designated "hot sink".

H. Emergency Procedures

1. Minor Spills:
 - a. NOTIFY: Notify persons in area that a spill has occurred.
 - b. PREVENT THE SPREAD: Cover the spill with absorbent paper.
 - c. CLEAN UP: Use disposable gloves and remote handling tongs. Carefully fold the absorbent paper and pad. Insert into a plastic bag and dispose of in the radioactive waste container. Include all other contaminated materials such as disposable gloves.
 - d. SURVEY: With a Survey Meter, check the area around the spill, your hands and clothing for contamination.
 - e. REPORT: Report incident to the Radiation Safety Officer.
2. Major Spills:
 - a. CLEAR THE AREA: Notify all persons not involved in the spill to vacate the room.
 - b. PREVENT THE SPREAD: Cover the spill with absorbent pads, but do not attempt to clean it up. Confine the movement of all personnel potentially contaminated to prevent the spread.
 - c. SHIELD THE SOURCE: If possible, the spill should be shielded, but only if it can be done without further contamination or without significantly increasing your radiation exposure.
 - d. CLOSE THE ROOM. Leave the room and lock the door(s) to prevent entry.
 - e. CALL FOR HELP. Notify the Radiation Safety Officer immediately.

- f. **PERSONNEL DECONTAMINATION.** Contaminated clothing should be removed and stored for further evaluation by the Radiation Safety Officer. If the spill is on the skin, flush thoroughly and then wash with mild soap and lukewarm water.

I. Identification of Areas Where Radioactive Materials Are Used or Stored

1. Each room where isotopes are being used shall be properly identified.
 - a. The door to each room in which radioactive materials are being used shall bear a radioactive sign signifying that the area is a radiation area or contains radioactive materials depending upon the level of radiation in the room as set forth by NRC regulations.
 - b. Each container containing radioactive material shall be properly labeled and the immediate area in which it is being used should be properly labeled.
2. Each storage area shall be properly identified and all isotopes stored in such a way that they do not become a health hazard to those in the area.

11. Waste Management

A. Effluent Monitoring-It is anticipated that minimal sewage disposal will be necessary. We will use only short-lived radioisotopes and decay in storage to a minimum of 10 half-lives.

B. Decay-in-Storage disposal procedures

1. Radioactive waste will be temporarily stored in labelled containers in designated radioisotope use rooms until transferred to room 386 for further decay. The amount and the time in decay will be recorded in a log.
2. The radioactive waste will be held in storage for at least 10 half-lives
3. Following decay, the waste will be surveyed in a low background area with all the shielding removed.
4. All radioactive labels will be removed from decayed materials and the solid waste will be disposed with normal trash, non-toxic aqueous solutions poured down the drain, and organic solvents handled as normal toxic wastes.
5. Disposal of all radioactive materials will conform to the rules and regulations as set forth in part 20 sections 20.2001, 20.2002, 20.2003, 20.2004, 20.2005, 20.2006, and 20.2007 of the United States Nuclear Regulatory Commission Rules and Regulations.

**CHEM-NUCLEAR SYSTEMS, INC.****DEFENSE CONSOLIDATION FACILITY**
P.O. Box 828 • Barnwell, South Carolina 29812

This is to certify that the radioactive material described below was received at the Chem-Nuclear Systems Inc. Consolidation Facility in Barnwell, South Carolina. This certification satisfies both Condition 17 of the South Carolina Department of Health and Environmental Control Radioactive Material License 287-04 issued to Chem-Nuclear Systems, Inc. and Title 10 Code of Federal Regulations Part 20, Appendix F, Section III.

SHIPMENT CONTROL NUMBER

ECN 0080-96

SHIPPER

UNIVERSITY OF WISCONSIN - EAU CLAIREEAU CLAIRE, WI

DATE RECEIVED

6-24-96

SIGNATURE

Bowers

Clifford E. Bowers

6-24-96

Date

DISCREPANCIES (if any):

NONE CONTENTS NOT INSPECTED.

Note: Inquiries regarding this acknowledgement should be directed to the authorizing command for military shipments or to the Consolidation Facility for commercial shipments.

STRAIGHT BILL OF LADING—SHORT FORM—ORIGINAL—NOT NEGOTIABLE.

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading

The property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown): Marked, consigned, and destined as indicated below, which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination. If on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination. And as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the uniform domestic straight bill of lading set forth (1) in official, Southern, Western and Illinois Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment. Or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment.

Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, including those on the back thereof, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

(MAIL OR STREET ADDRESS OF CONSIGNEE FOR PURPOSES OF NOTIFICATION ONLY)

FROM: UNIVERSITY OF WISCONSIN - EAU CLAIRE

DATE: 18-Jun-96

AT GARFIELD AVE, EAU CLAIRE, WI 54702

CONSIGNEE TO: Chem-Nuclear Consolidation Facility

DESTINATION: SC. Hwy 64 Barnwell, SC 29812

STATE: South Carolina

Control Number

N/A

Tractor No. 71

Trailer No. 097

LENGTH

LEGAL

HEIGHT 6'

LEGAL

WIDTH

LEGAL

EMERGENCY CONTACT:

BARNWELL SECURITY (803) 259-6069

No. Pkgs	HM	KIND OF PACKAGE, DESCRIPTION OF ARTICLES, LINER NUMBERS, SPECIAL MARKS & EXCEPTIONS	WEIGHT (Subject to Correction)
3	X	<p>RADIOACTIVE MATERIAL, N.O.S., 7, UN 2982.</p> <p>(3) METAL DRUMS CONTAINING DAW & SEALED SOURCES</p> <p>RADIONUCLIDES: ¹³⁷CS, ⁶⁰CO, ¹³²TE, ¹³⁴TE, ¹³⁵TE, ¹³⁷TE, ¹³⁸TE, ¹³⁹TE, ¹⁴⁰TE, ¹⁴¹TE, ¹⁴²TE, ¹⁴³TE, ¹⁴⁴TE, ¹⁴⁵TE, ¹⁴⁶TE, ¹⁴⁷TE, ¹⁴⁸TE, ¹⁴⁹TE, ¹⁵⁰TE, ¹⁵¹TE, ¹⁵²TE, ¹⁵³TE, ¹⁵⁴TE, ¹⁵⁵TE, ¹⁵⁶TE, ¹⁵⁷TE, ¹⁵⁸TE, ¹⁵⁹TE, ¹⁶⁰TE, ¹⁶¹TE, ¹⁶²TE, ¹⁶³TE, ¹⁶⁴TE, ¹⁶⁵TE, ¹⁶⁶TE, ¹⁶⁷TE, ¹⁶⁸TE, ¹⁶⁹TE, ¹⁷⁰TE, ¹⁷¹TE, ¹⁷²TE, ¹⁷³TE, ¹⁷⁴TE, ¹⁷⁵TE, ¹⁷⁶TE, ¹⁷⁷TE, ¹⁷⁸TE, ¹⁷⁹TE, ¹⁸⁰TE, ¹⁸¹TE, ¹⁸²TE, ¹⁸³TE, ¹⁸⁴TE, ¹⁸⁵TE, ¹⁸⁶TE, ¹⁸⁷TE, ¹⁸⁸TE, ¹⁸⁹TE, ¹⁹⁰TE, ¹⁹¹TE, ¹⁹²TE, ¹⁹³TE, ¹⁹⁴TE, ¹⁹⁵TE, ¹⁹⁶TE, ¹⁹⁷TE, ¹⁹⁸TE, ¹⁹⁹TE, ²⁰⁰TE, ²⁰¹TE, ²⁰²TE, ²⁰³TE, ²⁰⁴TE, ²⁰⁵TE, ²⁰⁶TE, ²⁰⁷TE, ²⁰⁸TE, ²⁰⁹TE, ²¹⁰TE, ²¹¹TE, ²¹²TE, ²¹³TE, ²¹⁴TE, ²¹⁵TE, ²¹⁶TE, ²¹⁷TE, ²¹⁸TE, ²¹⁹TE, ²²⁰TE, ²²¹TE, ²²²TE, ²²³TE, ²²⁴TE, ²²⁵TE, ²²⁶TE, ²²⁷TE, ²²⁸TE, ²²⁹TE, ²³⁰TE, ²³¹TE, ²³²TE, ²³³TE, ²³⁴TE, ²³⁵TE, ²³⁶TE, ²³⁷TE, ²³⁸TE, ²³⁹TE, ²⁴⁰TE, ²⁴¹TE, ²⁴²TE, ²⁴³TE, ²⁴⁴TE, ²⁴⁵TE, ²⁴⁶TE, ²⁴⁷TE, ²⁴⁸TE, ²⁴⁹TE, ²⁵⁰TE, ²⁵¹TE, ²⁵²TE, ²⁵³TE, ²⁵⁴TE, ²⁵⁵TE, ²⁵⁶TE, 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CHEM-NUCLEAR SYSTEMS INC.

P.O. Box 728 • Barnwell, South Carolina 29812 • (803) 259-1761

Control Number

NIA

BILL OF LADING-CONTINUATION PAGE 1
PAGE 2 OF 2 SHIPMENT NUMBER Com 289121 / SCN0080-96

NO. PKGS.	HM	KIND OF PACKAGE, DESCRIPTION OF ARTICLES, LINER NUMBERS, SPECIAL MARKS & EXCEPTIONS	*WEIGHT (Subject to Correction)
2	X	RADIOACTIVE MATERIAL, LSA, n.o.s., 7, UN2912.	240
		(2) POLY/FIBER CONTAINERS OF DAW-LABTRASH	
		Radionuclides: H3, C14, I125, Sr90, Ra226	
		Total Activity: .18909 mCi	
		Container Type: POLY/FIBER DRUM	
		Physical Form: Solid / LIQUID	
		Container Specification: STRONG - TIGHT	
		Chemical Form: OXIDE	
		Non-Spec. Marking: RADIOACTIVE-LSA	
		Specification Label: NONE	
		Exclusive/Non-Exclusive Use Vehicle:	
		Transport Index: NONE	
		Placarded: RADIOACTIVE	

NO. PKGS.	HM	KIND OF PACKAGE, DESCRIPTION OF ARTICLES, LINER NUMBERS, SPECIAL MARKS & EXCEPTIONS	*WEIGHT (Subject to Correction)
		Radionuclides:	
		Total Activity: N	
		Container Type: A	
		Physical Form:	
		Container Specification:	
		Chemical Form:	
		Non-Spec. Marking:	
		Specification Label:	
		Exclusive/Non-Exclusive Use Vehicle:	
		Transport Index:	
		Placarded:	

(1) GENERATOR

AGENCY OF WASHINGTON - EAGLE
EAGLE GARDENS ARE
EAGLE, WI 53002

P.O.C. SPAN PATRICK
PHONE (715) 836-4414
S.C. Transport Permit No 5166 AB-06-X

RADIOACTIVE SHIPMENT MANIFEST FORM

DOT EXEMPT E-11575
Chem-Nuclear's Consolidation Facility
P.O. Box 828
SC Hwy 64 (Near SBS Gate)
Sueiling, SC 29812
(803) 259-1119

EMERGENCY TELEPHONE: (803) 259-6069

(4) USE THIS NUMBER ON ALL CONTINUATION PAGES
SHIPMENT CONTROL NUMBER
CYRLE 29101 / 2210000-AD
PAGE 1 OF 2

(4) CARRIER
Chem-Nuclear Systems, Inc.
P.O. Box 828, SC Hwy 64, Sueiling, SC 29812
(803) 259-1119
SHIPPING DATE 18 Jun 96

(5) TOTAL ACTIVITY (ENTER IN 11) in mCi
ALL ISOTOPES
TITANIUM C-14 119
201-05814-26
201-05814-26
NP NP

(6) TOTAL FOR EACH CLASS	PROPER SHIPPING NAME AND HAZARD CLASS (PER 49 CFR 172.101)	ID NUMBER	PG OR EXCEPTED
NO. OF PACKAGES	WEIGHT (POUNDS)		
3	240 ABO	UN 2918	EXCEPTED
3	ABO	UN 2918	EXCEPTED
		UN 2918	EXCEPTED

THIS VEHICLE IS CONSIDERED EXCLUSIVE USE (PER 172.101) LOADING AND UNLOADING MUST BE ACCOMPLISHED BY CONSIGNEE, CONSIGNEE OR HIS DESIGNATED AGENT. VEHICLE OR PACKAGE COMBINATION CANNOT BE ALTERED FROM ORIGINAL LOADING WITHOUT THE PRIOR APPROVAL OF THE CONSIGNEE. ANY LOADING OR UNLOADING MUST BE PERFORMED BY PERSONNEL HAVING KNOWLEDGE OF THE TRAINING AND RESOURCES APPROPRIATE FOR THE SAFE HANDLING OF THE COMBINATION.

DRIVER'S SIGNATURE

Date: 18 Jun 96

(8) IMPORT/EXPORT: *This is to certify that the above named materials are properly classified, described, packaged, marked, and labeled, and in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Signature: Baron Bradley / Baron Bradley Date: 18 Jun 96

(9) *Certification is hereby made to the South Carolina Department of Health and Environmental Control that this shipment of low-level radioactive waste has been inspected in accordance with the requirements of South Carolina Radioactive Material License 287-94 as amended, and the effective consolidation facility acceptance criteria within 48 hours prior to shipment, and further certification is made that the inspection revealed no other non-compliance with all applicable laws, rules and regulations.

Date: 18 Jun 96
Title and Organization: Baron Bradley
Commercial Telephone No: 259-1119

ATTACH SHIPPING DOCUMENTS TO OUTSIDE OF PACKAGE

(10) ITEM NO.	(11) RADIOACTIVE EACH CONTAINER	(12) ACTIVITY EACH RADIOACTIVE (mCi)	(13) PHYSICAL FORM	(14) CHEMICAL FORM AND NAME A.S. OR CHELATING AGENT	(15) WASTE DESCRIPTION	(16) WASTE CLASS (A,B,C)	(17) SPECIAL MATERIAL (Fuels)	(18) SPECIAL MATERIAL (Fuels)	(19) CONTAINER WEIGHT (Pounds)	(20) CONTAINER VOLUME (GAL)	(21) CONTAINER TYPE	(22) RADIATION LEVELS (Cm) 1 Meter	(23) CONTAINER SURFACE (CPM/100 cm ²)	(24) LABEL MARKINGS USED
WEC #1	H3 CL 30 CL 30 CL 30 UNAT NA 22 BA 13 CL 14 PA 210	.005 .002 .002 .003 .001 .001 .003 .002	SOLID/POWDER, NONE LIQUID/CL 30	SOLID/POWDER, NONE LIQUID/CL 30	DAW (USE TRASH-PAPER PLASTIC, A GLASS) - CONTAMINATED AREAS RESERVE (< 4 H. REM.)	A	NP	ABO	160	7.5	METAL DRUM	0.1 0.2	2200/2200	Radioactive WHITE Radioactive Radioactive Radioactive Radioactive Radioactive Radioactive Radioactive Radioactive Radioactive
WEC #2	CL 14 H3	.005 300.025	SOLID/POWDER, NONE LIQUID/CL 30	SOLID/POWDER, NONE LIQUID/CL 30	DAW (USE TRASH-PAPER PLASTIC GLASS) - CONTAMINATED AREAS RESERVE (< 4 H. REM.)	A	NP	NP	170	7.5	METAL DRUM	0.1 0.2	2200/2200	Radioactive WHITE Radioactive Radioactive Radioactive Radioactive Radioactive Radioactive Radioactive Radioactive Radioactive
2		171.03					NP	.003	330	15		.04		

NP - None present

Page Totals

D.O.T. Shipping Papers (3 of 4)

JOSEPH P. WILKINSON, JR.

[illegible]

D.O.T. Shipping Papers (A) of (A)



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION III
801 WARRENVILLE ROAD
LISLE, ILLINOIS 60532-4351

copy JUN 17 1996

VICE CHANCELLOR'S OFFICE

Must reply within 20 days

JUN 13 1996

RECEIVED UW-EC

Marjorie R. Smelstor
Vice Chancellor
University of Wisconsin-Eau Claire
Garfield and Park Avenue
Eau Claire, WI 54702

JUN 21 1996

DEAN, COLLEGE OF
ARTS & SCIENCES

received
6/25/96

Dear Ms. Smelstor:

We have reviewed your application dated March 28, 1995, for renewal of your NRC License No. 48-08895-01 and find that we will need the following additional information in order to continue our review.

1. Authorized Place of Use

Your current license lists the Chemistry and Biology Departments at Garfield and Park Avenues as the authorized place of use. Your renewal application lists L.E. Phillips Science Hall as the place of use. Please confirm that these facilities are the same and that the place of use has not changed.

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Please clarify what materials you wish Dr. Thao Yang to be listed for. From our review of his training and experience, Dr. Yang can be listed phosphorus-32 and other similar beta emitters. Please also confirm that you wish to delete Drs. Gleiter, Ochrymowycz, Weil and McKee.

3. Duties of the Radiation Safety Officer (RSO) and Management Control

a. Please provide a description of the duties and responsibilities of your Radiation Safety Officer. The typical duties of a Radiation Safety Officer would be:

- (1) To assess radiological hazards and prescribe, and ensure the implementation of, appropriate radiation safety precautions.
- (2) To ensure that the use of licensed material is by or under the direct supervision of individuals specifically listed on your license.
- (3) To ensure that all users (where appropriate) wear personnel monitoring equipment when using licensed materials.
- (4) To ensure that licensed materials are properly secured against unauthorized removal at all times when not in use.

- (5) To perform routine inspections of all laboratories using or storing licensed materials.
 - (6) To ensure that the terms and conditions of your license are met, and that all required records are maintained.
- b. 10 CFR 20.1101(c) requires that the licensee review the radiation protection program content and implementation at least annually. Please provide a description of your program for performing the required annual review. It should include the following criteria:
- (1) Senior management oversight of the radiation protection program. Specify, the mechanisms that will be used by senior management to ensure that they are aware of NRC regulations, the provisions of the license, and the compliance status of the institution's licensed program.
 - (2) Review of the Radiation Safety Officer and staff performance. Specify, the minimum qualifications for an individual who will perform this review, and confirm that the results will be reported to senior management.
 - (3) Audits by the Radiation Safety Officer and staff to determine user compliance with the requirements of the NRC license and your radiation protection program. Audits should include such topics as: reviews of users' inventory and survey records, evaluation of users' radiation safety procedures through observation and discussion, and performance of independent work area surveys.

4. Training

In your application, you didn't describe a training program for ancillary personnel (maintenance, security, etc.) and personnel involved in radionuclide work. Please describe a program that will:

- a. be of sufficient scope to ensure that all personnel using licensed materials, or frequenting areas where licensed materials are used, receive proper instruction in accordance with 10 CFR 19.12 (enclosed); and
- b. assure that personnel are instructed before assuming duties with, or in the vicinity of licensed materials and retrained at least annually.

The training given to each group should be commensurate with the duties and responsibilities of the group and need not be the same for each group.

5. Survey Instrument Calibration

If you propose to calibrate your own radiation survey and monitoring instruments, please provide a detailed description of your planned calibration procedures. The description of calibration procedures need to include, as a minimum:

- a. The manufacturer and model number of the source(s) to be used.
- b. The nuclide and activity of the licensed material contained in the source.
- c. The accuracy of the source(s). Traceability of the source to a primary standard should be provided.
- d. The step-by-step procedures, including associated radiation safety procedures. These procedures should include a two-point calibration of each scale of each instrument with the points separated by at least 50% of the scale.
- e. The name(s) and pertinent experience of person(s) who will perform the calibrations.
- f. Calibration of survey instruments every 12 months is an acceptable frequency to the NRC.

Appendix B of the enclosed regulatory guide may be helpful in preparing your response and provides procedures that are acceptable to the NRC.

6. Personnel Monitoring

In support of your request for more than one millicurie of phosphorus-32, submit special safety instructions to be provided to individuals. Your procedures should include:

- a. the use of low density shielding (e.g., plexiglass) in order to keep Bremsstrahlung radiation at a minimum,
- b. a mandatory radiation survey and wipe test for radioactive contamination after each use,
- c. the use of finger extremity monitors for procedures that involve one millicurie or more,
- d. a dry run prior to the performance of unfamiliar procedures in order to preclude unexpected complications. In addition, it is recommended that the radiation protection officer be present during new procedures, and

- e. the use of eye protection for procedures that involve 10 millicuries or more.

7. Bioassays

- a. Please describe your bioassay program, including the type of bioassay (thyroid counts, urine counts, whole body counts, etc), the criteria and the frequency for performing bioassays, and the type of action taken when positive results are obtained. It is recommended that bioassay procedures be considered for personnel using millicurie quantities of tritiated organic compounds, carbon-14, iodine-131, and iodine-125 in noncontained forms.
- b. Your application did not specify the instrument used in your bioassay program for determining activity in the thyroid. Please specify your instrumentation and calibration procedures, including the type of phantom you will use.
- c. Please specify the criteria used to set the type and frequency at which routine surveys for airborne licensed materials are performed (e.g., breathing zone and general work area air sampling, hood and room ventilation air flow rate measurement, and stack effluent sampling). Describe the instrumentation that will be used for sample collection and analysis, the calibration method and frequency for each, and specify the lower limit of detection and action levels for each.
- d. In support of your request for more than one millicurie of radioiodine, submit special safety instructions to be provided to individuals. Your procedures should include:
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 - (2) Bioassay procedures for individuals working with millicurie quantities of radioiodine.
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 - (4) A dry run prior to the performance of unfamiliar procedures in order to preclude unexpected complications. In addition, it is recommended that the radiation protection officer be present during new procedures.
 - (5) Procedures for measuring the concentration of radioiodine from the hoods where material is stored and where iodinations are performed.

- e. Your equipment should include a survey instrument with a thin sodium iodide crystal detector probe to detect iodine-125 contamination. Please specify the instrument that will be used for this purpose.

8. Area Monitoring

It is recommended that areas where radioactive materials are used be checked for contamination to avoid its spread to other areas. Please confirm that these areas will be checked for contamination after each use of radioactive material and specify how the area will be monitored.

9. Effluent Monitoring

10 CFR 20.2003(a)(1) requires that a licensee may discharge licensed material into sanitary sewerage if the material is readily soluble (or is readily dispersible biological material). Information Notice 94-07 (enclosed) provides methods for determining compliance with this requirement which are acceptable to the NRC. Please review this Information Notice and provide specific information as to how you will assure that your releases to the sanitary sewerage system will meet the solubility criteria in 10 CFR 20.2003(a)(1). If you wish, you may indicate that you will use one of the methods described in Information Notice 94-07. Otherwise, describe your alternative methodology including the models, calculations, analytical techniques, and quality control measurements as well as the records that will be maintained.

10. Sealed Sources

Please provide the following information regarding the leak testing of your sealed sources:

- a. A description of the procedure for leak testing the source.
- b. The instrumentation used to measure activity on the wipe and the lower limit of detectability for this instrumentation.

If you elect to have another person perform the leak test, please submit the name of the person and the applicable NRC or Agreement State license number. If this person is not licensed, please submit a description of their procedure and instrumentation as requested above.

11. Material Control and Inventory

- a. Please describe your licensed material inventory, control and accountability program. Your inventory and control system should have the capability to assure that licensed material possession limits are not exceeded and that material is accountable throughout the institution at any given time.

- b. Please provide your procedures for transfer and transportation of licensed material between authorized users at your facility, and your procedures for transfer and transportation of licensed material to other licensees. Describe your program to control such transfers, including update of material inventory and audits of users' procedures.

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- c. decay-in-storage waste records, including the date licensed material is placed into storage, and the date and results of surveys performed when disposed,
- d. receipt and transfer of licensed material,
- e. licensed material inventory, and
- f. calibration of radiation monitoring instruments and equipment.

13. General Laboratory Safety Instructions

Please confirm that licensed material will be secured when not under the constant surveillance and immediate control of the authorized users.

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- a. Please provide your procedures for disposal of licensed radioactive waste by decay-in-storage. Your procedures need to provide assurance that you will:
 - (1) hold the radioactive waste in storage for at least 10 half-lives,
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- (4) remove or deface the radioactive material labels or otherwise indicate that containers no longer hold radioactive materials, and
- (5) you will maintain records of these waste disposal surveys.

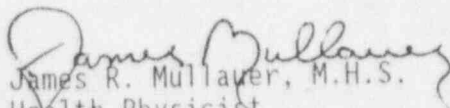
"Guidance to Licensees Regarding Requests to Dispose of Radioactive Waste by Decay-In-Storage" (enclosed) may be helpful in preparing your response.

- b. Your procedures for waste disposal references outdated regulations in the old 10 CFR Part 20. The regulations in 10 CFR Part 20 were revised on January 1, 1994. Please review the new 10 CFR Part 20 (enclosed) and reference the appropriate parts of the new Part 20.

We will continue our review of your application upon receipt of this information. Please reply in duplicate, within 20 days, and refer to Control Number 398365.

If you have any questions or require clarification on any of the information stated herein, you may contact me at (708) 829-9873.

Sincerely,


James R. Mullaver, M.H.S.
Health Physicist
Nuclear Materials Licensing Branch

License No. 48-08895-01
Docket No. 030-01158

CONVERSATION RECORD

TIME

DATE

9 a.m.

8/19/96

☐ VISIT

☐ CONFERENCE

☒ TELEPHONE

☐ INCOMING

☒ OUTGOING

NAME OF PERSON(S) CONTACTED OR IN CONTACT

Lloyd Tertintine, RSO

ORGANIZATION (OFFICE, DEPT. ETC.)

University of WI-Eau Claire

TELEPHONE NO.

608-263-3746

SUBJECT

Renewal application

SUMMARY

I spoke with lloyd and asked that he resubmit the application and highlight all the changes that he made that was in response to my deficiency letter. He agreed to highlight the changes and provide a cover letter that explains what the changes are and were they may be found in the application.

This action is certified by _____

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION

James R. Mullauer

SIGNATURE

DATE

ACTION TAKEN

SIGNATURE

TITLE

DATE

JUN 13 1996

Marjorie R. Smelstor
Vice Chancellor
University of Wisconsin-Eau Claire
Garfield and Park Avenue
Eau Claire, WI 54702

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Sincerely,

Original Signed By
James R. Mullauer, M.H.S.
Health Physicist
Nuclear Materials Licensing Branch

License No. 48-08895-01
Docket No. 030-01158

DOCUMENT NAME: M:\03001158.DF6

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OFFICE	DNMS/RLI									
NAME	JRMULLAUER:jaw									
DATE	06/13/96									

OFFICIAL RECORD COPY

April 4, 1995

University of Wisconsin - Eau Claire
ATTN: Lloyd W. Turtinen, Ph.D.
Radiation Safety Officer
Garfield and Park Avenue
Eau Claire, WI 54701

SUBJECT: LICENSE RENEWAL APPLICATION

Dear Dr. Turtinen:

This is to acknowledge receipt of your application for renewal of the material(s) license identified above. Your application is deemed timely filed, and accordingly, the license will not expire until final action has been taken by this office.

Any correspondence regarding the renewal application should reference the control number specified and your license number.

Sincerely,

Original Signed By
Marianne Meenan, Chief
Nuclear Materials Support Section

License No.: 48-08895-01
Control No.: 398365

DOCUMENT NAME: M:\03001158.CL5

To receive a copy of this document, indicate in the box: "C" = Copy without attachment/enclosure "E" = Copy with attachment/enclosure "N" = No copy

OFFICE	DRSS/RIII	<input checked="" type="checkbox"/>							
NAME	MMEENAN:jaw	<i>MM</i>							
DATE	04/4/95								

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