

MATERIALS LICENSE

OFFICIAL RECORD COPY

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

Licensee		3. License Number	20-30376-01
1. Exact Laboratories, Inc.		4. Expiration Date	March 31, 2007
2. 63 Great Road Maynard, Massachusetts 01754		5. Docket or Reference No.	030-34375
6. Byproduct, Source, and/or Special Nuclear Material	7. Chemical and/or Physical Form	8. Maximum Amount that Licensee May Possess at Any One Time Under This License	
A. Phosphorus 32	A. Any	A. 25 millicuries	
B. Phosphorus 33	B. Any	B. 25 millicuries	
C. Sulfur 35	C. Any	C. 25 millicuries	

CONDITIONS

10. A. Licensed material may be used only at the licensee's facilities located at 63 Great Road, Maynard, Massachusetts.
- B. The licensee may not possess and use materials authorized in Items 6, 7, and 8, until: (1) the licensee has constructed the facilities and obtained the equipment described in the application and supporting documentation; and (2) the U.S. Nuclear Regulatory Commission, Region I, ATTN: Chief, Nuclear Materials Safety Branch, 475 Allendale Road, King of Prussia, Pennsylvania 19406 has been notified in writing that activities authorized by the license will be initiated.

In accordance with the requirements set forth in 10 CFR 30.36(b), 40.42(b), and 70.38(b), the licensee shall promptly notify the Nuclear Regulatory Commission, in writing, of a decision not to complete the facility, acquire equipment, or possess and use authorized material.
11. A. Licensed material shall be used by, or under the supervision of, Joel E. Skoletsky or Anthony P. Shuber.
- B. The Radiation Safety Officer for this license is Anthony P. Shuber.
12. Licensed material shall not be used in or on human beings.
13. The licensee shall not use licensed material in field applications where activity is released except as provided otherwise by specific condition of this license.

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**MATERIALS LICENSE
SUPPLEMENTARY SHEET**

License Number

20-30376-01

Docket or Reference Number

030-34375

14. The licensee is authorized to hold radioactive material with a physical half-life of less than or equal to 120 days for decay-in-storage before disposal in ordinary trash, provided:
- A. Waste to be disposed of in this manner shall be held for decay a minimum of ten half-lives.
 - B. Before disposal as ordinary trash, the waste shall be surveyed at the container surface with the appropriate survey instrument set on its most sensitive scale and with no interposed shielding to determine that its radioactivity cannot be distinguished from background. All radiation labels shall be removed or obliterated.
 - C. A record of each such disposal permitted under this License Condition shall be retained for three years. The record must include the date of disposal, the date on which the byproduct material was placed in storage, the radionuclides disposed, the survey instrument used, the background dose rate, the dose rate measured at the surface of each waste container, and the name of the individual who performed the disposal.
15. The licensee is authorized to transport licensed material in accordance with the provisions of 10 CFR Part 71, "Packaging and Transportation of Radioactive Material."
16. Except as specifically provided otherwise in this license, the licensee shall conduct its program in accordance with the statements, representations, and procedures contained in the documents, including any enclosures, listed below. The Nuclear Regulatory Commission's regulations shall govern unless the statements, representations, and procedures in the licensee's application and correspondence are more restrictive than the regulations.
- A. Application dated January 28, 1997
 - B. Letter dated February 14, 1997

Date MAR - 7 1997

For the U.S. Nuclear Regulatory Commission

ORIGINAL SIGNED BY:

By PENNY A. LANZISERA

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

MAR - 7 1997

License No. 20-30376-01
Docket No. 030-34375
Control No. 124214

Anthony P. Shuber
Radiation Safety Officer
Exact Laboratories, Inc.
63 Great Road
Maynard, MA 01754

Dear Mr. Shuber:

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 I Office, Licensing Assistance Team, (610) 337-5093 or 5239, 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. Until your license is 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. Not possess and use materials authorized in Items 6, 7, and 8, on the license until:
 - a. you have constructed the facilities and obtained the equipment described in the license application and supporting documentation; and
 - b. you have notified the U.S. Nuclear Regulatory Commission, Region I, ATTN: Chief, Nuclear Materials Safety Branch, 475 Allendale Road, King of Prussia, Pennsylvania 19406 in writing, that activities authorized by the license will be initiated.

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3. Notify NRC, in writing, within 30 days:
 - a. when an authorized user or Radiation Safety Officer, permanently discontinues performance of duties under the license or has a name change; or
 - b. when the mailing address on the license changes (no fee is required if the location of byproduct material remains the same).
4. In accordance with 10 CFR 30.36(b) and/or license condition, notify NRC, promptly, in writing, and request termination of the license:
 - a. when you decide to terminate all activities involving materials authorized under the license; or
 - b. if you decide not to complete the facility, acquire equipment, or possess and use authorized material.
5. Request and obtain a license amendment before you:
 - a. permit anyone to work as an authorized user under the license;
 - b. change Radiation Safety Officer;
 - c. order byproduct material in excess of the amount, or radionuclide, or form different than authorized on the license;
 - d. add or change the areas of use, or address or addresses of use identified in the license application or on the license; or
 - e. change ownership of your organization.
6. 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.

A. Shuber
Exact Laboratories, Inc.

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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 a certifying official of the licensee rather than the Radiation Safety Officer or a consultant.

You will be periodically inspected by the 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 Statement of Policy and Procedure for NRC Enforcement Actions," (Enforcement Policy), NUREG 1600.

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.

Thank you for your cooperation.

Sincerely,

**ORIGINAL SIGNED BY:
PENNY A. LANZISERA**

Penny Lanzisera
Division of Nuclear Materials Safety

License No. 20-30376-01
Docket No. 030-34375
Control No. 124214

Enclosures:

1. License No. 20-30376-01
2. 10 CFR Parts 2, 19, 20, 30, and 170
3. NRC Form 3 and 313

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A. Shuber
Exact Laboratories, Inc.

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DOCUMENT NAME: R:\WPS\MLTR\L2030376.01

To receive a copy of this document, indicate in the box: "C" = Copy w/o attach/encl "E" = Copy w/ attach/encl "N" = No copy

OFFICE	DNMS/RI	<input checked="" type="checkbox"/> N	DNMS/RI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NAME	Lanzisera <i>PL</i>						
DATE	02/20/97	02/ /97	02/ /97	02/ /97	02/ /97	02/ /97	02/ /97

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EXACT

MS 16
P-6

030-34375

February 14, 1997

Control No. 124214
Exact Laboratories

US Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, PA 19406

Attention: Penny Lanzisera

Dear Ms. Lanzisera:

In response to your verbal request for additional information on our license application, enclosed are revised training and experience forms detailing the specific training in each subject and the experience specific to each nuclide. Enclosed also is a more detailed facilities diagram illustrating where storage-for-decay takes place, and where incoming shipments are processed.

Film badges will be changed on a monthly basis. Although we don't anticipate that anyone in this program is likely to exceed the 10% of maximum permissible exposure level where badges are necessary, we will issue badges to those who will handle millicurie quantities of ^{32}P , as discussed in the ^{32}P precautions section.

Since ^{32}P is a commonly used nuclide in this program, the wipe test action limits will be changed to 2000 dpm/100 cm².

Sewer releases in this program will be limited to incidental releases involved in glassware washing etc. Solubility will be established by the stated solubility of the incoming materials in the manufacturers brochure. Records will be kept of the drain disposals to assure compliance with disposal concentrations, but the water use in this laboratory facility is expected to be more than enough to provide adequate dilution to discharge all radionuclides purchased in a given year.

The general laboratory instructions will be amended to remind the users of the need to properly post laboratories in which radionuclides are used (in addition to labeling of individual containers). Also added to these instructions will be a section on skin contamination, those instructions to include a careful measurement of initial contamination level with a pancake probe in close proximity, a soap-and-water initial decontamination effort, a follow-up pancake probe measurement of residual contamination, plus instructions to report these results to Masse Associates for dose calculations and advice on additional decontamination efforts, if necessary. A complete record of all such incidents would become a part of the workers file, that record to contain calculations on the total skin dose received.

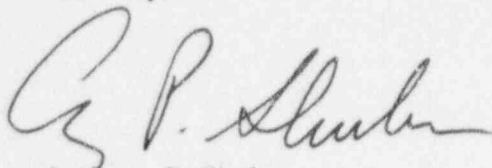
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Finally, we confirm that all records in this program, including purchase, receipt, and use of radionuclides, training of workers, personnel dosimetry, surveys, disposal, and any other records associated with the program will be maintained in compliance with the regulations. Please don't hesitate to call F.X. Masse at 617-253-9217 if further information is required.

Sincerely,

A handwritten signature in dark ink, appearing to read 'A. P. Shuber', written in a cursive style.

Anthony P. Shuber
Director, Molecular Biology

SUPPLEMENT		U.S. NUCLEAR REGULATORY COMMISSION		
TRAINING AND EXPERIENCE AUTHORIZED USER OR RADIATION SAFETY OFFICER				
1. NAME OF PROPOSED AUTHORIZED USER OR RADIATION SAFETY OFFICER <i>Anthony L. Huber</i>		2. FOR PHYSICIANS, STATE OR TERRITORY WHERE LICENSED		
SPECIALTY BOARD A	3. CERTIFICATION CATEGORY B		MONTH AND YEAR CERTIFIED C	
4. TRAINING RECEIVED IN BASIC RADIOISOTOPE HANDLING TECHNIQUES				
FIELD OF TRAINING A	LOCATION AND DATE(S) OF TRAINING B	TYPE AND LENGTH OF TRAINING		
		CLOCK HOURS IN LECTURE OR LABORATORY	CLOCK HOURS OF SUPERVISED ON-THE-JOB EXPERIENCE	
1. RADIATION PHYSICS AND INSTRUMENTATION	176-180 Haquett U. 180-89 Genetics Institute 89-96 Genzyme Corp.	272 hrs.	28,000 hrs.	
2. RADIATION PROTECTION	176-180 Haquett U. 80-1989 Genetics Institute 1989-1996 Genzyme Corp.	272 hrs.	28,000 hrs.	
3. MATHEMATICS PERTAINING TO THE USE AND MEASUREMENT OF RADIOACTIVITY	1980 Haquett U. 180-89 Genetics Institute 89-96 Genzyme	80 hrs.	5200 hrs.	
4. RADIATION BIOLOGY	1980 Haquett U. 1980-1989 Genetics Institute 89-96 Genzyme	80 hrs.		
5. RADIOPHARMACEUTICAL CHEMISTRY				
5. EXPERIENCE WITH RADIATION. (Actual use of Radioisotopes or Equivalent Experience)				
ISOTOPE	mCi USED AT ONE TIME	LOCATION	CLOCK HOURS	TYPE OF USE
³² P	1 mCi	³² P @ Haquett U.	50% total experience to date	Legates in Nucleic Acid Anal. or direct label of protein + Abs
³³ P	1 mCi	All Isotopes used @ Genetics Institute + Genzyme Corp.		
⁵⁵ S	100 mCi			
¹⁴ C	100 mCi			
³ H	1 mCi			
¹²⁵ I	1 mCi			

SUPPLEMENT		U.S. NUCLEAR REGULATORY COMMISSION		
TRAINING AND EXPERIENCE AUTHORIZED USER OR RADIATION SAFETY OFFICER				
1. NAME OF PROPOSED AUTHORIZED USER OR RADIATION SAFETY OFFICER Joel Skoletsky		2. FOR PHYSICIANS, STATE OR TERRITORY WHERE LICENSED		
3. CERTIFICATION				
SPECIALTY BOARD A	CATEGORY B	MONTH AND YEAR CERTIFIED C		
4. TRAINING RECEIVED IN BASIC RADIOISOTOPE HANDLING TECHNIQUES				
FIELD OF TRAINING A	LOCATION AND DATE(S) OF TRAINING B	TYPE AND LENGTH OF TRAINING		
		CLOCK HOURS IN LECTURE OR LABORATORY	CLOCK HOURS OF SUPERVISED ON-THE-JOB EXPERIENCE	
a. RADIATION PHYSICS AND INSTRUMENTATION	Genzyme Corporation Framingham, MA 1988-1996	72 hrs	1900 hrs	
b. RADIATION PROTECTION	Genzyme Corporation Framingham, MA 1988-1996	72 hrs	9,000 hrs 1,000 hrs	
c. MATHEMATICS PERTAINING TO THE USE AND MEASUREMENT OF RADIOACTIVITY	Genzyme Corporation Framingham, MA 1988-1996	54 hrs	2250 hrs	
d. RADIATION BIOLOGY	Genzyme Corporation Framingham, MA 1988-1996	72 hrs	450 hrs	
e. RADIOPHARMACEUTICAL CHEMISTRY				
5. EXPERIENCE WITH RADIATION. (Actual use of Radioisotopes or Equivalent Experience)				
ISOTOPE	mCi USED AT ONE TIME	LOCATION	CLOCK HOURS	TYPE OF USE
32P	2 mCi	Genzyme Corporation Framingham, MA 1988-1996	6,750 hrs	Used as reporter in hybridizations, DNA detection, sequencing, RFLP, PCR, ILXNS
33P	1 mCi			
35S	5 mCi			

Isotope to
be received
here →

reception
area

office

Liquid Waste
Storage →

entry
hood

bench

bench

bench

bench

Exact Laboratories, Inc.
63 Great Road
Maynard MA 01754

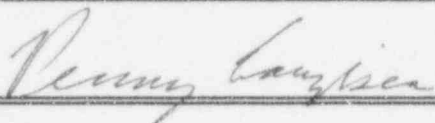
Newly
Constructed Room

bench

Area where isotope
received will be
unpacked

Solid
Waste Storage

Note: Isotope to be stored in
this room secured.

TELEPHONE CONVERSATION RECORD		Date: 2-12-97	Time: 11:15am
Mail Control No.: 124214		License No.: N/A	Docket No.: 030-34375
Person Called: Frank Masse, Consultant		Organization: Exact Labs	Telephone Number: 617 253-9217
Person Calling: Penny Lanzisera			
Subject: New license deficiencies			
<p>Summary: 1) Provide max use per isotope and training in categories other than Radiation Protection for both users.</p> <p>2) Describe facilities for receipt and waste storage</p> <p>3) Frequency of exchange for dosimetry and 10 % determination criteria.</p> <p>4) Action limit of 20,000 and 2,000 dpm appears high for P-32 use. Reg. Guide 10.8 suggests 2,000 and 200 for restricted and unrestricted triggers.</p> <p>5) Any sewer releases. If so, describe solubility and dispersibility determinations and provide maximum disposal concentrations and activities.</p> <p>6) Confirm that records of receipt, disposal, inventory, dosimetry, training, and radiation safety program will be maintained.</p> <p>7) With regards to general lab safety instructions: a) Provide procedures for posting. b) Provide procedures for skin contamination incidents, and c) describe area over which contamination wipes of incoming packages are taken or change limit to 22 dpm/square centimeter.</p>			
Action Required/Taken: response			
Signature: 		Date: 2-12-97	

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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 _____

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

Exact Laboratories, Inc.
63 Great Road
Maynard MA 01754

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

same

4 NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

F.X. Masse

TELEPHONE NUMBER
617-253-9217

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 3M AMOUNT ENCLOSED \$ 1500.00

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

SIGNATURE

DATE

Anthony P. Huber Director of Mol. Biol.

[Signature]

1/28/97

FOR NRC USE ONLY

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

\$

APPROVED BY

DATE

124214

Following is the information in support of license application for Exact Laboratories, Inc.

5. Radioactive Materials

<u>Nuclide</u>	<u>Form</u>	<u>Possession Limit</u>
A. Phosphorus 32	Any	25 millicuries
B. Sulfur 35	Any	25 millicuries
C. Phosphorus 33	Any	25 millicuries

6. Purpose for which licensed material will be used:

A through C. Research and development as defined in 10 CFR 30.4 of 10 CFR Part 30.

7. A. Material listed in Item 5 above is to be used by, or under supervision of, Joel Skoletsky and Anthony P. Shuber. Training and Experience sheets for each are attached.

B. The Radiation Safety Officer will be Anthony P. Shuber.

8. Attached is a detailed description of the training for individuals working in or frequenting restricted areas page 7.

9. Facility diagram attached. Bench tops are impervious epoxy finished chemical resistant materials for easy decontamination. All work will be conducted in fiberglass trays lined with plastic inserts.

All radioactive material will be secured under lock and key in the radiation work area part of the lab. Material requiring refrigeration will be stored in a locked refrigerator. Other material will be stored in a locked cabinet. All storage of stock materials will be in the shielded shipping containers provided by the manufacturer. Additional shielding will be provided as necessary to reduce the dose rate around the storage area to less than 2 mRem/hr in all areas. Although all lab personnel will be classified as radiation workers and trained accordingly, only those who require access to the radioactive material will have keys to the storage area.

Present equipment includes:

- A. GM Survey Meter, Ludlum model 2 with a 44-9 or a 44-88 probe
- B. Liquid Scintillation, Packard or equivalent, 0-10⁶ dpm
- C. Fume Hood

10. The following contains all aspects of the Radiation Safety Program.

- A. Duties of the Radiation Safety Officer page 9.
- B. ALARA Program, page 10.
- C. Personnel monitoring is provided by Landauer. Film badges are provided for whole body measurement and TLD finger rings for extremity. Such monitoring is assigned if it is determined that workers are likely to receive in excess of 10% of the maximum permissible whole body or extremity exposures.
- D. Procedures for Ordering and Receiving Radioactive Material page 16.
- E. Procedures for Safely Opening Packages Containing Radioactive Material, page 17.
- F. Calibration of survey instrumentation. Survey instruments will be calibrated at least annually and following repair. Calibration will be performed by our consultants, F.X. Massé Associates, Inc. Procedures and sources have been approved by NRC and are on file under license number 20-17143-01.

As part of our survey instrument calibration program a small dedicated check source has been affixed to each survey instrument with an external probe. F.X. Massé Associates, Inc., will record the reading obtained on this source during calibration on the calibration sticker affixed to the instrument. A check of this source reading will be made by the instrument user on each day of use.

- G. Emergency Procedures, page 19. This will be posted in the restricted areas.
- H. General Safety Instructions and Precautions for Radioisotope Users, page 20.

A daily close-out survey will be performed to insure all radioactive materials have been properly secured and there is no residual radioactivity on the bench and floor areas.

- I. Area Survey Program, page 21.
- J. Precautions for Work with P-32 and P-33, page 24.

11. Radioactive Waste Disposal Procedures

Primary management of short-lived radioactive waste (half-lives to 120 days) will be via storage for decay. Waste will

be dated and segregated in a secured storage area for decay. Storage will be in steel drums for fire resistance. Waste will be stored for at least 10 half-lives, surveyed with the GM survey meter, and disposed as normal trash if no measurable contamination is observed.

A clearly marked container for radioactive waste will be present in the laboratory at all times. All disposable materials that are suspected of being contaminated will be placed in this container. Waste so collected will be segregated and stored for decay.

SUPPLEMENT		U.S. NUCLEAR REGULATORY COMMISSION		
TRAINING AND EXPERIENCE AUTHORIZED USER OR RADIATION SAFETY OFFICER				
1. NAME OF PROPOSED AUTHORIZED USER OR RADIATION SAFETY OFFICER <i>Anthony P. Skluber</i>		2. FOR PHYSICIANS, STATE OR TERRITORY WHERE LICENSED		
SPECIALTY BOARD A	3. CERTIFICATION CATEGORY B		MONTH AND YEAR CERTIFIED C	
4. TRAINING RECEIVED IN BASIC RADIOISOTOPE HANDLING TECHNIQUES				
FIELD OF TRAINING A	LOCATION AND DATE(S) OF TRAINING B	TYPE AND LENGTH OF TRAINING		
		CLOCK HOURS IN LECTURE OR LABORATORY	CLOCK HOURS OF SUPERVISED ON-THE-JOB EXPERIENCE	
a. RADIATION PHYSICS AND INSTRUMENTATION				
b. RADIATION PROTECTION	1976-1980 Marquette Univ (Annual) 1980-1989 Genetics Institute (Annual) 1989-1996 Genzyme Corp (Annual)	1 hr. lecture annually on Safety	50% of total years experience	
c. MATHEMATICS PERTAINING TO THE USE AND MEASUREMENT OF RADIOACTIVITY				
d. RADIATION BIOLOGY				
e. RADIOPHARMACEUTICAL CHEMISTRY				
5. EXPERIENCE WITH RADIATION. (Actual use of Radioisotopes or Equivalent Experience)				
ISOTOPE	ACTIVITY USED AT ONE TIME	LOCATION	CLOCK HOURS	TYPE OF USE
32P 33P 35S 14C 3H 125I	1 μ Ci - 1 mCi	Marquette University Genetics Institute Genzyme Corp.	50% of total experience to date.	Reporter for Nuclear Acid Anal or direct label of proteins and Abs.

SUPPLEMENT		U.S. NUCLEAR REGULATORY COMMISSION		
TRAINING AND EXPERIENCE AUTHORIZED USER OR RADIATION SAFETY OFFICER				
1. NAME OF PROPOSED AUTHORIZED USER OR RADIATION SAFETY OFFICER <u>Joel E Skoletsky</u>		2. FOR PHYSICIANS, STATE OR TERRITORY WHERE LICENSED		
SPECIALTY BOARD A	3. CERTIFICATION CATEGORY B		MONTH AND YEAR CERTIFIED C	
4. TRAINING RECEIVED IN BASIC RADIOISOTOPE HANDLING TECHNIQUES				
FIELD OF TRAINING A	LOCATION AND DATE(S) OF TRAINING B	TYPE AND LENGTH OF TRAINING		
		CLOCK HOURS IN LECTURE OR LABORATORY	CLOCK HOURS OF SUPERVISED ON-THE-JOB EXPERIENCE	
1. RADIATION PHYSICS AND INSTRUMENTATION				
2. RADIATION PROTECTION	1988-1996 Genzyme Corp. (Framingham MA) Annual Training	1 hr safety Lecture/yr	60% of total work experience	
3. MATHEMATICS PERTAINING TO THE USE AND MEASUREMENT OF RADIOACTIVITY				
4. RADIATION BIOLOGY				
5. RADIOPHARMACEUTICAL CHEMISTRY				
5. EXPERIENCE WITH RADIATION. (Actual use of Radioisotopes or Equivalent Experience)				
ISOTOPE	NCI USED AT ONE TIME	LOCATION	CLOCK HOURS	TYPE OF USE
32P	32P , 32P	Genzyme Corporation Framingham, MA	60% of work time	Probe labelling
33P	33P			Reagents
35S	35S - 1mCi			Sequencing Hybridizations

RADIATION SAFETY TRAINING PROGRAM

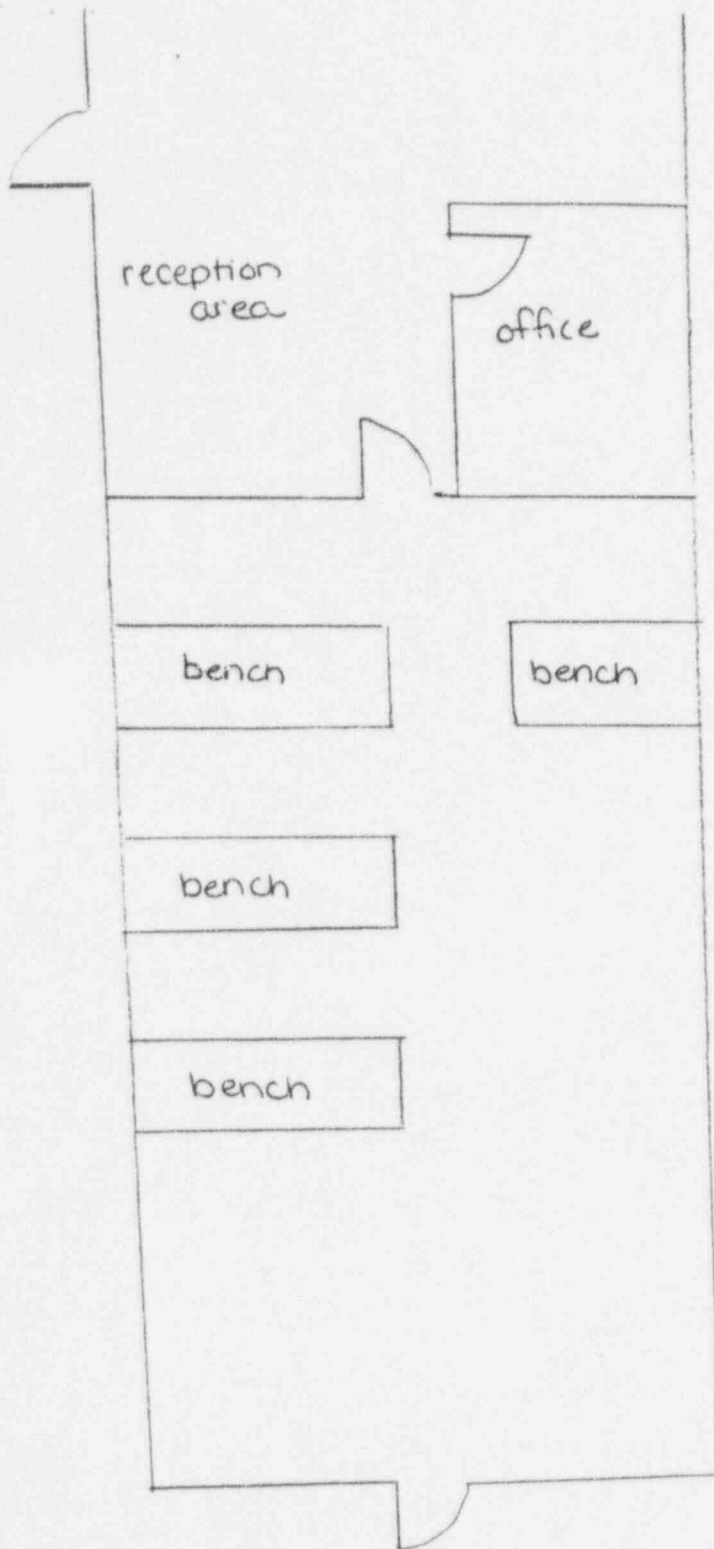
Personnel working with or in the vicinity of radioactive material will be instructed:

1. Before assuming duties with, or in the vicinity of, radioactive materials.
2. During annual refresher training.
3. Whenever there is a significant change in duties, regulations, or the terms of the license.

Instruction for individuals in attendance will include the following subjects:

1. Applicable regulations and license conditions.
2. Areas where radioactive material is used or stored.
3. Potential hazards associated with radioactive material in each area where employees will work.
4. Appropriate radiation safety procedures.
5. Licensee's in-house work rules.
6. Each individual's obligation to report unsafe conditions to the Radiation Safety Officer.
7. Appropriate response to emergencies or unsafe conditions.
8. Worker's right to be informed of occupational radiation exposure and bioassay results.
9. Locations where the licensee has posted or made available notices, copies of pertinent regulations, and copies of pertinent licenses and license conditions (including applications and applicable correspondence).
10. Question and answer period.

A record will be kept of all training sessions, including a listing of the attendees.



Exact Laboratories, Inc.
63 Great Road
Maynard MA 01754

DUTIES OF THE RADIATION SAFETY OFFICER

The appointed Radiation Safety Officer shall assume the following duties:

1. Control of the purchase of all radionuclides.
2. Coordinate all uses of radionuclides.
3. Control radioactive materials such that they are used only by properly trained and authorized individuals.
4. Coordinate personnel monitoring as necessary for those persons likely to receive more than 10% of maximum permissible exposures.
5. Provide initial training and annual retraining of all individuals working with radionuclides. Such training shall include:
 - a. Review of license and conditions.
 - b. Review of 10 CFR Parts 19 and 20.
 - c. Review of basics of radiation protection, radiation effects, and radiation measurements and calculations.
 - d. Required laboratory practices and procedures.
6. Provide initial orientation and annual reorientation for all ancillary personnel whose duties may require them to work in the vicinity of radioactive materials (e.g., janitors, guards). Such instruction will include an explanation of the potential radiation hazard, information on ways of controlling or avoiding unnecessary exposure, and actions to be taken in the event of emergency.
7. Establish and conduct a radiation safety program which shall include:
 - a. Routine surveys of all areas where radionuclides are used.
 - b. Inventory control procedures to guarantee adequate control of such materials.
 - c. Routine review of all radionuclides uses, including routine review of laboratory survey and use records.
 - d. Establishment and maintenance of an appropriate emergency program.
8. Designate an alternate Radiation Safety Officer during times of absence.

ALARA PROGRAM

Exact Laboratories

(Licensee's Name)

January, 1997

(Date)

1. Management Commitment

- a. We, the management of this facility are committed to the program described herein for keeping individual and collective doses as low as is reasonably achievable (ALARA). In accord with this commitment, we hereby describe an administrative organization for radiation safety and will develop the necessary written policy, procedures, and instructions to foster the ALARA concept within our institution. The organization will include a Radiation Safety Officer (RSO).
- b. We will perform a formal annual review of the radiation safety program, including ALARA considerations. This will include reviews of operating procedures and past dose records, inspections, etc., and consultations with the radiation safety staff or outside consultants.
- c. Modifications to operating and maintenance procedures and to equipment and facilities will be made if they will reduce exposures unless the cost, in our judgment, is considered to be unjustified. We will be able to demonstrate, if necessary, that improvements have been sought, that modifications have been considered, and that they have been implemented when reasonable. If modifications have been recommended but not implemented, we will be prepared to describe the reasons for not implementing them.
- d. In addition to maintaining doses to individuals as far below the limits as is reasonably achievable, the sum of the doses received by all exposed individuals will also be maintained at the lowest practicable level. It would not be desirable, for example, to hold the highest doses to individuals to some fraction of the applicable limit if this involved exposing additional people and significantly increasing the sum of radiation doses received by all involved individuals.

2. Radiation Safety Officer

a. Delegation of Authority

Authority is delegated to the RSO for enforcement of the ALARA concept.

b. Review of ALARA Program

- (1) The RSO will encourage all users to review current procedures and develop new procedures as appropriate to implement the ALARA concept.
- (2) The RSO will perform a quarterly review of occupational radiation exposure with particular attention to instances in which the investigational levels in Table 1 are exceeded. The principal purpose of this review is to assess trends in occupational exposure as an index of the ALARA program quality and to decide if action is warranted when investigational levels are exceeded.

Table 1

Investigational Levels

	Investigational Levels (mRems per calendar quarter)	
	Level I	Level II
1. Whole body; head and trunk; active blood-forming organs; or gonads	125	375
2. Hands and forearms; feet and lower legs; skin	1250	3750
3. Lens of the eye	375	1125

- (3) The RSO will evaluate our institution's overall efforts for maintaining doses ALARA on an annual basis. This review will include the efforts of the

RSO, authorized users, and workers as well as those of management.

c. Annual and Quarterly Review

- (1) Annual review of the radiation safety program. The RSO will perform an annual review of the radiation safety program for adherence to ALARA concepts. Reviews of specific methods of use may be conducted on a more frequent basis.
- (2) Quarterly review of occupational exposures. The RSO will review at least quarterly the external and internal radiation doses of authorized users and workers to determine that their doses are ALARA in accordance with the provisions of Section 5 of this program.
- (3) Quarterly review of records of radiation surveys. The RSO will review radiation surveys in unrestricted, controlled and restricted areas to determine that dose rates and amounts of contamination were at ALARA levels during the previous quarter and will prepare a summary report for his/her files.

d. Education Responsibilities for ALARA Program

- (1) The RSO will schedule briefings and educational sessions to inform workers of ALARA program efforts.
- (2) The RSO will ensure that authorized users, workers, and ancillary personnel who may be exposed to radiation will be instructed in the ALARA philosophy and informed that management and the RSO are committed to implementing the ALARA concept.

e. Cooperative Efforts for Development of ALARA Procedures

Radiation workers will be given opportunities to participate in formulating the procedures that they will be required to follow.

- (1) The RSO will be in close contact with all users and workers in order to develop ALARA procedures for working with radioactive materials.
 - (2) The RSO will establish procedures for receiving and evaluating the suggestions of individual workers for improving health physics practices and will encourage the use of those procedures.
- f. Reviewing Instances of Deviation from Good ALARA Practices

The RSO will investigate all known instances of deviation from good ALARA practices and, if possible, will determine the causes. When the cause is known, the RSO will implement changes in the program to maintain doses ALARA.

3. Authorized Users

- a. New Methods of Use Involving Potential Radiation Doses
- (1) The authorized user will consult with the RSO during the planning stage before using radioactive materials for new uses.
 - (2) The authorized user will review each planned use of radioactive materials to ensure that doses will be kept ALARA. Trial runs may be helpful.
- b. Authorized User's Responsibility to Supervised Individuals
- (1) The authorized user will explain the ALARA concept and the need to maintain exposures ALARA to all supervised individuals.
 - (2) The authorized user will ensure that supervised individuals who are subject to occupation radiation exposure are trained and educated in good health physics practices and in maintaining exposures ALARA.

4. Individuals Who Receive Occupational Radiation Doses

- a. Workers will be instructed in the ALARA concept and its relationship to work procedures and work conditions.
- b. Workers will be instructed in recourses available if they feel that ALARA is not being promoted on the job.

5. Establishment of Investigational Levels in Order to Monitor Individual Occupational Radiation Doses

This institution hereby establishes investigational levels for occupational radiation doses which, when exceeded, will initiate review or investigation by the RSO. The investigational levels that we have adopted are listed in Table 1. These levels apply to the exposure of individual workers.

The RSO will review and record on Form NRC-5, "Current Occupational External Radiation Exposures," or an equivalent form (e.g., dosimeter processor's report) results of personnel monitoring plus any results for internal dosimetry not less than once in any calendar quarter. The following actions will be taken at the investigational levels as stated in Table 1:

- a. Personnel dose less than Investigational Level I.

Except when deemed appropriate by the RSO, no further action will be taken in those cases where an individual's dose is less than Table 1 values for the Investigation Level I.

- b. Personnel dose equal to or greater than Investigational Level I but less than Investigational Level II.

The RSO will review the dose of each individual whose quarterly dose equals or exceeds Investigational Level I. If the dose does not equal or exceed Investigational Level II, no action related specifically to the exposure is required unless deemed appropriate by the RSO. The RSO will, however, review each such dose in comparison

with those of others performing similar tasks as an index of ALARA program quality and will record the review in his records.

- c. Personnel dose equal to or greater than Investigational Level II.

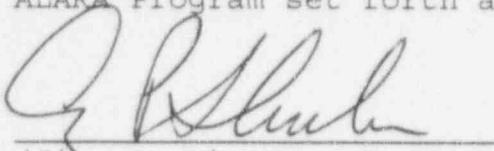
The RSO will investigate in a timely manner the cause of all personnel doses equaling or exceeding Investigational Level II and, if warranted, will take action. A report of the investigation, any actions taken, and a copy of the individual's exposure records will be recorded in RSO records.

- d. Reestablishment of investigational levels to levels above those listed in Table 1.

In cases where a worker's or a group of worker's doses need to exceed an investigation level, a new, higher investigational level may be established for that individual or group on the basis that it is consistent with good ALARA practices. Justification for new investigational levels will be documented.

6. Signature of Certifying Official

I hereby certify that this institution has implemented the ALARA Program set forth above.



(Signature)

Anthony P. Shuber
Name (print or type)

Director Molecular Biology
Title

PROCEDURES FOR ORDERING AND ACCEPTING DELIVERY
OF RADIOACTIVE MATERIAL

1. The Radiation Safety Officer or designee will review all orders for radioactive materials and will ensure that the requested materials and quantities are authorized by the license and that possession limits are not exceeded.
2. A system for ordering and receiving radioactive materials will be established and maintained. The system will consist minimally of the following.
 - a. Ordering of all materials:
 - (1) Written records that identify the isotope, compound, activity levels, and supplier, etc., will be used.
 - (2) The written records will be referenced when opening and storing radioactive shipment.
 - b. It is essential that written records be maintained for all ordering and receipt procedures.
3. All packages will be received during normal working hours by the Radiation Safety Officer or his alternate.

PROCEDURE FOR SAFELY OPENING PACKAGES
CONTAINING RADIOACTIVE MATERIAL

1. For packages bearing a DOT Radioactive I, II, or III label or all packages containing radioactive material that appear to have been damaged in transit, the following procedures will be followed. Package opening must be performed within three (3) hours of receipt during regular work time.
 - a. Put on gloves to prevent hand contamination.
 - b. Visually inspect the package for any sign of damage (e.g., wet or crushed). If damage is noted, stop the procedure and notify the Radiation Safety Officer (RSO).
 - c. Wipe test package surface to assure removable surface contamination is less than 2200 dpm.
 - d. Measure the exposure rate from the package at 1 meter and at the package surface. If it is higher than expected, stop and notify the RSO. (The "transport index" noted on packages with "Yellow II" or "Yellow III" labels is the approximate dose rate, in millirem per hour, at 1 meter from the package surface; the surface dose rate for such packages should not exceed 200 millirem per hour. The dose rate from package with "White I" labels should be less than 0.5 millirem per hour at the package surface.
 - e. Open the package with the following precautionary steps:
 - (1) Remove the packing slip.
 - (2) Open the outer package following the supplier's instructions, if provided.
 - (3) Open the inner package and verify that the contents agree with the packing slip.
 - (4) Check the integrity of the final source container. Look for broken seals or vials, loss of liquid, condensation, or discoloration of the packing material.
 - (5) If anything is other than expected, stop and notify the RSO.
 - f. If there is any reason to suspect contamination, wipe the external surface of the final source container and remove

the wipe sample to a low-background area. Assay the wipe sample to determine if there is any removable radioactivity. Take precautions against the potential spread of contamination.

- g. Check the request to ensure that the material received is the material that was ordered.
 - h. Monitor the packing material and the empty package for contamination with a radiation detection survey meter before discarding.
 - (1) If contaminated, treat this material as radioactive waste.
 - (2) If not contaminated, remove or obliterate the radiation labels before discarding in in-house trash.
 - i. Make a record of the receipt.
2. For small quantity packages received with no DOT Radioactive I, II or III label, the following procedure for opening each package will be followed:
- a. Visually inspect the package for any sign of damage (e.g., wet or crushed). If damage is noted, stop the procedure and notify the RSO. The above opening procedure must then be followed.
 - b. Check to ensure that the material received is the material that was ordered.

EMERGENCY PROCEDURES

I. PROCEDURE FOR MAJOR SPILLS (involving 1 mCi or more)

- A. WASH IMMEDIATELY with water any part of the body involved (e.g., skin, eyes, etc.)
- B. REMOVE AND LEAVE IN THE AREA ANY CONTAMINATED CLOTHING.
- C. RESTRICT ACCESS to area.
- D. CONFINE THE SPREAD by righting overturned container, covering powdered spill with damp paper towels, closing windows, and turning off fans in the case of powdered or volatile spills, etc.
- E. MONITOR AND DECONTAMINATE PERSONNEL wash skin repeatedly until survey meter reads near background levels.
- F. CALL YOUR SUPERVISOR AND THE RADIATION SAFETY OFFICER to supervise subsequent decontamination.

RADIATION SAFETY OFFICER Anthony P. Shuber

OFFICE PHONE _____ HOME _____

ALTERNATE NAME: Frank Massé or Gerry Fallon, F.X. Massé Associates
508-283-4888 Twenty-four hours

II. PROCEDURE FOR MINOR SPILLS (less than 1 mCi)

- A. RESTRICT ACCESS
- B. CONFINE SPREAD
- C. MONITOR AND DECONTAMINATE PERSONNEL
- D. CLEAN AREA until survey meter reads near background levels. Confirm clean-up with wipe tests and record results.
- E. REPORT incident to the RSO as soon as it is practicable.

III. NOTES ON CLEAN-UP PROCEDURE

- A. All spills should be cleaned up as soon as they are found.
- B. Clean-up is done only by persons registered with the Radiation Safety Office -- preferably by the person responsible for the spill.
- C. Any household detergent and water may be used. Products such as Count-off and Radiac wash work well.
- D. Take precautions to prevent personal contamination during the clean-up procedure by wearing gloves, lab coat, and shoe covers.

GENERAL SAFETY INSTRUCTIONS AND PRECAUTIONS
FOR RADIOISOTOPE USERS

All individuals working with radioactive materials will adhere to the following minimum safety requirements.

1. Maintain daily exposure to radiation as low as possible. Personnel monitoring devices will be worn when in areas where radioactive materials are used or stored.
2. No smoking, eating, drinking, application of facial cosmetics or storage of food or beverages will be permitted in any area where unsealed sources of radioactive materials are used, handled, transferred or stored.
3. No mouth pipetting of radioactive solutions will be permitted.
4. After handling unsealed radioactive material, hands shall be washed before leaving the laboratory and exposed skin, hair and/or clothing shall be surveyed for contamination.
5. When hand or clothing contamination is possible, protective gloves and lab-coat shall be worn.
6. Insure that containers of radioactive materials that will be left unattended are appropriately marked and labeled indicating the contents, date, and responsible user and that they are properly secured against unauthorized removal.
7. Objects and equipment which may have been contaminated shall not be removed from the controlled area without the appropriate prior survey for the presence of contamination. If contamination is detected, the object or piece of equipment shall be satisfactorily decontaminated as directed by the Radiation Safety Officer.
8. Whenever practical, the user should perform a trial experimental run using a non-radioactive (or low activity) material to establish the adequacy of equipment and procedures.
9. All work which may result in significant airborne concentrations of radioactive materials (e.g., heating, evaporation to dryness, etc.) shall be performed in a properly operating hood.

AREA SURVEY PROGRAM

Individual users of unsealed radioactive materials are expected to perform routine area surveys of the work places and laboratories to insure that working surfaces, floor, equipment, etc., are free from removable contamination and that external radiation exposure is maintained at a minimum.

All radioactive material handling areas will be surveyed on each day of use with an appropriate low range survey meter and decontaminated if necessary. For daily surveys where no abnormal radiation levels are found only the date, the identification of the person performing the survey, and the fact that no abnormal levels were observed need be recorded.

In addition to self evaluation, the Radiation Safety Officer will perform, with the help of F.X. Massé Associates, area surveys of radiation work areas at appropriate intervals to insure that internal and external exposure of personnel to radiation is maintained as low as reasonably achievable.

1. For busy labs involving the routine handling of significant quantities of activity (greater than 200 μCi) this formal survey by other than laboratory personnel will be conducted weekly.
2. Laboratory areas where only small quantities of radioactive material are used (less than 200 μCi) will be formally surveyed monthly.
3. Waste storage areas will be surveyed weekly.
4. The weekly and monthly surveys will consist of:
 - a. A measurement of radiation levels with a survey meter sufficiently sensitive to detect 0.1 mR/hr.
 - b. Wipe sample assay procedures sufficiently sensitive to detect the presence of 2000 dpm/100 cm^2 of removable contamination. Wipe tests for higher energy beta emitters are measured with a portable pancake thin-window GM survey meter in a low background area. The calibration of this instrument is such that a 1 mR/hr reading represents a count rate of 3000 CPM. The geometry and efficiency of the system for counting higher energy beta emitters wipe smears is such that 20% of the activity on the wipe is detected when the wipe is placed on a clean bench top and the probe placed directly over

it touching the surrounding bench top in a reproducible geometry. (A significant reduction in background for this measurement may be accomplished by performing the measurement on a clean lead brick instead of directly on the benchtop.)

Therefore, 2000 dpm of removable activity on the wipe will yield a count rate increase of 400 cpm, which is an ambient background of 0.02 mR/hr (60 dpm) represents a gross reading of seven times background. Wipes of lower energy beta emitters are analyzed on a properly calibrated liquid scintillation counter.

Action levels for such contamination surveys are 2000 dpm/100 cm² in unrestricted areas; 20,000 in restricted areas. Decontaminate to achieve these levels if higher levels are found.

5. A permanent record will be kept of all survey results, including negative results. The record will include:
 - a. Location, date, and identification of equipment used, including the serial number and pertinent counting efficiencies.
 - b. Name of persons conducting the survey.
 - c. Drawing of area surveyed, identifying relevant features such as active storage areas, active waste areas, etc.
 - d. Measured exposure rates, keyed to location on the drawing, marking rate that require corrective action.
 - e. Detected contamination levels, keyed to locations on the drawing.
 - f. Corrective action taken in the case of contamination or excessive exposure rates, reduced contamination or exposure rates after correction action, and any appropriate comments.

6. The Radiation Safety Officer will be notified whenever radiation levels in unrestricted areas exceed 0.3 mR/hr and restricted areas exceed 1.0 mR/hr. The RSO will decide whether additional shielding, application of restrictions, or posting is necessary.
7. The weekly and monthly formal surveys will include a review of the laboratory monitoring records.

PRECAUTIONS FOR WORK WITH P-32 AND P-33

The following safety instructions shall apply to work with millicurie quantities of P-32 or P-33.

1. A plexiglass L-shield shall be used to shadow-shield the operator whenever millicurie levels of P-32 or P-33 are being handled.
2. Disposable gloves shall be worn whenever handling unsealed quantities of P-32 or P-33.
3. Both a body badge and a finger ring badge shall be worn while working with millicurie quantities of P-32 or P-33.
4. Eye protection, either full-eye prescription glasses or safety glasses/goggles, shall be worn when the P-32 or P-33 quantities being handled exceed 10 millicuries.
5. Hands, all exposed skin surfaces, and clothing shall be monitored before leaving the laboratory after handling unsealed quantities of P-32 or P-33.
6. Any non-disposable materials (e.g. glassware) will be decontaminated in Count Off (NEN), washed, and surveyed with a hand held monitor.

LOW LEVEL RADIOACTIVE WASTE
SEGREGATION INSTRUCTIONS

Following are the procedures to be followed in segregating radioactive waste for decay-in-storage.

1. Waste containers clearly labeled for receipt of waste with half life "less than 15 days" (^{32}P), "less than 90 days" are provided in the laboratory.
2. Carefully segregate work areas by nuclide whenever possible. Dispose waste with measurable contamination (as measured with a thin-window pancake GM detector operating at close contact on the most sensitive scale in a low background area) in the proper waste container. Avoid putting any radioactive labels in waste containers.
3. Only place measurably contaminated waste in these containers, minimizing volume of waste so generated (e.g. separate contaminated from clean portions of a discard item if practical), and taking great care to place it in the correct container by half-life.
4. Waste that is contaminated with two or more nuclides shall be placed in the container designated for the longest-lived nuclide that might be present.
5. All waste placed in these containers is logged into record card on lid of container with nuclide, estimated activity, date, and person responsible.
6. When waste is removed from the container, the bag in which it is contained is labeled by half-life category, dated, inventoried, and placed in storage for decay.
7. When placing waste into storage for decay, review record card to be sure all entries are for the proper nuclides. If a mistake has been made and a longer-lived nuclide is recorded as present, label the bag with the longer-lived entry and decay accordingly.
8. When decayed waste is measured for discard, use a thin-window pancake probe in a low background area, measure intact bags containing only energetic penetrating emitters such as ^{32}P but open bags and measure in close proximity to waste for weaker emitters such as ^{35}S or ^{33}P . In this way, the actual level of waste released should always be less than 5 μCi for all decayed nuclides.

BETWEEN:

LICENSE FEE MANAGEMENT BRANCH, ARM
AND
REGIONAL LICENSING SECTIONS

(FOR LFMS USE)
INFORMATION FROM LTS

PROGRAM CODE: 03620
STATUS CODE: 3
FEE CATEGORY: -----
EXP. DATE: 0
FEE COMMENTS: -----
DECOM FIN ASSUR REQD: -----
.....

LICENSE FEE TRANSMITTAL

A. REGION

I

1. APPLICATION ATTACHED

APPLICANT/LICENSEE: EXACT LABORATORIES, INC.
RECEIVED DATE: 970205
DOCKET NO: 3034375
CONTROL NO.: 124214
LICENSE NO.:
ACTION TYPE: NEW LICENSEE

2. FEE ATTACHED

AMOUNT: *\$1,500.00*
CHECK NO.: *5286*

3. COMMENTS

SIGNED *M.A. Perkins*
DATE *2/5/97*

3. LICENSE FEE MANAGEMENT BRANCH (CHECK

\$1,500

1. FEE CATEGORY AND AMOUNT: *3M*

2. CORRECT FEE PAID. APPLICATION MAY BE PROCESSED FOR:

AMENDMENT -----
RENEWAL -----
LICENSE ☒ -----

3. OTHER -----

Log	<i>Feb 9</i>
Remitter	
Check No.	<i>5286</i>
Amount	<i>\$1,500</i>
Fee Category	<i>3M</i>
Type of Fee	<i>APP</i>
Date Check Rec'd	<i>2/21/97</i>
Date Completed	
By:	<i>BP</i>

SIGNED
DATE

1997 FEB 18 AM 10:03

07 for 2/21/97