DEPARTMENT OF THE ARMY
UNITED STATES ARMY CRIMINAL INVESTIGATION LABORATORY—CONUS
FORT GILLEM
FOREST PARK, GEORGIA 30050-5000

REPLY TO
ATTENTION OF:

CILAC-ZA (195) 26 September 1988

MEMORANDUM THRU:

Commander, HQS USACIL, Fort Gillem, Forest Park, Georgia 30050-5000

Chief of Staff, USACIDC, 5611 Columbia Pike, Falls Church, VA 22041-5015

Commander, Army Material Command, ATTN: AMCSF-P, 5001 Eisenhower Ave, Alexandria, VA 22333-0001

FOR: U. S. Nuclear Regulatory Commission, Region II
Nuclear Materials Safety Section
101 Marietta Street, Suite 2900
Atlanta, GA 30323

SUBJECT: Request for Nuclear Regulatory Commission (NRC) license to use radioactive material.

1. Attached are NRC Form 313, Application for Material License, and supporting documentation. An NRC license is required to allow this laboratory to utilize radioactive material in DNA testing procedures.

2. Request your immediate attention as procedures are planned to begin in early FY89.

3. Points of contact are Mr. Larry Chelko or Ms. Marilyn Chase at AV 797-7267/7031 or (404) 362-7267/7031.

DANIEL F. UYESUGI
LTC, CC
Commanding

NRC FORM 313
(10-97)
10 CFR 30, 32, 33, 34, 35 and 40

APPLICATION FOR MATERIAL LICENSE

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED BY OMB
3150-0120
Expires: 6-30-00

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.

APPLICATIONS FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

U.S. NUCLEAR REGULATORY COMMISSION
DIVISION OF FUEL CYCLE AND MATERIAL SAFETY, NMSS
WASHINGTON, DC 20555

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:

U.S. NUCLEAR REGULATORY COMMISSION, REGION I
NUCLEAR MATERIALS SAFETY SECTION B
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406

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

U.S. NUCLEAR REGULATORY COMMISSION, REGION II
NUCEAR MATERIALS SAFETY SECTION
101 MARIETTA STREET, SUITE 2900
ATLANTA, GA 30323

IF YOU ARE LOCATED IN:

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

U.S. NUCLEAR REGULATORY COMMISSION, REGION III
MATERIALS LICENSING SECTION
799 ROOSEVELT ROAD
GLEN ELLYN, IL 60137

ARKANSAS, COLORADO, IDAHO, KANSAS, LOUISIANA, MONTANA, NEBRASKA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, SOUTH DAKOTA, TEXAS, UTAH, OR WYOMING, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION IV
MATERIAL RADIATION PROTECTION SECTION
611 RYAN PLAZA DRIVE, SUITE 1000
ARLINGTON, TX 76011

ALASKA, ARIZONA, CALIFORNIA, HAWAII, NEVADA, OREGON, WASHINGTON, AND U.S. TERRITORIES AND POSSESSIONS IN THE PACIFIC, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION V
NUCLEAR MATERIALS SAFETY SECTION
1450 MARIA LANE, SUITE 210
WALNUT CREEK, CA 94596

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 JURISDICTION.

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

- [X] A. NEW LICENSE
- [ ] B. AMENDMENT TO LICENSE NUMBER _____
- [ ] C. RENEWAL OF LICENSE NUMBER _____

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

Commander
USACIL-CONUS
Ft Gillem
Forest Park, GA 30050-5000

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

USACIL-CONUS
Building 213B
Corner of 2nd & B Streets
Ft Gillem, GA 30050-5000

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

LARRY CHELKO/MARILYN CHASE

TELEPHONE NUMBER: (404) 362-7267/7031

SUBMIT ITEMS 5 THROUGH 11 ON 8½ 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 AND 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 N/A AMOUNT ENCLOSED $ N/A

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, 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.

SIGNATURE-CERTIFYING OFFICER	TYPED/PRINTED NAME	TITLE	DATE
Daniel F. Uyesugi	Daniel F. Uyesugi	LTC, CC Commanding	19 Sept 88

FOR NRC USE ONLY

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

5. Radioactive Material

a. Phosphorus-32,

b. 32P-DNA (deoxyribonucleic acid) nucleotides; any chemical or physical form of phosphorus-32.

c. Maximum amounts not to exceed 10mCi 32P on site, including stored materials and waste.

6. The 32P-labelled DNA probes are intended for use in the serology laboratory for the analysis of DNA extracted from liquid blood, bloodstains, tissues, bones, and other body fluids. To identify the DNA that has been extracted, a gene probe labelled with 32P is added and exposed to X-ray film.

7. Marilyn G. Chase/Larry C. Chelko

Ms. Chase's background includes:

a. A graduate study program leading to a master's degree at the Medical College of Georgia from 1976 to 1979. This program involved the use of phosphorus-32 and carbon-14 to label phospholipids in animal tissues.

b. Attendance at a Radiation Safety Training course at the Georgia Institute of Technology in July, 1988. The instructor for this course was Mr. Robert Boyd. This 40 hour course covered such topics as: biological effects of ionizing radiation, instruments used to detect radiation, proper handling techniques and waste disposal.

c. Radiation Awareness seminar projected in Fall, 1988, on site at U.S. Army Crime Lab. This will be conducted by Mr. Robert Boyd, RSO at Georgia State University.

d. Attendance at a four week course at Lifecodes, Inc. of Valhalla, N.Y. projected for Feb 1989. Topics to be covered include techniques for handling and analysis with 32P-labelled DNA probes.

Mr. Chelko is projected to attend courses listed under (b) and (c) during late 1988 or early 1989.

8. Training for Others

Training of the other principle DNA investigator, Michael J. Auvdel includes:

a. Successful completion of a radiochemistry course at the University of Pittsburgh, 1976.

b. Training in the Safe Handling of Transmitted Radiation, U.S. Air Force, 1969-73.

c. Radiation Awareness Seminar projected for Fall, 1988. This seminar will be held at the U.S. Army Crime Lab.

d. Attendance at the four week course at Lifecodes projected for Oct 1988.

8 continued

All other employees having access to restricted area or radioactive materials will initially receive training through in-house radiation awareness seminars and training.

9. Facilities and Equipment

The radioactive materials will be stored and used in a controlled laboratory area dedicated to this work and with limited access. There will be two entrance ways to this area. One will be an alarmed emergency entrance only to be used in the event of fire. The other entrance will be through the main Serology work area. The laboratory shall contain the following: benchtops and furniture with non-porous surfaces, a fume hood with a cold water faucet and sink of non-porous material, and two ventilation closets with keyed entry locks. The closets shall be used as radioactive waste storage areas. Equipment with specific use for this area will include: Centrifuges, incubators, micropipettes, a waterbath, a freezer, a refrigerator, electrophoresis equipment, a heat block, a trash compactor, and lucite beta work shields, waste containers, and test tube racks. Facilities and equipment described are shown in enclosures 1, 2, and 3. It should be noted that the entire facility is a crime laboratory protected by a sophisticated security system. Access is very limited.

10. Radiation Safety Program

a. The controlled area shall be posted with required caution signs. Laboratory personnel in the controlled area shall wear disposable lab coats, disposable gloves, and disposable shoe covers. A lead apron shall also be provided to personnel. Safety glasses shall by worn at all times. All pipetting of radioactive materials shall take place within the hood behind a 1-inch thick lucite body shield. In addition, the door of the hood shall be positioned such that the worker's face is protected from splashing. Work surfaces will be covered with plastic-backed absorbent paper. All storage containers shall be labelled with contents, radiation hazard and date.

b. Personnel monitoring. Laboratory analysts shall wear a whole body beta-gamma film badge and ring badges on both hands while working with 32P. These will be read on monthly basis by the U.S. Army Ionizing Radiation Dosimetry Center, Lexington, KY. The Dosimetry Center provides computerized monthly and quarterly cumlative print-outs of readings. Records of these shall be kept by Larry C. Chelko., Chief Chemist, Army Crime Lab, and by Occupational Health, Ft McPherson, GA. Each person will be checked with a survey meter for contamination before leaving the controlled area.

c. The controlled area will be checked during each day of use: before, during, and after any analysis. This will be performed by means of a hand-held survey meter. In addition, at the end of each day when radioactivity is used, a wipe shall be performed on workstation areas, waste storage containers, and any equipment used (ie. micropipets). This wipe shall be monitored with the survey meter. A film badge shall be suspended from the ceiling in the middle of the controlled area for a constant monitoring of this area. This badge will be read monthly along with the individual's badges.

10 continued

d. Safety Equipment. Instruments will consist of two survey meters and detectors. The meter will be Ludlum Model 3 or equivalent and the detector will be Model 44-7 or equivalent. The calibration of these instruments will be staggered on an annual basis by Ludlum Measurements, Sweetwater TX. A supply of Radiac wash or equivalent will be maintained for any contamination clean-up.

e. Instructions to Personnel.

1) In the future, other Serology personnel will be using the radioactive 32P DNA probes. These individuals will be trained Serology Examiners already familiar with the laboratory safety procedures for handling of biohazards. A Laboratory Safety Manual and Guidelines for Handling Contaminated Evidence are written guidelines in effect within the laboratory. The individuals will work under the supervision of those listed in item 7. These individuals shall be familiarized with the proper handling procedures for radiation. The purpose of this training shall be to establish standards to ensure the protection of personnel against radiation hazards by means of proper use, storage, and waste disposal. This training shall be provided by the U.S. Army Crime Lab RSO. The scope of this program shall include all personnel at the laboratory who receive, possess, use, or transfer radioactive materials. Future training shall include a one-day seminar for all lab personnel on Radiation Awareness to be given by Mr. Robert Boyd, RSO, at Georgia State University. A copy of the Standards for Protection Against Radiation in Part 20 of 10 CFR shall be maintained in the Serology area and all personnel handling radioactive materials will be required to read/review it annually.

2) Records of the purchase, receipt, and disposal of radioactive materials will be maintained by the RSO of the laboratory.

3) Emergency Procedures. In the event of an accident involving radioactive materials immediate action shall be taken to secure the area and isolate the contamination from personnel. The area shall be monitored with the survey meter and clean-up shall be performed with Radiac wash until the Survey meter and wipes show the contamination has been removed. Any contaminated clothing shall be removed and stored in the radioactive waste storage area for six months, at which time the clothing shall be returned to the owner.

11. Waste Management.

a. All solid waste shall be collected in a polyethylene bag within a Lucite solid waste container.

b. Residual 32P liquid will be allowed to decay for six months within it's original manufacturer's shipping container. This container shall be stored behind a Lucite shield in a locked closet in the controlled area. At the end of six months this liquid will be poured onto plastic backed mats and disposed through conventional waste removal.

11 continued

c. Liquid 32P waste will be poured onto absorbent plastic backed mats. When dry, these mats shall be placed within the solid waste container.

d. When the polyethylene bag of the Lucite waste container is filled, it shall be placed within the trash compactor.

e. The trash compactor will be compacted periodically. The waste from the compactor will be placed in a waste storage container (25 gallon Lucite) which will remain in the controlled area. When the last waste bag is added to the 25 gallon container, it shall be stored for six months and the contents disposed of through conventional waste removal.

f. All containers used to store radioactive waste, ie. drums, compactor, Lucite solid waste container, and plastic bags will be labeled "Caution: Radioactive Material" along with the isotope, amounts, and date.