

## MATERIALS LICENSE

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, 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

1. Boise State University
2. 1910 University Drive  
Boise, Idaho 83725

In accordance with letter dated  
December 1, 1996

3. License number 11-27388-01 is amended in  
its entirety to read as follows:

4. Expiration date May 31, 2001

5. Docket or  
Reference No 030-32218/IDA-100-5

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. Americium-241

B. Carbon-14

C. Hydrogen-3

D. Iodine-125

E. Mercury-203

F. Phosphorus-32

G. Sulfur-35

A. Sealed sources

B. Any, except sealed  
sources

C. Any, except sealed  
sources

D. Any, except sealed  
sources

E. Any, except sealed  
sources

F. Any, except sealed  
sources

G. Any, except sealed  
sources

A. 10 microcuries

B. 3 millicuries

C. 3 millicuries

D. 1 millicurie

E. 100 microcuries

F. 3 millicuries

G. 3 millicuries

9. Authorized use

- A. through G. Laboratory studies for research and development as defined in 10 CFR 30.4, including animal and plant studies.

## CONDITIONS

10. A. Licensed material shall be used only at the licensee's facilities located at 1910 University Drive, Boise, Idaho.
- B. Licensed material shall be received at 1004 Vermont (Central Receiving Area), Boise, Idaho.

MATERIALS LICENSE  
SUPPLEMENTARY SHEET

License Number

11-27388-01

Docket or Reference Number

030-32218/IDA-100-5

Amendment No. 01

11. A. Licensed material identified in Item 6.A. shall be used by, or under the supervision of, Richard J. Reimann, Ph.D., or R.A. Luke, Ph.D.
- B. Licensed material identified in Items 6.B. through 6.G. shall be used by, or under the supervision of, Al Dufty, Ph.D., Robert Ellis, Ph.D., James Long, Ph.D., James Munger, Ph.D., Russell Ott, Ph.D., Robert Rychert, Ph.D. or James Smith, Ph.D.
- C. Licensed material identified in Item 6.A. through 6.G. shall be used by, or under the supervision of, Susan E. Shadle, Ph.D.
12. The Radiation Safety Officer for this license is Lee W. Stokes, Ph.D.
13. The licensee is authorized to hold radioactive material with a physical half-life of less than 65 days for decay-in-storage before disposal in ordinary trash provided:
  - A. 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 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 3 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.
14. Licensed material shall not be used in or on human beings.
15. Sealed sources or detector cells containing licensed material shall not be opened or sources removed from source holders by the licensee.
16. The licensee shall conduct a physical inventory every 6 months to account for all sources and/or devices received and possessed under the license.
17. Experimental animals, or the products from experimental animals, that have been administered licensed materials shall not be used for human consumption.

**MATERIALS LICENSE  
SUPPLEMENTARY SHEET**

License Number

11-27388-01

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030-32218/IDA-100-5

Amendment No. 01

18. In addition to the possession limits in Item 8, the licensee shall further restrict the possession of licensed material to quantities below the minimum limit specified in 10 CFR 30.35(d) for establishing decommissioning financial assurance.
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 July 13, 1993
  - B. Letter dated November 1, 1993
  - C. Letter dated March 16, 1994
  - D. Letter dated May 1, 1996
  - E. Letter dated December 1, 1996

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Date DEC 31 1996

By *William H. Campbell*  
Nuclear Materials Licensing Branch  
Region IV  
Arlington, Texas 76011



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

REGION IV

611 RYAN PLAZA DRIVE, SUITE 400  
ARLINGTON, TEXAS 76011-8064

December 31, 1996

Boise State University  
ATTN: Lee W. Stokes  
1910 University Drive  
Boise, Idaho 83725

SUBJECT: LICENSE AMENDMENT

Please find enclosed License No. 11-27388-01. You should review this license carefully and be sure that you understand all conditions. If you have any questions, you may contact the reviewer who signed your license at 817-860-8143.

NRC expects licensees to conduct their programs with meticulous attention to detail and a high standard of compliance. Because of the serious consequences to employees and the public which can result from failure to comply with NRC requirements, you must conduct your program involving radioactive 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: Inspection and Investigations," 10 CFR Part 20, "Standards for Protection Against Radiation," and other applicable regulations.
2. Possess radioactive material only in the quantity and form indicated in your license.
3. Use radioactive material only for the purpose(s) indicated in your license.
4. Notify NRC in writing of any change in mailing address (no fee required if the location of radioactive material remains the same).
5. Request and obtain written NRC consent before transferring your license or any right thereunder, either voluntarily or involuntarily, directly or indirectly, through transfer of control of your license to any person or entity. A transfer of control of your license includes not only a total change of ownership, but also a change in the controlling interest in your company whether it is a corporation, partnership, or other entity. In addition, appropriate license amendments must be requested and obtained for any other planned changes in your facility or program that are contrary to your license or contrary to representations made in your license application, as well as supplemental correspondence thereto, which are incorporated into your license. A license fee may be charged for the amendments if you are not in a fee-exempt category.

6. Maintain in a single document decommissioning records that have been certified for completeness and accuracy listing all the following items applicable to the license:
- Onsite areas designated or formerly designated as restricted areas as defined in 10 CFR 20.3(a)(14) or 20.1003.
  - Onsite areas, other than restricted areas, where radioactive materials in quantities greater than amounts listed in Appendix C to 10 CFR 20.1001-20.2401 have been used, possessed, or stored.
  - Onsite areas, other than restricted areas, where spills or other unusual occurrences involving the spread of contamination in and around the facility, equipment, or site have occurred that required reporting pursuant to 10 CFR 30.50(b)(1) or (b)(4), including areas where subsequent cleanup procedures have removed the contamination.
  - Specific locations and radionuclide contents of previous and current burial areas within the site, excluding radioactive material with half-lives of 10 days or less, depleted uranium used only for shielding or as penetrators in unused munitions, or sealed sources authorized for use at temporary job sites.
  - Location and description of all contaminated equipment involved in licensed operations that is to remain onsite after license termination.
7. Submit a complete renewal application with proper fee, or termination request at least 30 days before the expiration date on your license. You will receive a reminder notice approximately 90 days before the expiration date. Possession of radioactive material after your license expires is a violation of NRC regulations.
8. Request termination of your license if you plan to permanently discontinue activities involving radioactive material.

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; 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), 60 FR 34381, June 30, 1995.



Thank you for your cooperation.

Sincerely,

Original Signed By  
Vivian H. Campbell

Vivian H. Campbell  
Senior Health Physicist  
Nuclear Materials Licensing Branch

Docket: 030-32218  
License: 11-27388-01  
Control: 466266

Enclosures: As stated

DOCUMENT NAME: P:\Boise.mlc

To receive copy of document, indicate in box: "C" = Copy without enclosures "E" = Copy with enclosures "N" = No copy

RIV:NMLB	NI	RIV:					
VHCampbell	<i>NI</i>						
12 / 31 / 96							

OFFICIAL RECORD COPY

BETWEEN:

License Fee Management Branch, ARM  
and  
Regional Licensing Sections

(FOR LFMS USE)  
INFORMATION FROM LTS

Program Code: 03620  
Status Code: 0  
Fee Category: EX 3M  
Exp. Date: 20010531  
Fee Comments: 170-11(A)(4)  
Decom Fin Assur Req: N

1996 DEC 11 PM 1:28

LICENSE FEE TRANSMITTAL

A. REGION IV

1. APPLICATION ATTACHED

Applicant/Licensee: BOISE STATE UNIVERSITY  
Received Date: 961506  
Docket No.: 3032218  
Control No.: 466266  
License No.: 11-27388-01  
Action Type: Amendment

2. FEE ATTACHED

Amount: 4  
Check No.: 4

3. COMMENTS

Signed  
Date

Lillie Muszynski  
12/19/96

B. LICENSE FEE MANAGEMENT BRANCH (Check when milestone 03 is entered ☒)

1. Fee Category and Amount: EX 3M

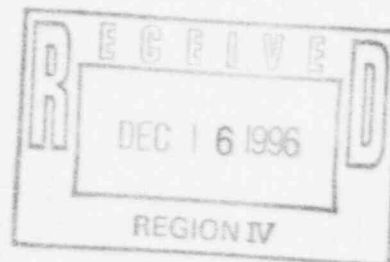
2. Correct Fee Paid. Application may be processed for: 170-11(A)(4)

Amendment  
Renewal  
License

3. OTHER

Signed  
Date

Rita Messier  
12/13/96



RECEIVED BY LFMS	
Date	12/11/96
Log	DEC 2 IV
By	Fern
Date Completed	12/13/96



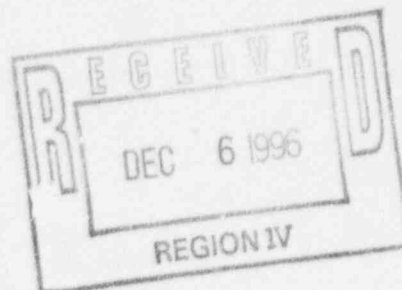


BOISE STATE UNIVERSITY • 1910 UNIVERSITY DRIVE • BOISE, IDAHO 83725

Campus Environmental Health Compliance Office

Telephone: (208) 385-3999

December 1, 1996



Jacqueline D. Burks  
Health Physicist  
Nuclear Materials Licensing Branch  
Nuclear Regulatory Commission  
Region IV  
611 Ryan Plaza Drive, Suite 400  
Arlington, TX 76011-8064

Dear Ms. Burks:

Enclosed is a document requesting an amendment to the Boise State University Materials License #11-27388-01. The amendment simply adds one BSU faculty member to the list of personnel authorized to use radioactive materials and adds one laboratory and one darkroom to the list of approved locations for the use of such materials.

Please let me know if any other information or process is required.

Sincerely,

Lee W. Stokes  
Radiation Safety Officer

cc: James Long  
Richard Banks  
Susan Shadle  
Gail Maloney

466266

December 1, 1996

Request for Amendment to Materials License #11-27388-01, Boise State University:

Specific Amendment: Amend Section 11 B. of the License to add Dr. Susan E. Shadle to the list of approved users of licensed material identified as items A through G in Section 6 of the license.

In support of the proposed amendment, the following information is hereby added to certain sections of the July 13, 1993 "Application for Materials License" (NRC Form 313) as shown below:

6. Purpose and Usage

P-32 incorporated into radionucleotides will be used to monitor reactions of DNA oxidation. Experiments utilizing instrumentation and techniques for DNA sequencing will be used. In any one experiment, the total activity will be less than 100 microcuries.

7. Individuals Authorized for Use of Materials and Responsible for Radiation Safety Program and Their Training and Experience

Dr. Susan Shadle completed the radiation safety course at The Johns Hopkins University in January, 1995. Topics covered in the course included proper laboratory procedures for safe utilization of radioactive isotopes, methods for monitoring and measuring radioactivity, calculations of dose, exposure, activity and decay, and biological effects of radiation exposure. In her postdoctoral work, Dr. Shadle gained extensive research experience using radionuclides ( $^{32}\text{P}$ ) in structural studies of DNA. In addition, Dr. Shadle's doctoral work was conducted at high energy X-ray source facilities (Stanford Synchrotron Radiation Laboratory and the National Synchrotron Light Source at Brookhaven National Laboratories). Dr. Shadle completed the requisite radiation safety training to work at these facilities.

9. Facilities and Equipment

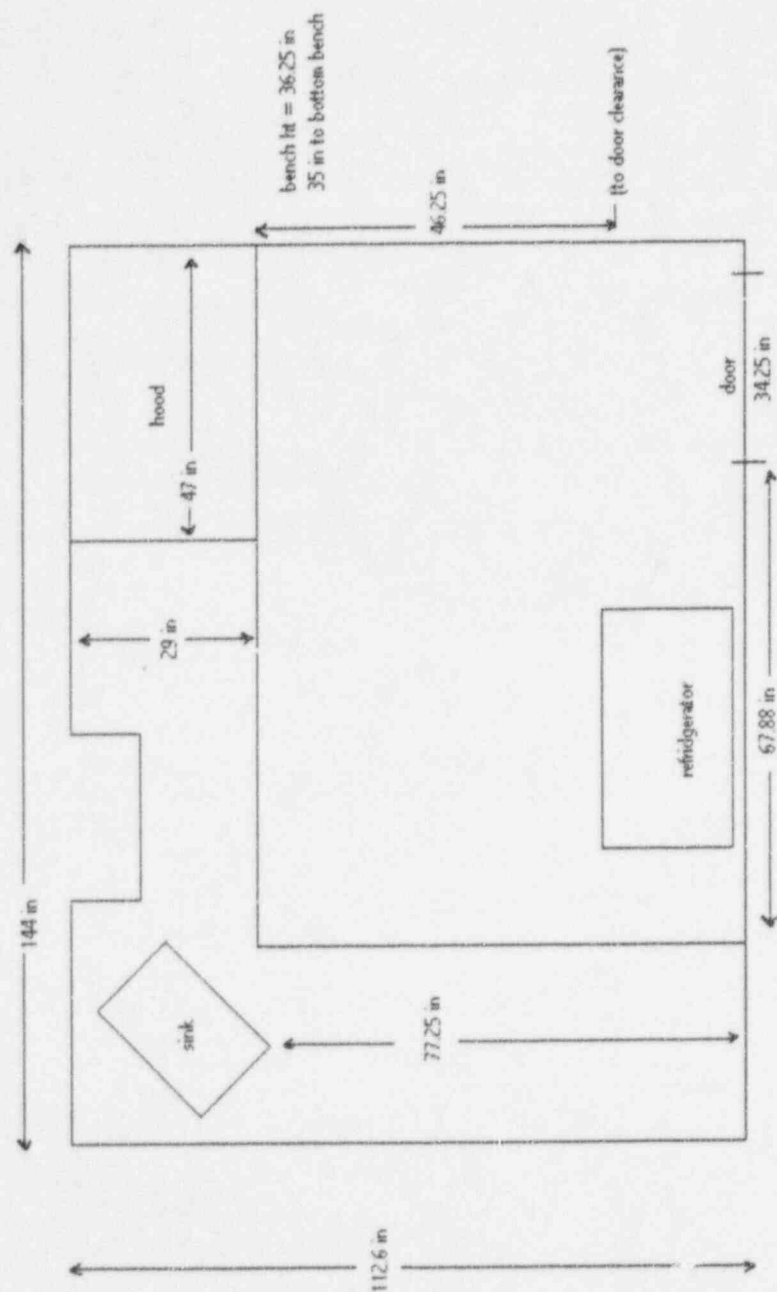
A laboratory (SN 355) and a darkroom (SN 346) are included among the facilities in which radioactive materials will be used (see attached drawings).

11. Waste Management

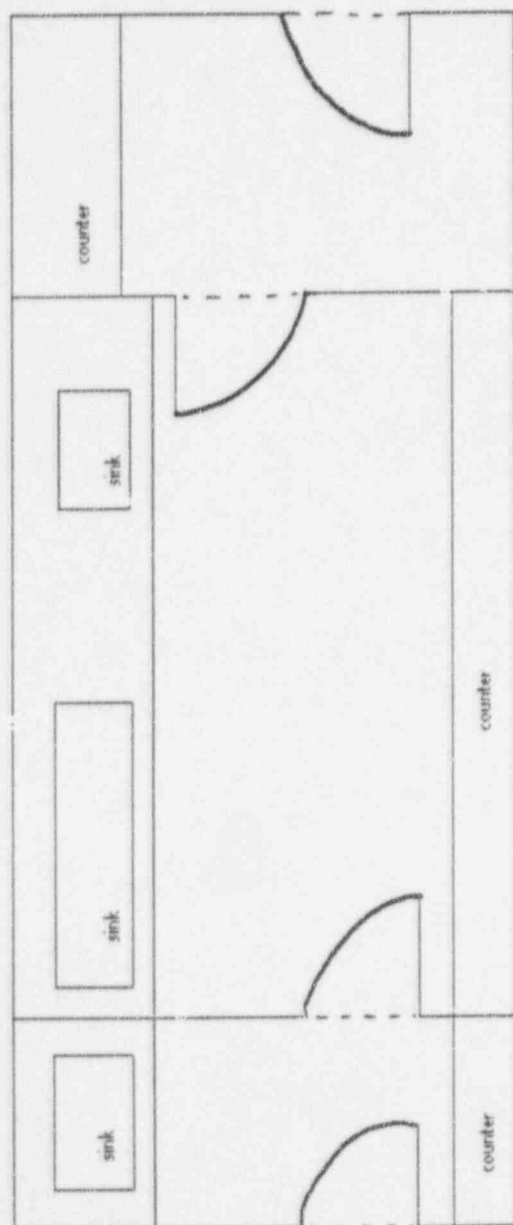
Let  $^{32}\text{P}$  decay (10 half-lives = 143 days) for normal waste disposal.

SN 353

This laboratory will be used for DNA reactivity experiments. Procedures will include P-32 labeling of oligonucleotides and DNA sequencing gel electrophoresis.



SN348: Barroom. To be used for developing film images of P-32 labeled electrophoresis gels





BOISE STATE UNIVERSITY • 1910 UNIVERSITY DRIVE • BOISE, IDAHO 83725



October 9, 1996

TO: Jacqueline D. Burks  
Health Physicist  
Nuclear Materials Licensing Branch  
Fax # 817-860-8263

FROM: Dr. James Long  
Biology Department  
Boise State University  
Ph# 208-385-1256  
Fax # 208-385-3006

RE: Docket 030-32218 License # 11-27388-01

Dear Ms. Burks,

I am inquiring as to what steps need to be taken to add Dr. Susan Shadle to the above Materials License. Dr. Shadle is a newly hired Assistant Professor in the Chemistry department. I am assuming that information concerning her training, the type of experiments she wishes to conduct, and the location where they would be conducted is required. At this point, all I know is that she wishes to use P-32 in amounts within the limits of the current license. What additional information would be required and would there be any charge to add her name to the list of authorized users, assuming she meets all other requirements?

Thanks for Your Assistance in this Matter,

*Dr. James Long*  
Dr. James Long  
Biology Department  
Boise State University

*10/9/96: Spoke with Dr. Long and told him in order to add Dr. Shadle to the license would require an amendment + fee. Also, need to include a resume outlining Dr. Shadle's training and experience as outlined in Form 849 RG-10.2.*

*Jacqui Burks*