

REPORT OF PROPOSED ACTIVITIES IN NON-AGREEMENT STATES

(Please read the instructions on the cover sheet before completing this form.)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 15 MINUTES. THIS NOTIFICATION IS REQUIRED SO THAT NRC MAY SCHEDULE INSPECTION OF THE ACTIVITIES TO ENSURE THAT THEY ARE CONDUCTED IN ACCORDANCE WITH REQUIREMENTS FOR PROTECTION OF 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 (3150-0013), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

1. NAME OF LICENSEE *Person or firm proposing to conduct the activities described below*
Washington State University

2. TYPE OF REPORT
 INITIAL
 REVISION
 CLARIFICATION

3. CONTROL NUMBER
(Leave Blank-Number to be assigned by NRC)
JLC 27 1999

4. ADDRESS OF LICENSEE *(Mailing address or other location where licensee may be located)*
**Radiation Safety Office
Nuclear Radiation Center
Pullman, WA 99164-1302**

5. LICENSEE CONTACT
Steve Eckberg

6. TELEPHONE NUMBER
(Include area code)
509 335-8574

7. FACSIMILE NUMBER
(Include area code)
509 335-1615

8. ACTIVITIES TO BE CONDUCTED IN NON-AGREEMENT STATES UNDER THE GENERAL LICENSE IN 10 CFR 150.20

WELL LOGGING LEAK TESTING AND/OR CALIBRATION TELETHERAPY/IRRADIATOR SERVICE
PORTABLE GAUGES OTHER *(Specify)* Use of a Valco ECD containing 5 mCi of Ni-63 to measure forest products kiln emissions.

RADIOGRAPHY TRANSPORTATION QA PROGRAM APPROVAL NO. & REV. NO. REGISTERED AS USER OF PACKAGES (CERTIFICATES OF COMPLIANCE NOS.)

9. CLIENT NAME, ADDRESS, CITY/COUNTY, STATE, ZIP CODE
**U of Idaho Moscow, Idaho
Vicky Schurr, Rad. Safety 208-885-6524
or
Dr. Richard Folk, FWR 208-885-5850**

10. WORK LOCATION ADDRESS
(Street and number or other location. Give as complete an address or direction as possible.)
**Field location on the roof of the Forestry, Wildlife and Range Sciences Bldg. at the U of Idaho.
Moscow, ID**

11. CLIENT TELEPHONE NUMBER
(Include area code)
208-885-6524

12. WORK LOCATION CONTACT
Vicky Schurr

13. WORK LOCATION TELEPHONE NUMBER
(Include area code)
208-885-6524

14. DATES SCHEDULED
FROM **January 1, 2000** TO **January 31, 2000**

15. NUMBER OF WORK DAYS
31

16. LOCATION REFERENCE NUMBER
LEAVE BLANK FOR INITIAL NRC FORM 241 REQUESTS - NUMBER TO BE ASSIGNED BY NRC
000122

LIST ADDITIONAL WORK SITES ON SEPARATE SHEET TO INCLUDE ALL INFORMATION CONTAINED IN ITEMS 9-16 ABOVE.

17. LIST RADIOACTIVE MATERIAL WHICH WILL BE POSSESSED, USED, INSTALLED, SERVICED, OR TESTED IN NON-AGREEMENT STATES
(Include description of type and quantity of radioactive material, sealed sources, or devices to be used.)
Use of a Valco ECD containing 5 mCi of Ni-63 to measure forest products kiln emissions.

18. AGREEMENT STATE SPECIFIC LICENSE WHICH AUTHORIZES THE UNDERSIGNED TO CONDUCT ACTIVITIES WHICH ARE THE SAME, EXCEPT FOR LOCATION OF USE, AS SPECIFIED IN ITEM 8. ABOVE. *(Four copies of the specific license must accompany the initial NRC form 241)*

LICENSE NUMBER
WN-C003-1

STATE
Washington

EXPIRATION DATE
June 30, 1999, Ltr of Timely Renewal previously sent.

TOTAL USAGE DAYS TO DATE
31 days with this request.

19. CERTIFICATION (MUST BE COMPLETED BY APPLICANT)

10. I, THE UNDERSIGNED, HEREBY CERTIFY THAT:
a. All information in this report is true and complete
b. I have read and understand the provision of the general license 10 CFR 150.20 reprinted on the cover sheet of this form set: and I understand that I am required to comply with these provisions as to all byproduct, source, or special nuclear material which I possess and use in non-Agreement States or offshore waters under the general license for which this report is filed with the U.S. Nuclear Regulatory Commission.
c. I understand that activities, including storage, conducted in non-Agreement States under general license 10 CFR 150.20 are limited to a total of 180 days in calendar year.
d. I understand that I may be inspected by NRC at the above work site locations and at the Licensee home office address for activities performed in non-Agreement States or offshore waters. I am also aware that I will be responsible for any fees associated with such inspections.
e. I understand that conduct of any activities not described above, including conduct of activities on dates or locations different from those described above or without NRC authorization, may subject me to enforcement action, including civil or criminal penalties.

SIGNATURE - CERTIFYING OFFICER
(Signature)

TYPE/PRINTED NAME
Steve Eckberg

TITLE
Assistant Director

DATE
Dec. 3, 1999

WARNING: FALSE STATEMENTS IN THIS CERTIFICATE MAY BE SUBJECT TO CIVIL AND/OR CRIMINAL PENALTIES. NRC REGULATIONS REQUIRE THAT SUBMISSIONS TO THE NRC BE COMPLETE AND ACCURATE IN ALL MATERIAL RESPECTS. 18 U.S.C. SECTION 1001 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.

FOR NRC USE ONLY

AUTHORIZING OFFICIAL
**M. C. Hernandez
Radiation Specialist**

(Signature)

DATE
1/4/00

PDR STPRG

NE05
Copy to RIV



STATE OF WASHINGTON
DEPARTMENT OF HEALTH
DIVISION OF RADIATION PROTECTION
7171 Cleanwater Lane, Bldg. 5 • P.O. Box 47827 • Olympia, Washington 98504-7827
TDD Relay 1-800-833-6388

May 18, 1999

DEC 27 1999

Len Porter, Ph.D.
Radiation Safety Officer
Washington State University
Radiation Safety Office
Pullman, Washington 99164-1302

Dear Dr. Porter:

NOTICE OF TIMELY RENEWAL

In accordance with WAC 246-235-050 your application received May 18, 1999 is considered to be a timely request for renewal and has been issued Licensing Action Number 99-04-23. Therefore, your existing license WN-C003-1, will not expire until the department has made a final determination on the application. The reviewer assigned to your license is Leo Wainhouse who may be reached at (360) 236-3226. If you have any questions regarding this renewal, please contact either Mr. Wainhouse or myself at (360) 236-3220.

Sincerely,

Dorrie B. Dodson, Secretary
Radioactive Materials Section

RECEIVED

MAY 28 1999

RADIATION SAFETY

Radioactive Materials License



- E. Research and Technology Park
NE 1615 Eastgate Boulevard
Pullman, Washington
- F. Leased laboratory space at Sacred Heart Medical Center
West 44 Sixth Avenue
Spokane, Washington
- G. Leased laboratory space at Deaconess Medical Center
West 800 Fifth Avenue
Spokane, Washington
- H. Washington State University
1812 East McLoughlin
Vancouver, Washington
- I. Washington State University, Tri-Cities
100 Sprout Road
Richland, Washington
- J. At temporary locations and sites within the state of Washington. This condition does not prohibit use in states under U.S. Nuclear Regulatory Commission (NRC) jurisdiction or in other Agreement States under reciprocity procedures which may be established by the NRC or those states.
- 11. The licensee shall comply with the provisions of WAC 246-220 "General Provisions"; WAC 246-221 "Radiation Protection Standards"; WAC 246-222 "Worker Rights"; WAC 246-232 "Licensing Applicability"; WAC 246-235 "Specific Licenses"; WAC 246-244 "Wireline Services"; WAC 246-247 "Air Emissions", and WAC-246-249 "Radioactive Waste - Use of the Commercial Disposal Site".
- 12. The Radiation Safety Officer for this program shall be Leonard E. Porter, Ph.D. The department shall be notified in writing within 30 days of a change in this position.
- 13. The Radiation Safety Committee shall:
 - A. 1. Administer the licensee's radioactive materials program.
 - 2. Set policy for the licensee's radioactive materials program.
 - 3. Determine criteria for safety evaluations.
 - 4. Approve all uses of radioactive material prior to use.
 - 5. Direct, and review annually, the radiation safety program as specified in application and the Safety Policies and Procedures Manual Chapter S90 received July 13, 1993 and subsequent revisions.
 - 6. Perform additional duties as specified in the Safety Policies and Procedures Manual Chapter S90 received July 13, 1993 and subsequent revisions.

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- B. Notify the department in writing within 30 days of changes in Radiation Safety Committee membership.
14. The Radiation Safety Officer may authorize only those uses of radioactive material within the delegation of authority and specific limits set forth by the Radiation Safety Committee as described in Washington State University Safety Policies and Procedures Manual-S90, received July 13, 1993 and any subsequent revisions approved by the department.
 15. Radioactive material shall be used by, or under the supervision of, individuals approved by the Radiation Safety Committee and as specified in the Washington State University Safety Policies and Procedures Manual-S90, received July 13, 1993 and any subsequent revisions approved by the department.
 16. The radioactive materials authorized in this license shall not be used in human beings or in products distributed to the public.
 17. For radioactive material in forms other than a sealed source or special form, the possession limit shall not exceed limits specified in Item 8 of this license, or the limits determined from Attachment 1 - Schedule of Unity Possession Limits, whichever is more restrictive. If more than one radionuclide listed in Attachment 1 is possessed, the total possession quantity for these radionuclides must be limited such that the sum of the quotients shall not exceed unity. A quotient shall be calculated for each radionuclide and is defined as the possession quantity of the radionuclide divided by its unity possession limit, specified in Attachment 1. This verification shall be done quarterly by the licensee. Records shall be maintained and available for inspection by the department.
 18. Use of radioactive material at temporary locations and sites within the state of Washington requires approval of the Radiation Safety Committee and at least three days prior written notice to the department. If for a specific case the three day period would impose an undue hardship, the licensee may, upon application to the department, obtain permission to proceed sooner. This condition does not apply to the use of sealed sources in well logging or portable moisture/density gauges.
 19. The transport of licensed material by the licensee, or the delivery of licensed material to a carrier for transport, shall be in accordance with WAC 246-232-090 "Transportation."
 20. The licensee shall conduct a tritium bioassay program in accordance with the criteria set forth in the Washington State Regulatory Guide 8.99, "Bioassay Requirements for Tritium."

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21. The licensee shall conduct a radioiodine bioassay program in accordance with the criteria set forth in the Washington State Guide 8.20, "Bioassay Program Criteria for I-125 and I-131."
 22. A. 1. Each sealed source containing licensed material, other than Hydrogen 3, with a half-life greater than thirty days and in any form other than gas:
 - a. shall be tested for leakage and/or contamination at intervals not to exceed six months, except that each source designed for the purpose of emitting alpha particles shall be tested at intervals not to exceed three (3) months, or
 - b. at such other intervals as are approved by the U.S. Nuclear Regulatory Commission, an Agreement State or a Licensing state (Licensing state pertains only to NARM) and described by the manufacturer on the label attached to the source, device, or permanent container thereof, or in the leaflet or brochure which accompanies the source or device.

In the absence of a certificate from a transferor indicating that a test has been made within six months prior to the transfer, a sealed source received from another person shall not be put into use until tested.
 2. Notwithstanding the periodic leak test required by this condition, any licensed sealed source is exempt from such leak tests when the source contains 100 microcuries (3.7 megabecquerels) or less of beta and/or gamma emitting material or 10 microcuries (370 kilobecquerels) or less of alpha emitting material.
- B. The test shall be capable of detecting the presence of 0.005 microcurie (185 becquerels) of radioactive material on the test sample. The test sample shall be taken from the sealed source or from the surfaces of the device in which the sealed source is permanently mounted or stored on which one might expect contamination to accumulate. Records of leak test results shall be kept in units of microcuries (or becquerels) and maintained for inspection by the department.

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- C. If the test reveals the presence of 0.005 microcurie (185 becquerels) or more of removable contamination, the licensee shall immediately withdraw the sealed source from use and shall cause it to be decontaminated and repaired or to be disposed in accordance with department regulations. A report shall be filed within five (5) days of the test with the department describing the equipment involved, the test results, and the corrective action taken.
- D. The licensee is authorized to collect and analyze leak test samples in accordance with procedures described in their Radioactive Materials License Application dated May 22, 1990 and subsequent addendums and revisions approved by the department. Alternatively, leak test samples may be collected and/or analyzed by other persons specifically authorized by the department, the U.S. Nuclear Regulatory Commission, an Agreement State, or a Licensing State to perform such services. Licensing State authorization applies to naturally occurring and accelerator produced radioactive material (NARM) only.
- E. Except for sources designed to emit alphas, the periodic leak test required by this condition does not apply to sealed sources that are stored and not being used, provided that an inventory and wipe test of the outside of all sealed source storage containers, where accessible, must be made every six months. If contamination is found at or greater than minimum detectable levels, the licensee must conduct a survey to determine if the stored sealed sources are leaking pursuant to Condition 22.C above. All sources exempted from this test shall be tested for leakage prior to any use or transfer to another person unless they have been leak tested within six months prior to the date of use or transfer.
- 23. Sealed sources, other than metallic foils, containing radioactive material shall not be opened by the licensee. Metallic foils may be handled as approved by the Radiation Safety Committee.
- 24. Sealed sources listed in subitem O of Items 6, 7, and 8 shall be leak tested at six month intervals according to procedures described in letter dated March 6, 1990, April 20, 1990, and February 11, 1991.
- 25. A. Pursuant to WAC 246-222-030 each individual radiation worker shall receive radiation safety instruction as stated in the Washington State University Safety Policies and Procedures Manual-S90, received July 13, 1993 and any subsequent revisions approved by the department.

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- B. Radiation workers include University staff, faculty, and students who work directly with radioactive material or frequent areas where radioactive material is used or stored.
 - C. Records of individuals who received instruction shall be maintained by the Radiation Safety Office for inspection by the department.
26. Shipments of plutonium by air may be made only in accordance with the provisions of 10 CFR 71.88.
27. The provisions of this license are not intended to control radioactive materials described in WAC 246-232-010, except when deemed appropriate by the Radiation Safety Officer.
28. A. Each authorized user is required to have available and use appropriate, operable, and calibrated instrumentation to perform health and safety surveys. These instruments shall be calibrated at intervals not to exceed 12 months.
- B. Each authorized user and the Radiation Safety Office shall perform appropriate surveys at frequencies specified in the Washington State University Safety Policies and Procedures Manual-S90, received July 13, 1993 and any subsequent revisions approved by the department and as described in the Survey Procedure Requirements submitted June 1, 1993, and in accordance with WAC 246-221-110, "Surveys".
29. The licensee is authorized to calibrate instruments according to in-house procedures which were derived from manufacturers' operations and calibration manuals for the various instruments.
30. The licensee's emergency procedures shall conform to procedures outlined in the Washington State Radiation Emergency Handbook revised November 1991, or subsequent revisions.
31. The licensee shall not use radioactive material in field applications where activity is released to the environment except as provided by a specific amendment to this license.
32. A. Tritium gas chromatographs shall not be vented into occupied areas, but shall be vented to the exterior of the building via nonrecirculating exhaust systems and/or vent tubes to the exterior of the building.

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- B. Detector cells containing scandium tritide foil shall only be used in conjunction with a properly operating temperature control mechanism which prevents foil temperatures from exceeding 325 degrees Centigrade.
 - C. Detector cells containing titanium tritide foil shall only be used in conjunction with a properly operating temperature control mechanism which prevents foil temperatures from exceeding 225 degrees Centigrade.
 - D. Detector cells containing Nickel 63 foil shall only be used in conjunction with a properly operating temperature control mechanism which prevents foil temperatures from exceeding manufacturer's recommendations. For custom-made devices, temperature control mechanisms may not be required during testing and design, provided the procedures are reviewed and approved by the Radiation Safety Officer.
33. The licensee shall conduct a physical inventory every six months to account for all sealed sources received and possessed under the license. The records of the inventories shall be maintained for three years from the date of the last inspection by the department. They shall include activities, radionuclides, source descriptions, serial numbers, locations, clearly legible name of the person conducting the inventory, and the date of the inventory.
- The licensee shall conduct a physical inventory every three (3) months to account for the sealed sources listed in Subitems W and AA. The records of the inventories shall be maintained for inspection by the department, and shall include the quantities and kinds of radioactive material, location of sealed sources, and the date of the inventory.
34. All hoods where radioactive material may be used or stored shall have a flow rate of 100 linear-feet-per-minute \pm 20 percent, with the hood sash at the normal working height. Hood flow rates shall be checked annually.
35. The licensee shall maintain a utilization/transfer log for each well logging sealed source and each portable gauge, at the storage location stated in the application for this license. The utilization/transfer log shall include, but not be limited to, dates of use, location of use, and the name of the authorized individual checking out the well logging sealed source or portable gauge.

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36. Immediately after removal of a logging tool from the drilling hole, a contamination survey of the logging tool shall be performed with an appropriately calibrated and operable survey meter. Results shall be recorded in units of disintegrations per minute and maintained for inspection by the Department.
37. Whenever a radioactive source is lost down-hole, circulating fluid, if available, shall be monitored with an appropriately calibrated and operable survey meter. An alpha probe shall be used for the Americium 241 source. Results shall be recorded in units of disintegrations per minute and maintained for inspection by the Department.
38. The licensee shall report to the Department by telephone, within twenty-four (24) hours, the loss or potential abandonment down-hole of any well logging source containing radioactive material. In addition, a written report shall be submitted within thirty (30) days of the loss or abandonment, which shall include information regarding radionuclide, amount, location, depth method of immobilization, sealing, placarding and any notations to be placed in the public records.
39. The licensee is authorized to conduct well logging studies only in well bores drilled for mineral and water exploration, and in test wells. Such studies shall be conducted subject to the provisions of State of Washington "Statutes and Rules for Radiation Protection", and to the following requirements:
 - A. The use of radioactive material in uncased boreholes shall be restricted to wells penetrating known stable rock formations. These boreholes shall be cased from the surface down through the over-burden to the top of the stable rock formation. Unstable interbeds or deposits located within the formation must be lined with casing to prevent collapse of the borehole and to ensure the safe passage of the logging string.
 - B. The licensee shall maintain available for inspection such records as are necessary to establish compliance with the requirements of these conditions for all radioactive material introduced into well bores. These records shall include, but not be limited to, the kinds and amounts of radioactive material, dates introduced into well bores, and locations and identification of the well bores. These records shall be maintained subject to inspection at the well site for the duration of work at the site and at the campus location, following completion of work.
40. Experimental animals administered licensed materials or products containing licensed material shall not be used for human consumption.

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41. Except as specifically provided by this license, the licensee shall possess and use radioactive material described in Items 6, 7, and 8 of this license in accordance with statements, representations and procedures contained in the documents listed below. The department's "Rules and Regulations for Radiation Protection" shall govern the licensee's statements in applications or letters, unless the statements are more restrictive than the regulations.
- A. Application and attachments dated May 22, 1990 which includes the Radiation Protection Program Manual dated March 17, 1983.
 - B. Letter and attachments dated April 20, 1990, RE: Leak testing of Co-60 sources listed in Item 7.0. of Attachment 2.
 - C. Thyroid Monitoring System Calibration and Procedure for I-125 Thyroid Monitoring received May 22, 1991.
 - D. Letter and attachments dated September 30, 1991, RE: Adding location of use at Deaconess Medical Center in Spokane.
 - E. Letter and attachments dated September 17, 1991, RE: Operating Procedures for Use of Radioactive Sources in Well Logging Services; letter and attachment dated November 20, 1991, RE: Well-logging in uncased wells;
 - F. Letter and attachments dated May 8, 1992, RE: Adding Spokane location of use for the U.S. Transuranium and Uranium Registries; and facsimile dated May 11, 1992, RE: Letter of Intent signed by hospital administration.
 - G. Laboratory Classification System dated October 30, 1992.
 - H. Letters and attachments dated May 20, 1992, June 1, and November 22, 1993, RE: Initial application.
 - I. Letter dated June 1, 1993 and Telephone Conversation Record dated July 13, 1993, RE: JL Shepherd Cs-137 panoramic irradiator/calibrator.
 - J. Safety Policies & Procedures Manual Chapter S90 received July 13, 1993.

FOR THE STATE OF WASHINGTON DEPARTMENT OF HEALTH

Date March 2, 1994

By

Debra McBaugh
Radioactive Materials Licensing

ATTACHMENT 1 - QUANTITIES OF RADIOACTIVE MATERIALS REQUIRING CONSIDERATION OF THE NEED FOR AN EMERGENCY PLAN FOR RESPONDING TO A RELEASE.

RADIOACTIVE MATERIAL	QUANTITY (CURIES)	RADIOACTIVE MATERIAL	QUANTITY (CURIES)

Actinium-228.....	4,000	Phosphorus-32.....	100
Americium-241.....	2	Phosphorus-33.....	1,000
Americium-242.....	2	Polonium-210.....	10
Americium-243.....	2	Potassium-42.....	9,000
Antimony-124.....	4,000	Promethium-145.....	4,000
Antimony-126.....	6,000	Promethium-147.....	4,000
Barium-133.....	10,000	Ruthenium-106.....	200
Barium-140.....	30,000	Samarium-151.....	4,000
Bismuth-207.....	5,000	Scandium-46.....	3,000
Bismuth-210.....	600	Selenium-75.....	10,000
Cadmium-109.....	1,000	Silver-110m.....	1,000
Cadmium-113.....	80	Sodium-22.....	9,000
Calcium-45.....	20,000	Sodium-24.....	10,000
Californium-252.....	9 (20 mg)	Strontium-89.....	3,000
Carbon-14.....	50,000	Strontium-90.....	90
Cerium-141.....	10,000	Sulfur-35.....	900
Cerium-144.....	300	Technitium-99.....	10,000
Cesium-134.....	2,000	Technitium-99m.....	400,000
Cesium-137.....	3,000	Tellurium-127m.....	5,000
Chlorine-36.....	100	Tellurium-129m.....	5,000
Chromium-51.....	300,000	Terbium-160.....	4,000
Cobalt-60.....	5,000	Thulium-170.....	4,000
Copper-64.....	200,000	Tin-113.....	10,000
Curium-242.....	60	Tin-123.....	3,000
Curium-243.....	3	Tin-126.....	1,000
Curium-244.....	4	Titanium-44.....	100
Curium-245.....	2	Vanadium-48.....	7,000
Europium-152.....	500	Xenon-133.....	900,000
Europium-154.....	400	Yttrium-91.....	2,000
Europium-155.....	3,000	Zinc-65.....	5,000
Germanium-68.....	2,000	Zirconium-93.....	400
Gadolinium-153.....	5,000	Zirconium-95.....	5,000
Gold-198.....	30,000	Any other beta-gamma emitter	10,000
Hafnium-172.....	400	Mixed fission products.....	1,000
Hafnium-181.....	7,000	Mixed corrosion products....	10,000
Holmium-166m.....	100	Contaminated equipment beta-	
Hydrogen-3.....	20,000	gamma.....	10,000
Iodine-125.....	10	Irradiated material, any form	
Iodine-131.....	10	other than solid noncom-	
Indium-114m.....	1,000	bustible.....	1,000
Iridium-192.....	40,000	Irradiated material, solid	
Iron-55.....	40,000	non-combustible.....	10,000
Iron-59.....	7,000	Mixed radioactive waste, beta-	
Krypton-85.....	6,000,000	gamma.....	1,000
Lead-210.....	8	Packaged mixed waste, beta-	
Manganese-58.....	60,000	gamma.....	10,000
Mercury-203.....	10,000	Any other alpha emitter.....	2
Molybdenum-99.....	30,000	Contaminated equipment, alpha.	20
Neptunium-237.....	2	Packaged waste, alpha.....	20
Nickel-63.....	20,000		
Niobium-94.....	300		

ATTACHMENT 2

SUMMARY OF WASHINGTON STATE UNIVERSITY RADIOACTIVE MATERIAL AND USES

6. Radioactive Materials	7. Chemical and/or Physical Form	8. Maximum Quantity licensee may possess at any one time	9. Authorized Use
A. Radioactive material, atomic numbers between 3 and 83, inclusive unless otherwise specified.	A. Any.	A. 100 curies (3700 gigabecquerels) total, 1 curie (37 gigabecquerels) each radionuclide, except as specified in License Condition 17.	A. Research, development, and instruction.
B. Radioactive material, atomic numbers between 84 and 100, inclusive, including source material, except Special Nuclear Material, and except as otherwise specified.	B. Any.	B. 10 millicuries (370 megabecquerels). each radionuclide, except as specified in License Condition 17.	B. Research, development, and instruction.
C. Special Nuclear Material.	C. Any.	C. Not to exceed formula quantities as specified in WAC 246-220-010, except as specified by License Condition 17.	C. Research, development, and instruction.
D. Hydrogen 3 except as otherwise specified.	D. Any.	D. 25 curies (925 gigabecquerels).	D. Research, development, and instruction.
E. Molybdenum 99/ Technetium 99m.	E. Any.	E. 10 curies (370 gigabecquerels).	E. Research, development, and instruction.
F. Iodine 129.	F. Any.	F. 20 millicuries (740 megabecquerels).	F. Research, development, and instruction.

G. Iodine 131.	G. Any.	G. 2 millicuries (74 megabecquerels).	G. Research, development, and instruction.
H. Polonium 210.	H. Any.	H. 20 millicuries (740 megabecquerels).	H. Static elimination devices.
I. Thorium 228.	I. Any.	I. 20 millicuries (740 megabecquerels).	I. Research, development, and instruction.
J. Hydrogen 3.	J. Old neutron generator sources absorbed on metal.	J. 14 curies (518 gigabecquerels).	J. For storage only. (Kaman Nuclear neutron generators models A- 711 and S126).
K. Hydrogen 3.	K. Sealed sources absorbed on metal.	K. No single source to exceed 200 millicuries (7400 megabecquerels), 6 curies (222 gigabecquerels), total.	K. To be used in Electron Capture devices on gas chromatographs.
L. Cobalt 57.	L. Sealed sources.	L. No single source to exceed 50 millicuries (1850 megabecquerels), 200 millicuries (7400 megabecquerels), total.	L. To be used for calibration and in Mossbauer spectrometers.
M. Cobalt 60.	M. Five sealed sources (GEC-JLS-1947, AECL C-132-500C-960, Custom 301-2 & 301-1, Custom Picker pxnw).	M. 5000 curies (185 terabecquerels).	M. To be used in gamma irradiation unit in nuclear reactor pool.
N. Cobalt 60.	N. Four sealed sources (ID # 789,b95,c37, 855).	N. 10 millicuries (370 megabecquerels).	N. For storage only, (originally used for well logging).

O. Cobalt 60.	O. Sealed sources as listed on Attachment 1 to Item 5 of License Application dated May 22, 1990.	O. 12 sources, 16 curies each, 12 sources, 72 curies each, 1 source 1352 curies, 1 source 642 curies, and 1 source 5000 curies.	O. In reactor pool, for storage only.
P. Nickel 63.	P. Sealed source (manufactured under a specific license issued by the U.S. Nuclear Regulatory Commission, an Agreement State or a licensing state).	P. No single source to exceed 50 millicuries (1850 megabecquerels), 2 curies (74 gigabecquerels), total.	P. To be used in manufactured or custom-made electron capture devices on gas chromatographs.
Q. Krypton 85.	Q. Sealed source (manufactured under a specific license issued by the U.S. Nuclear Regulatory Commission, an Agreement State or a licensing state).	Q. 100 millicuries (3700 megabecquerels).	Q. To be used for neutralizing charge on aerosols particles.
R. Cesium 137.	R. Sealed source (U.S. Nuclear S-289).	R. 500 millicuries (18.5 gigabecquerels).	R. For storage only.
S. Cesium 137.	S. Sealed source (ICN Ser.No. Cs 1490).	S. 100 millicuries (3700 megabecquerels).	S. To be used only on main campus as a check source.
T. Cesium 137.	T. Sealed source (Nuclear Chicago Ser.No. 415).	T. 100 millicuries (3700 megabecquerels).	T. For storage only.
U. Cesium 137.	U. Sealed source (Nuclear Chicago Ser.No.187370).	U. 500 millicuries (18.5 gigabecquerels).	U. For storage only.
V. Cesium 137.	V. Sealed source (U.S. Nuclear Model No. 375 Ser.No. G-338).	V. 300 millicuries (11.1 gigabecquerels).	V. For storage only.

W. Cesium 137.	W. Sealed source (Gammatron Model No. GT-GHP).	W. 125 millicuries (4625 megabecquerels).	W. To be used as components of tools for well logging.
X. Cesium 137.	X. Sealed source (J.L. Shepherd Model # 6810).	X. 600 millicuries (22.2 gigabecquerels).	X. To be used only on main campus in a J.L. Shepherd Model 142S panoramic irradiator/calibrator for irradiating and calibrating dosimetry devices.
Y. Radium 226.	Y. Sealed sources.	Y. No single source to exceed 50 millicuries (1850 megabecquerels), 100 millicuries (3700 megabecquerels) total.	Y. For storage only (formerly check sources for liquid scintillation counters.)
Z. Plutonium 238.	Z. Sealed sources (Texas Nuclear Model No. 9256, Ser No. 0088, Amersham Ser No. 8133-1).	Z. 0.1 gram.	Z. For storage only.
AA. Americium 241/ Beryllium.	AA. Sealed sources.	AA. 10 sources, 32 curies (1184 gigabecquerels) each source.	AA. For storage only.
BB. Americium 241/ Beryllium.	BB. Sealed source (Gammatron Model AN-HP, reencapsulated, previously Monsanto Model 1502).	BB. 3 curies (111 gigabecquerels).	BB. To be used as components of tools for well logging.
CC. Americium 241/ Beryllium.	CC. Sealed source (Monsanto MRC 1503).	CC. 2.5 curies (92.5 gigabecquerels).	CC. To be used only on main campus for calibration.
DD. Americium 241.	DD. Sealed source (Monsanto MRC-Am-1550).	DD. 570 millicuries (21090 megabecquerels).	DD. To be used only on main campus as a charge neutralizer.

EE. Americium 241.	EE. Sealed source (Monsanto Am-313).	EE. 472 millicuries (17464 mega- becquerels).	EE. For storage only.
FF. Americium 241.	FF. Sealed source (Monsanto Am-604).	FF. 229 millicuries (8473 mega- becquerels).	FF. For storage only.
GG. Americium 241/ Beryllium.	GG. Sealed source (Troxler Electronic Laboratories Drawing # A-100608, Rev. A).	GG. 100 millicuries (3700 mega- becquerels).	GG. For storage only (formerly used in old Troxler Model 105A (now model 1257) Depth Moisture Gauge).
HH. Americium 241/ Beryllium.	HH. Sealed source (Troxler Electronic Laboratories Drawing # A-100608, Rev. A).	HH. 100 millicuries (3700 mega- becquerels).	HH. For storage only (formerly used in Troxler Model 1257 Depth Moisture Gauge).
II. Americium 241/ Beryllium.	II. Sealed source (Troxler Electronic Laboratories Drawing # A-100608, Rev. A).	II. 100 millicuries (3700 mega- becquerels).	II. For storage only (formerly used in old Troxler Model 217- 104A (now model 1205) Surface Moisture Gauge).
JJ. Americium 241/ Beryllium/ Cesium 137.	JJ. Combined Sealed source (Troxler Electronic Laboratories Drawing No. A-100281).	JJ. 50 millicuries (1850 megabecquerels) of Am-241, 10 millicuries (370 megabecquerels) of Cs-137.	JJ. For storage only. (formerly used in Troxler Model 2401 surface moisture/ density gauge).
KK. Americium 241/ Beryllium.	KK. Sealed source (Campbell Pacific Nuclear Model CPN- 131).	KK. No single source to exceed 50 millicuries (1850 megabecquerels).	KK. To be used in CPN Corporation Model 500 series depth probes for measuring moisture in soil.

LL. Americium 241/ Beryllium.	LL. Sealed source (Troxler Electronic Laboratories Drawing No. A-102700).	LL. No single source to exceed 10 millicuries (370 megabecquerels).	LL. To be used in Troxler hydroprobe Model 3320/3330 series moisture gauges.
MM. Americium 241/ Beryllium.	MM. Sealed sources obtained from United Nuclear, Richland, Washington.	MM. 250 millicuries (9250 megabecquerels) each source, 4 sources total.	MM. For storage only at WSU, Tri Cities.

Radioactive Materials License



Page 1 of 1 Pages

License Number WN-C003-1

Amendment No. 44

Washington State University
Pullman, Washington 99164-1302

Attention: Leonard E. Porter, Ph.D.
Radiation Safety Officer

In accordance with letter and attachment dated December 22, 1995, Radioactive Materials License Number WN-C003-1 is amended as follows:

Subitem NN of Items 6, 7 and 8 is added:

6.NN. Californium 252.	7.NN. Sealed Source (Frontier Technology Corp. Model 100 Series).	8.NN. 5.3 millicuries (196.1 megabecquerels).
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License Conditions 9.NN. and 41. K. are added:

9.NN. To be used for calibration of neutron detectors.

41.K. Letter and attachment dated December 22, 1995, RE: Adding Cf-252.

FOR THE STATE OF WASHINGTON DEPARTMENT OF HEALTH

Date March 19, 1996
(96-01-15)

PW
By *Debra McBaugh*
Debra McBaugh
Radioactive Materials Licensing

Radioactive Materials License



Page 1 of 1 Pages

WN-C003-1

License Number

Amendment No. 4

WASHINGTON STATE UNIVERSITY
Pullman, Washington 99164-1302

Attention: Leonard E. Porter, Ph.D.
Radiation Safety Officer

In accordance with letter and attachment dated April 16, 1996, Radioactive Materials License Number WN-C003-1 is amended as follows:

Item 8.NN and License Condition 33 are amended to read:

8.NN. 7.2 millicuries (266.4 megabecquerels).

33. The licensee shall conduct a physical inventory every six months to account for all sealed sources received and possessed under the license. The records of the inventories shall be maintained for three years from the date of the last inspection by the department. They shall include activities, radionuclides, source descriptions, serial numbers, locations, clearly legible name of the person conducting the inventory, and the date of the inventory.

The licensee shall conduct a physical inventory every three months to account for the sealed sources listed in Subitems W and BB. The records of the inventories shall be maintained for inspection by the department, and shall include the quantities and kinds of radioactive material, location of the sealed sources, and the date of the inventory.

License Condition 41.L is added:

41.L. Letter and attachment dated April 16, 1996, RE: increasing CF-252 possession limit and correcting typographical error.

FOR THE STATE OF WASHINGTON DEPARTMENT OF HEALTH

Date May 7, 1996
(96-04-37)

By 
Pamela J. Walsh
Radioactive Materials Licensing

STATE OF WASHINGTON
RADIOACTIVE MATERIALS LICENSE



Page 1 of 1 Page

License Number: WN-C003-1

Amendment No. 46

WASHINGTON STATE UNIVERSITY
Pullman, Washington 99164-1302

Attention: Leonard E. Porter, Ph.D.
Radiation Safety Officer

In accordance with letter dated July 15, 1996, Radioactive Materials License Number WN-C003-1 is amended as follows:

Subitem 8.K. (of Attachment 2) is amended to read:

8.K. No single source to exceed 200 millicuries (7400 megabecquerels), subject to a maximum of 25 curies (925 gigabecquerels).

License Condition 41.M. is added:

41.M. Letter dated July 15, 1996, RE: Increasing maximum activity of H-3.

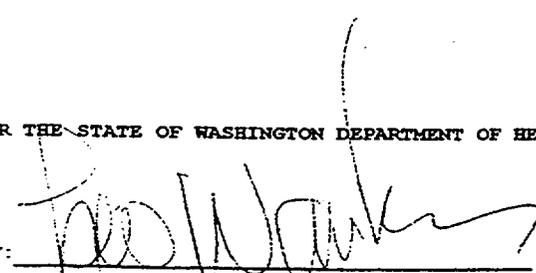
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APR 24 1997

RADIATION SAFETY

Date: April 4, 1997
(97-03-30)

FOR THE STATE OF WASHINGTON DEPARTMENT OF HEALTH

By: 
Leo Wainhouse
Radioactive Materials Licensing

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JUN 27 1997

STATE OF WASHINGTON
RADIOACTIVE MATERIALS LICENSE



RADIATION SAFETY

Page 1 of 1 Page

License Number: WN-C003-1

Amendment No. 47

WASHINGTON STATE UNIVERSITY
Pullman, Washington 99164-1302

Attention: Leonard E. Porter, Ph.D.
Radiation Safety Officer

In accordance with letter dated June 5, 1997, Radioactive Materials License Number WN-C003-1 is amended as follows:

License Condition 10.H. is amended to read:

10.H. Washington State University
14204 NE Salmon Creek Avenue
Vancouver, Washington

License Condition 41.N. is added:

41.N. Letter dated June 5, 1997; Re: Change of location of facility in Vancouver, Washington.

FOR THE STATE OF WASHINGTON DEPARTMENT OF HEALTH

Date: June 23, 1997
(97-06-15)

By: C. Della F. Leo
Leo Wainhouse
Radioactive Materials Licensing



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OCT 01 1997

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STATE OF WASHINGTON
RADIOACTIVE MATERIALS LICENSE

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License Number: WN-C003-1

Amendment No. 48



WASHINGTON STATE UNIVERSITY
Pullman, Washington 99164-1302

Attention: Leonard E. Porter, Ph.D.
Radiation Safety Officer

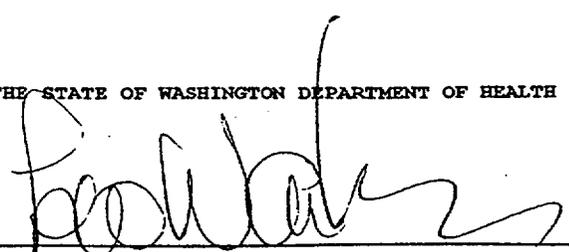
In accordance with letter and attachments dated August 13, 1997,
Radioactive Materials License Number WN-C003-1 is amended as follows:

License Condition 41.0. is added:

41.0. Letter and attachments dated August 13, 1997; RE: Change in
membership of the Radiation Safety Committee.

Date: September 25, 1997
(97-08-23)

FOR THE STATE OF WASHINGTON DEPARTMENT OF HEALTH

By: 
Leo Wainhouse
Radioactive Materials Licensing



STATE OF WASHINGTON
RADIOACTIVE MATERIALS LICENSE



Page 1 of 1 Page

License Number: WN-C003-1

Amendment No. 49

WASHINGTON STATE UNIVERSITY
Pullman, Washington 99164-1302

Attention: Leonard E. Porter, Ph.D.
Radiation Safety Officer

In accordance with letter dated December 11, 1997, Radioactive Materials License Number WN-C003-1 is amended as follows:

License Condition 10.I. is amended to read:

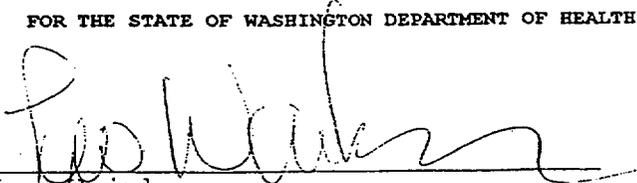
10.I. Washington State University, Tri-Cities
2710 University Drive
Richland, Washington

License Condition 41.P. is added:

41.P. Letter and attachments dated December 11, 1997; RE: Change of street name for W.S.U. Tri-Cities Campus.

FOR THE STATE OF WASHINGTON DEPARTMENT OF HEALTH

Date: December 29, 1997
(97-12-21)

By: 
① Leo Wainhouse
Radioactive Materials Licensing



STATE OF WASHINGTON
RADIOACTIVE MATERIALS LICENSE



Page 1 of 1 Page

License Number: WN-C003-1

Amendment No. 50

WASHINGTON STATE UNIVERSITY
Pullman, Washington 99164-1302

Attention: Leonard E. Porter, Ph.D.
Radiation Safety Officer

In accordance with letters dated 13 & 22 April, and 19 June 1998,
Radioactive Materials License Number WN-C003-1 is amended as follows:

License Condition 10.G. is amended to read:

10.G. Washington State University
1838 B Terminal Drive
Richland, Washington

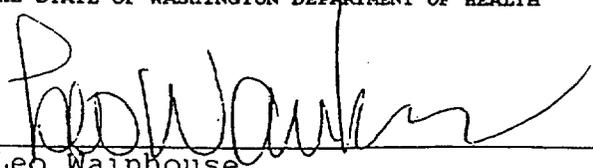
License Conditions 10.J. & 41.Q. is added:

10.J. Washington State University
Building Number 3746-A
300 Area U.S. DOE Hanford Site
Richland, Washington 99352

41.Q. Letters dated 13 & 22 April, and 19 June 1998; RE: Deleting
and adding locations of use.

Date: July 13, 1998
(98-04-18; 98-04-26;
(98-06-21)

FOR THE STATE OF WASHINGTON DEPARTMENT OF HEALTH

By: 
① Leo Wainhouse
Radioactive Materials Licensing

STATE OF WASHINGTON
RADIOACTIVE MATERIALS LICENSE



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License Number: WN-C003-1

Amendment No. 51

WASHINGTON STATE UNIVERSITY
Pullman, Washington 99164-1302

Attention: Leonard E. Porter, Ph.D.
Radiation Safety Officer

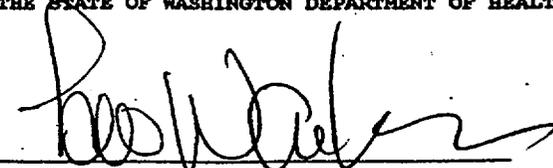
In accordance with letter and attachments dated 14 August 1998, Radioactive Materials License Number WN-C003-1 is amended as follows:

License Condition 41.R. is added:

41.R. Letters and attachments dated 14 April 1998; RE: Authorization for a field use study starting 1 September 1998 through 30 June 1999.

FOR THE STATE OF WASHINGTON DEPARTMENT OF HEALTH

Date: August 24, 1998
(98-08-34)

By: 
Leo Wainhouse
Radioactive Materials Licensing

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STATE OF WASHINGTON
RADIOACTIVE MATERIALS LICENSE



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License Number: WN-C003-1

Amendment No. 52

WASHINGTON STATE UNIVERSITY
Radiation Safety Office
Pullman, Washington 99164-1302

Attention: Leonard E. Porter, Ph.D.
Radiation Safety Officer

In accordance with letter and attachments dated 14 May 1999, Radioactive Materials License Number WN-C003-1 is amended as follows:

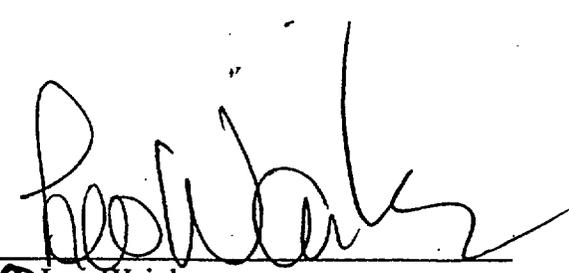
License Condition 41. S. is added:

41.S. Letter and attachments dated 14 May 1999; RE: Authorization for a field use study starting 1 June 1999 through 1 October 1999.

FOR THE STATE OF WASHINGTON DEPARTMENT OF HEALTH

Date: 18 May 1999
(99-05-19)

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By: 
Leo Wainhouse
Radioactive Materials Licensing



STATE OF WASHINGTON
RADIOACTIVE MATERIALS LICENSE



Page 1 of 1 Page

License Number: WN-C003-1

Amendment No. 53

WASHINGTON STATE UNIVERSITY
Radiation Safety Office
Pullman, Washington 99164-1302

Attention: Leonard E. Porter, Ph.D.
Radiation Safety Officer

In accordance with letter and attachments dated 1 September 1999, Radioactive Materials License Number WN-C003-1 is amended as follows:

License Condition 41. T. is added:

41.T. Letter and attachments dated 1 September 1999; RE: Change in membership of the Radiation Safety Committee.

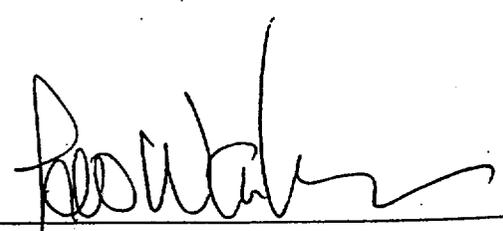
FOR THE STATE OF WASHINGTON DEPARTMENT OF HEALTH

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SEP 23 1999

Date: 7 September 1999
(99-09-01)

RADIATION SAFETY

By: 

Leo Wainhouse
Radioactive Materials Licensing



STATE OF WASHINGTON
RADIOACTIVE MATERIALS LICENSE



Page 1 of 1 Page

License Number: WN-C003-1

Amendment No. 54

WASHINGTON STATE UNIVERSITY
Radiation Safety Office
Pullman, Washington 99164-1302

Attention: Leonard E. Porter, Ph.D.
Radiation Safety Officer

In accordance with the letter dated 7 October 1999, Radioactive Materials License Number WN-C003-1 is amended as follows:

License Condition 10.K. is added:

10.K. WSU Cooperative Extension Center
303 6th Street
Davenport, WA 99122

License Condition 41.U. is added:

41.U. Letter dated 7 October 1999; RE: Request of new location of use.

FOR THE STATE OF WASHINGTON DEPARTMENT OF HEALTH

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RADIATION SAFETY

Date: 18 October 1999
(99-10-23)

By: *Bruce Busby*
Bruce Busby
Radioactive Materials Licensing