



STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

3100 Port of Benton Blvd • Richland, WA 99354 • (509) 372-7950

April 9, 2008

**RECEIVED**  
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**EDMC**

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Waste Management Program  
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Mr. Stuart Harris  
Confederated Tribes of the Umatilla  
Indian Reservation  
P.O. Box 638  
Pendleton, Oregon 97801

Re: Hanford Site Air Operating Permit, Draft Revision D (2006 Renewal) for Public Comment and Review by Affected States

Dear Ladies and Gentlemen:

Per Washington Administrative Code (WAC) 173-401-725, 173-401-800, and 173-401-820, the Department of Ecology, as the permitting authority, issues this draft Revision D of the *Hanford Site Air Operating Permit* (AOP), #00-05-006, Renewal 1, for public comment and review by affected states. Ecology will conduct a 30-day public comment period from April 28 to May 28, 2008, in accord with WAC 173-401-800(3).



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This draft revision adds Attachment 4 to the AOP. Attachment 4 is comprised of a Department of Health license for Environmental Assessment Services' sample preparation work at the Applied Process Engineering Laboratory. The company prepares radioactive and chemical environmental samples for analysis for Hanford's environmental monitoring programs. Most of the samples processed in the laboratory will be at or near environmental background levels. The Department of Health has issued their license to Environmental Assessment Services Radioactive Air Emissions License 06 (RAEL-06). RAEL-06 regulates radioactive air emissions; therefore, this revision is treated as a significant AOP modification according to WAC 173-401-725.

This draft revision includes two enclosures. Enclosure 1 is the Radioactive Air Emissions License RAEL-06, as the new Attachment 4 of the Hanford AOP. Enclosure 2 is the Statement of Basis (SOB) for the license as required by WAC 173-401-700(8). Related documents for public review are available online at:  
<http://www.ecy.wa.gov/programs/nwp/commentperiods.htm>.

Public members interested in the revision can review the draft at Ecology's Nuclear Waste Program Resource Center in Richland. Please call 509-372-7920 for an appointment. Review of the draft revision is also available at Hanford's public information repositories as listed below.

Gonzaga University  
Foley Center  
502 E Boone Avenue  
Spokane, Washington  
Attn: Linda Pierce 509-323-3834

Portland State University  
Branford Price Millar Library  
1875 SW Park Avenue  
Portland, Oregon  
Attn: Don Frank 503-725-4132

U.S. Department of Energy Reading Room  
Consolidated Information Center, Room 101-L  
2770 University Drive  
Richland, Washington  
Attn: Janice Parthree 509-372-7443

University of Washington  
Suzzallo Library  
Government Publications Division  
Seattle, Washington  
Attn: Eleanor Chase 206-543-4664

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Ecology does not plan to hold a public hearing. But if the public expresses significant interest, one may be scheduled. After the public comment period, Ecology will consider all comments and issue a responsiveness summary. If, after consideration of comments, Ecology determines that we will approve the revision, Ecology will then submit the proposed AOP revision to the U.S. Environmental Protection Agency for a 45-day review. The final issuance of the revision will also include administrative amendments (WAC 173-401-720[1][e]) in the AOP Standard Terms and General Conditions (STGC) and STGC SOB identifying the existence of Attachment 4 within the AOP.

If you have questions regarding this draft revision, please contact Oliver Wang at 509-372-7932 or [owan461@ecy.wa.gov](mailto:owan461@ecy.wa.gov).

Sincerely,



Jane A. Hedges  
Program Manager  
Nuclear Waste Program



Oliver Wang, P.E.  
Environmental Engineer  
Nuclear Waste Program

pll

Enclosures (2)

cc: cc w/enc:

Davis Zhen, EPA  
Dennis Bowser, USDOE  
Mary Jarvis, USDOE  
Dave Lauer, BCAA

John Schmidt, WDOH  
Administrative Record: AOP  
Environmental Portal

cc w/o enc:

Roylene Cunningham, EPA  
Doug Hardesty, EPA  
Nancy Helm, EPA  
Peter Garcia, USDOE  
Robert Haggard, BNI  
Lucinda Penn, CH2M  
John Bates, FH  
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Dale Dyekman, FH  
Nancy Homan, FH

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Patrick Weiher, Johnson Controls, Inc.  
Matthew Barnett, PNL  
Joan Woolard, WCH  
Gabriel Bohnee, NPT  
Susan Leckband, HAB  
Andy Ginsburg, ODEQ  
Ken Niles, ODOE  
John Martell, WDOH

**Enclosure 1**

AOP Attachment 4, Radioactive Air Emissions License RAEL-06 for Environmental Assessment Services

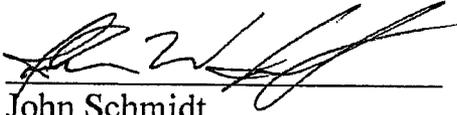
**Attachment 4**

Radioactive Air Emissions License (RAEL-06)  
For  
Environmental Assessment Services

State of Washington Department of Health (Health)  
The Division of Environmental Health  
The Office of Radiation Protection  
Air Emissions and Defense Waste  
111 Israel Road, Town Center 2  
P.O. Box 47827  
Olympia, WA 98504-7827

The permittee is authorized to operate the radioactive air emission units identified in this Air Operating Permit Number 00-05-006.

Reviewed by:

  
\_\_\_\_\_

John Schmidt  
Radiation Health Physicist  
Office of Radiation Protection  
Department of Health  
State of Washington

4-1-08  
Date

Approved by:

  
\_\_\_\_\_

Earl Fordham  
Eastern Regional Director  
Office of Radiation Protection  
Department of Health  
State of Washington

4-1-08  
Date



STATE OF WASHINGTON  
 DEPARTMENT OF HEALTH  
 OFFICE OF RADIATION PROTECTION  
 309 Bradley Blvd., Suite 201 • Richland, Washington 99352  
 TDD Relay Service: 1-800-833-6388

AIR 08-108  
 NOC ID 728  
 RAEL-06

January 22, 2008

Mr. Brett Tiller, President  
 Environmental Assessment Services  
 350 Hills Street  
 P.O. Box 265  
 Richland, Washington 99352

Dear Mr. Tiller:

Pursuant to Chapter 246-247 of the Washington Administrative Code (WAC), your application is approved according to the enclosed Radioactive Air Emissions License (RAEL) -06 for:

**Operation of the Environmental Assessment Services (EAS) Sample Processing Facility  
 (Room 133 - Applied Engineering Laboratory [APEL])**

The conditions, controls, monitoring requirements, and limitations of this approval must be observed in order for you to be in compliance with Chapter 246-247 WAC. Failure to meet any provision of this approval may result in the revocation of approval, the issuance of Notices of Violation, or other enforcement actions under WAC 246-247-100.

This approval applies to these Notices of Construction (NOCs) only. It does not apply to future projects without further review and approval by the Washington State Department of Health.

If you have any questions or concerns regarding this approval, please feel free to contact me at (509) 946-3798, or John Schmidt at (509) 946-3874.

Sincerely,

P. John Martell, Manager  
 Radioactive Air Emissions Section

Enclosure: RAEL-06

cc: Anine Grumbles, DOH  
 John Schmidt, DOH



**RADIOACTIVE AIR EMISSIONS LICENSE**

**For**

**Environmental Assessment Services**

**Issued by**

**The State of Washington Department of Health**

**Office of Radiation Protection**

**Radioactive Air Emissions**

**License Number:**

**RAEL-006**

Under the Nuclear Energy and Radiation Control Act, RCW 70.98 the State Clean Air Act, RCW 70.94 and the Radioactive Air Emissions Regulations, Chapters 246-247 WAC, and in reliance on statements and representations made by the Licensee designated below before the effective date of this license, the Licensee is authorized to vent radionuclides from the emission units identified in this license. The State of Washington Department of Health generates this license subject to all applicable rules. This license does not relieve the Licensee of compliance with the NRC License or other State or Federal agencies jurisdiction pertaining to hazardous air pollutants.

*Licensee*

Environmental Assessment Services  
PO Box 265  
Richland, Washington 99352

**Issue Date: January 22, 2008**

**Effective Date: January 22, 2008**

**Expiration Date: December 31, 2011**

DATED at Richland, Washington the 22nd day of January 2008.

Approved By:



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P. John Martell  
Manager, Radioactive Air Emissions

January 22, 2008

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The following are state only applicable requirements from Chapter 246-247 of the Washington Administrative Code.

### ***Emission Standards***

The emission of radionuclides to the ambient air from the Environmental Assessment Services (EAS) shall not exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent of 10 mrem per year. [WAC 246-247-040(1)]

All radioactive material purchases shall be approved through the Environmental Assessment Services Radiation Safety Officer (EASRSO) in order to assure that no user can bring material into the emission unit without being assessed. [WAC 246-247-040(5), WAC 246-247-060(5)]

The EASRSO will oversee all radioactive materials use in the emission Unit. When proposals are made to the EASRSO for additional radionuclides, increases in quantities of radionuclides, or radionuclides are requested to be moved from one location to another, EASRSO staff will perform an evaluation of those changes. This evaluation is to assess estimates of any potential increase in exposure and total exposure to the MEI. [WAC 246-247-040(5), WAC 246-247-060(5)]

Evaluations will be performed using the following protocol as applicable:

1. Contamination surveys are performed by laboratory personnel after uses of radioactive materials and on a required periodicity.
  2. Periodic visits of labs are performed by Radiation Safety Office personnel. The lab inspection regimen includes an examination of radioactive materials use logs and a contamination survey.
  3. The EASRSO will notify the WDOH Air Emissions staff when proposed new activities may increase the potential to emit radionuclides to the air and file a notice of construction and follow the procedures for a license to operate.
- [WAC 246-247-040(5), WAC 246-247-060(5)]

### ***WAC 246-247 DEFINITIONS (WAC 246-247-030 JUNE 26, 2005)***

Terms used in this chapter have the definitions set forth below with reference to radioactive air emissions.

(1) "Abatement technology" means any mechanism, process or method that has the potential to reduce public exposure to radioactive air emissions. Abatement control

features include automatic mechanisms and administrative controls used in the operation and control of abatement technology from entry of radionuclides into the ventilated vapor space to release to the environment.

(2) "Administrative control" means any policy or procedure that limits the emission of radionuclides.

(3) "ALARA" means as low as reasonably achievable making every reasonable effort to maintain exposures to radiation as far below the dose standards in this chapter as is practical, consistent with the purpose for which the licensed activity is undertaken, taking into account the state of technology, the economics of improvements in relation to the state of technology, the economics of improvements in relation to benefits to the public health and safety, and other socioeconomic considerations, and in relation to the utilization of nuclear energy, ionizing radiation, and radioactive materials in the public interest. See WAC 246-220-007.

(4) "As low as reasonably achievable control technology" (ALARACT) means the use of radionuclide emission control technology that achieves emission levels that are consistent with the philosophy of ALARA. ALARACT compliance is demonstrated by evaluating the existing control system and proposed nonsignificant modifications in relation to applicable technology standards and other control technologies operated successfully in similar applications. In no event shall application of ALARACT result in emissions of radionuclides that could cause exceedance of the applicable standards of WAC 246-247-040. See the definition of ALARA in this section. Note that ALARACT is equivalent to, but replaces, RACT in the May 7, 1986, version of chapter 173-480 WAC.

(5) "Annual possession quantity" means the sum of the quantity of a radionuclide on hand at the beginning of the calendar year and the quantity of that radionuclide received or produced during the calendar year.

(6) "Best available radionuclide control technology" (BARCT) means technology that will result in a radionuclide emission limitation based on the maximum degree of reduction for radionuclides from any proposed newly constructed or significantly modified emission units that the licensing authority determines is achievable on a case-by-case basis. A BARCT compliance demonstration must consider energy, environmental, and economic impacts, and other costs through examination of production processes, and available methods, systems, and techniques for the control of radionuclide emissions. A BARCT compliance demonstration is the conclusion of an evaluative process that results in the selection of the most effective control technology from all known feasible alternatives. In no event shall application of BARCT result in emissions of radionuclides that could exceed the applicable standards of WAC 246-247-040. Control technology that meets BARCT requirements also meets ALARACT requirements. See WAC 173-480-030 and 246-247-120.

(7) "Committed effective dose equivalent" (CEDE) means the sum of the products of absorbed dose from internally deposited radionuclides and appropriate factors to account

for differences in biological effectiveness due to the quality of radiation and its distribution in the body of reference man over a fifty-year period.

(8) "Construction" means fabrication, erection, or installation of a new building, structure, plant, process, or operation within a facility that has the potential to emit airborne radionuclides. Construction includes activities of a permanent nature aimed at completion of the emission unit, such as pouring concrete, putting in a foundation, or installing utilities directly related to the emission unit. It does not include preliminary activities such as tests to determine site suitability, equipment procurement and storage, site clearing and grading, and the construction of ancillary buildings.

(9) "Decommissioning" means actions taken to reduce or eliminate the potential public health and safety impacts of a building, structure, or plant that has permanently ceased operations, including, but not limited to, actions such as decontamination, demolition, and disposition.

(10) "Emission unit" means any single location that emits or has the potential to emit airborne radioactive material. This may be a point source, nonpoint source, or source of fugitive emissions.

(11) "Facility" means all buildings, structures, plants, processes, and operations on one contiguous site under control of the same owner or operator.

(12) "Fugitive emissions" are radioactive air emissions which do not and could not reasonably pass through a stack, vent, or other functionally equivalent structure, and which are not feasible to directly measure and quantify.

(13) "Indication device" means any method or apparatus used to monitor, or to enable monitoring, the operation of abatement controls or the potential or actual radioactive air emissions.

(14) "License" means a radioactive air emissions license, either issued by the department or incorporated by the department as an applicable portion of an air operating permit issued by the department of ecology or a local air pollution control authority, with requirements and limitations listed therein to which the licensed or permitted party must comply. Compliance with the license requirements shall be determined and enforced by the department.

(15) "Maximally exposed individual" (MEI) means any member of the public (real or hypothetical) who abides or resides in an unrestricted area, and may receive the highest TEDE from the emission unit(s) under consideration, taking into account all exposure pathways affected by the radioactive air emissions

(16) "Modification" means any physical change in, or change in the method of operation of, an emission unit that could increase the amount of radioactive materials emitted or may result in the emission of any radionuclide not previously emitted. This definition

includes the cleanup of land contaminated with radioactive material, the decommissioning of buildings, structures, or plants where radioactive contamination exists, and changes that will cause an increase in the emission unit's operating design capacity. This definition excludes routine maintenance, routine repair, replacement-in-kind, any increases in the production rate or hours of operation, provided the emission unit does not exceed the release quantities specified in the license application or the operating design capacity approved by the department, addition of abatement technology as long as it is not less environmentally beneficial than existing, approved controls, and changes that result in an increase in the quantity of emissions of an existing radionuclide that will be offset by an equal or greater decrease in the quantity of emissions of another radionuclide that is deemed at least as hazardous with regard to its TEDE to the MEI.

(17) "Monitoring" means the measurement of radioactive material released to the ambient air by means of an in-line radiation detector, and/or by the withdrawal of representative samples from the effluent stream. Ambient air measurements may be acceptable for nonpoint sources and fugitive emissions.

(18) "Nonpoint source" is a location at which radioactive air emissions originate from an area, such as contaminated ground above a near-surface waste disposal unit, whose extent may or may not be well-defined.

(19) "Notice of construction" (NOC) is an application submitted to the department by an applicant that contains information required by WAC 246-247-060 for proposed construction or modification of a registered emission unit(s), or for modification of an existing, unregistered emission unit(s).

(20) "Point source" is a discrete, well-defined location from which radioactive air emissions originate, such as a stack, vent, or other functionally equivalent structure.

(21) "Potential-to-emit" means the rate of release of radionuclides from an emission unit based on the actual or potential discharge of the effluent stream that would result if all abatement control equipment did not exist, but operations are otherwise normal. Determine the potential-to-emit by one of the following methods:

- (a) Multiply the annual possession quantity of each radionuclide by the release fraction for that radionuclide, depending on its physical state. Use the following release fractions:
  - (i) 1 for gases;
  - (ii)  $10^{-3}$  for liquids or particulate solids; and
  - (iii)  $10^{-6}$  for solids.

Determine the physical state for each radionuclide by considering its chemical form and the highest temperature to which it is subjected. Use a release fraction of

one if the radionuclide is subjected to temperatures at or above its boiling point; use a release fraction of  $10^{-3}$  if the radionuclide is subjected to temperatures at or above its melting point, but below its boiling point. If the chemical form is not known, use a release fraction of one for any radionuclide that is heated to a temperature of one hundred degrees Celsius or more, boils at a temperature of one hundred degrees Celsius or less, or is intentionally dispersed into the environment. Other release fractions may be used only with the department's approval; or

- (b) Perform a back-calculation using measured emission rates and in situ measurements of the control equipment efficiencies, as approved by the department; or
- (c) Measure the quantities of radionuclides captured in each control device, coupled with in situ measurements of the control equipment efficiencies, as approved by the department; or
- (d) Sample the effluent upstream from all control devices, as approved by the department; or
- (e) Use an alternative method approved by the department.

(22) "Replacement-in-kind" means the substitution of existing systems, equipment, components, or devices of an emission unit's control technology with systems, equipment, components, or devices with equivalent, or better, performance specifications that will perform the same function(s).

(23) "Routine" means:

- (a) Maintenance, repair, or replacement-in-kind performed on systems, equipment, components, or devices of an emission unit's abatement technology as a planned part of an established inspection, maintenance, or quality assurance program that does not increase the emission unit's operating design capacity; or
- (b) Normal, day-to-day operations of a facility.

(24) "Sealed source" means radioactive material that is permanently bonded or fixed in a capsule or matrix, or radioactive material in airtight containers, designed to prevent release and dispersal of the radioactive material under the most severe conditions encountered in normal use and handling.

(25) "Significant" means the potential-to-emit airborne radioactivity at a rate that could increase the TEDE to the MEI by at least 1.0 mrem/yr as a result of a proposed modification.

(26) "Total effective dose equivalent" (TEDE) means the sum of the dose equivalent due to external exposures and the CEDE due to internal exposures.

(27) "Uranium fuel cycle" means the operations of milling uranium ore, chemical conversion of uranium, isotopic enrichment of uranium, fabrication of uranium fuel, generation of electricity in a nuclear power plant that uses uranium fuel, and reprocessing of spent uranium fuel, to the extent that these operations solely support the production of electrical power for public use.

Excluded are mining operations, waste disposal sites, transportation of any radioactive material, and the reuse of recovered nonuranium special nuclear and by-product materials from the cycle.

### ***Applicability***

The standards and requirements of this chapter apply to point sources, nonpoint sources, and fugitive emissions. (WAC 246-247-010(2))

The standards and requirements of this chapter apply to stationary and mobile emission units, whether temporary or permanent. (WAC 246-247-010(3))

The control technology standards and requirements of this chapter apply to the abatement technology and indication devices of facilities and emission units subject to this chapter. Control technology requirements apply from entry of radionuclides into the ventilated vapor space to the point of release to the environment. (WAC 246-247-010(4))

### ***Exemptions***

The following types of facilities or sources of radiation are exempt from the requirements of this chapter because they release no airborne radioactivity, or they prima facie comply with the standards in WAC 246-247-040, or they are already adequately regulated under other requirements:

- (a) Users of only sealed sources;
- (b) Sealed sources;
- (c) Accelerators less than 200 MeV;
- (d) Nuclear-powered vessels underway or moored dockside unless under a maintenance condition with a potential-to-emit;
- (e) Uranium mill tailings piles disposed of under 40 CFR Part 192 (WAC 246-247-020(1))

No exemptions from the standards in WAC 246-247-040 will be granted. (WAC 246-247-020(2))

A nonfederal facility may request exemption from some of the requirements of WAC 246-247-060 and 246-247-075 if the potential-to-emit, for the emission unit(s) under consideration, results in compliance at level 1 of the COMPLY computer code or level 1 of the NCRP's Commentary No. 3, or equivalent as approved by the department. **(WAC 246-247-020(b))**

The facility shall submit all the data necessary to make the exemption determinations of (b) and (c) of this subsection. The department shall determine if any exemptions apply. **(WAC 246-247-020(2)(d))**

The department may require a facility with exempt emission units to submit a radioactive air emissions report to confirm compliance with applicable standards. The department reserves the right to conduct inspections and audits of the facility to confirm the status of its exempt emission units. **(WAC 246-247-020(3))**

(4) Naturally occurring airborne radionuclides are exempt from the requirements of this chapter unless the concentrations or rates of emissions have been enhanced by industrial processes. **(WAC 246-247-020(4))**

### ***General standards***

Standards for radioactive air emissions in the state of Washington are contained in WAC 173-480-040, 173-480-050, and 173-480-060. Additional standards for NRC licensees are contained in 10 CFR 20.1101 (as effective on January 9, 1997). In accordance with WAC 173-480-050(3), the department shall enforce the most stringent standard in effect, notwithstanding any agreement between EPA and any other agency, including those agreements made pursuant to 42 USC 7412(d)(9). **(WAC 246-247-040(1))**

In addition to the radioactive air emission standards of subsection (1) of this section, the department's radioactive materials licensees shall comply with the limitations on radioactive air emissions contained in WAC 246-221-070. **(WAC 246-247-040(2))**

All new construction and significant modifications of emission units commenced after August 10, 1988 (the date this chapter originally became effective) shall utilize BARCT (see Appendix B). **(WAC 246-247-040(3))**

All existing emission units and nonsignificant modifications shall utilize ALARACT (see Appendix C). **(WAC 246-247-040(4))**

In order to implement these standards, the department may set limits on emission rates for specific radionuclides from specific emission units and/or set requirements and limitations on the operation of the emission unit(s) as specified in a license. **(WAC 246-247-040(5))**

All emissions of radionuclides, including those due to emergency conditions resulting from startup, shutdown, maintenance activities, or process upsets are subject to the standards of this section and, therefore, subject to the enforcement actions of WAC 246-247-100. (WAC 246-247-040(6))

### ***Applications, registration and licensing***

For those facilities subject to the operating permit regulations in chapter 173-401 WAC, the radioactive air emissions license will be incorporated as an applicable portion of the air operating permit issued by the department of ecology or a local air pollution control authority. The department will be responsible for determining the facility's compliance with and enforcing the requirements of the radioactive air emissions license. (WAC 2460-247-060)

Requirements for new construction or modification of emission units.

- (a) Early in the design phase, the applicant shall submit a NOC containing the information required in Appendix A (WAC 246-247-110).
- (b) Within thirty days of receipt of the NOC, the department shall inform the applicant if additional information is required. The department may determine, on the basis of the information submitted, that the requirements of BARCT or ALARACT have been met, or may require the applicant to submit a BARCT or ALARACT demonstration compatible with Appendix B or C, respectively.
- (c) Within sixty days of receipt of all required information, the department shall issue an approval or denial to construct. The department may require changes to the final proposed control technology.
- (d) The applicant may request a phased approval process by so stating and submitting a limited application. The department may grant a conditional approval to construct for such activities as would not preclude the construction or installation of any control or monitoring equipment required after review of the completed application.
- (e) The department shall issue a license, or amend an existing license, authorizing operation of the emission unit(s) when the proposed new construction or modification is complete. For facilities subject to the air operating permit requirements of chapter 173-401 WAC, the license shall become part of the air operating permit issued by the department of ecology or a local air pollution control authority. For new construction, this action shall constitute registration of the emission unit(s). (WAC 246-247-060 (1))

Requirements for modification of unregistered emission units that are not exempt from these regulations.

- (a) The applicant shall submit an application containing the information required in WAC 246-247 Appendix A.
- (b) Within thirty days of receipt of the application, the department shall inform the applicant if additional information is required. The department may determine, on the basis of the information submitted, that the requirements of BARCT or ALARACT have been met, or may require the applicant to submit a BARCT or ALARACT demonstration compatible with Appendix B or C, respectively.
- (c) Within sixty days of receipt of all required information, the department shall issue or amend the license. For facilities subject to the air operating permit requirements of chapter 173-401 WAC, the license shall become part of the air operating permit issued by the department of ecology or a local air pollution control authority. This action shall constitute registration of the emission unit(s). A determination of noncompliance may result in the issuance of a notice of violation.
- (d) The department reserves the right to require the owner of an existing, unregistered emission unit to make modifications necessary to comply with the applicable standards of WAC 246-247-040. **(WAC 246-247-060(2))**

If an emission unit is in violation of any standards contained in WAC 246-247-040, the facility shall either submit a compliance plan which describes how it intends to achieve compliance with the standards, and/or cease operation of the emission unit(s). The facility shall submit the compliance plan within forty-five days of the notice of violation. The cessation of operation of the emission unit(s) shall not necessarily exempt the facility from the requirements of this chapter if active or passive ventilation and radioactive air emission controls will still be required. The department reserves the right to take further enforcement action, if necessary, in accordance with WAC 246-247-100. **(WAC 246-247-060(3))**

The facility shall notify the department at least seven calendar days prior to any planned preoperational tests of new or modified emission units that involve emissions control, monitoring, or containment systems of the emission unit(s). The department reserves the right to witness or require preoperational tests involving the emissions control, monitoring, or containment systems of the emission unit(s). **(WAC 246-247-060(4))**

The license shall specify the requirements and limitations of operation to assure compliance with this chapter. The facility shall comply with the requirements and limitations of the license. **(WAC 246-247-060(5))**

Facilities may request a single categorical license which identifies limits and conditions of operation for similar multipurpose temporary and/or portable emission units. When

applicable, the license shall be part of the facility's air operating permit. (WAC 246-247-060(8))

All facilities with licensed emission units, except for radioactive materials licensees, shall submit a request to the department for renewal of their radioactive air emissions license at least sixty days prior to expiration of the license or as required by the air operating permit. All renewal requests shall include a summary of the operational status of all emission units, the status of facility compliance with the standards of WAC 246-247-040, and the status of any corrective actions necessary to achieve compliance with the requirements of this chapter. Facilities with licensed emission units that also hold a radioactive materials license issued by the department shall submit this information along with their radioactive material license renewal submittal. If the department is unable to renew a radioactive air emissions license before its expiration date, the existing license, with all of its requirements and limitations, remains in force until the department either renews or revokes the license. (WAC 246-247-060(9))

### *Fees*

All facilities under the authority of this chapter shall submit fees in accordance with WAC 246-254-160. (WAC 246-247-065(1))

Those facilities required by WAC 246-254-160(2) to submit an application fee, shall submit the fee with the application. (WAC 246-247-065(2))

### *Monitoring, testing and quality assurance*

The department may, upon request by a nonfederal licensee, authorize provisions specific to that nonfederal licensee, other than those already set forth in WAC 246-247-075 for nonfederal emission unit monitoring, testing, or quality assurance, so long as the department finds reasonable assurance of compliance with the performance objectives of this chapter. (WAC 246-247-075 (1))

Equipment and procedures used for the continuous monitoring of radioactive air emissions shall conform, *as applicable*, to the guidance contained in ANSI N13.1, ANSI N42.18, ANSI N323, ANSI N317, reference methods 1, 1A, 2, 2A, 2C, 2D, 4, 5, and 17 of 40 CFR Part 60, Appendix A, 40 CFR Part 52, Appendix E, and any other methods approved by the department. (WAC 246-247-075(2))

The operator of an emission unit with a potential-to-emit of less than 0.1 mrem/yr TEDE to the MEI may estimate those radionuclide emissions, in lieu of monitoring, in accordance with 40 CFR 61 Appendix D, or other procedure approved by the department. The department may require periodic confirmatory measurements (e.g., grab samples) during routine operations to verify the low emissions. Methods to implement periodic confirmatory monitoring shall be approved by the department. (WAC 246-247-075(3))

The department may allow a facility to use alternative monitoring procedures or methods if continuous monitoring is not a feasible or reasonable requirement. (WAC 246-247-075(4))

Licensed facilities shall conduct and document a quality assurance program. Except for those types of facilities specified in subsection (5) of this section, the quality assurance program shall be compatible with applicable national standards such as ANSI/ASME NQA-1-1988, ANSI/ASME NQA-2-1986, QA/R-2, and QA/R-5. (WAC 246-247-075(6))

Facilities shall monitor nonpoint and fugitive emissions of radioactive material. (WAC 246-247-075(8))

The department may conduct an environmental surveillance program to ensure that radiation doses to the public from emission units are in compliance with applicable standards. The department may require the operator of any emission unit to conduct stack sampling, ambient air monitoring, or other testing as necessary to demonstrate compliance with the standards in WAC 246-247-040. (WAC 246-247-075(9))

The department may require the owner or operator of an emission unit to make provision, at existing emission unit sampling stations, for the department to take split or collocated samples of the emissions. (WAC 246-247-075(10))

The planning for any proposed new construction or significant modification of the emission unit must address accidental releases with a probability of occurrence during the expected life of the emission unit of greater than one percent. (WAC 246-247-075(11))

All facilities must be able to demonstrate that appropriate supervisors and workers are adequately trained in the use and maintenance of emission control and monitoring systems, and in the performance of associated test and emergency response procedures. (WAC 246-247-075(12))

All facilities must be able to demonstrate the reliability and accuracy of the radioactive air emissions monitoring data. (WAC 246-247-075(13))

### ***Inspections, reporting, and recordkeeping***

The department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data, and other records related to compliance with the requirements of this chapter. The department may require a demonstration of ALARACT at any time. (WAC 246-247-080(1))

The department may, upon request by a nonfederal licensee, other than those already set forth in WAC 246-247-080 for nonfederal emission unit inspections, reporting, or recordkeeping, so long as the department finds reasonable assurance of compliance with the performance objectives of this chapter. (WAC 246-247-080(2))

The facility shall annually submit to the department the information requirements adopted in subsection (2) of this section, as applicable, along with the following additional information, as applicable:

- (a) The results of emission measurements for those emission units subject only to periodic confirmatory measurements;
- (b) Wind rose or joint frequency table;
- (c) Annual average ambient temperature;
- (d) Annual average emission unit gas temperature, if available;
- (e) Annual total rainfall;
- (f) Annual average emission unit flow rate and total volume of air released during the calendar year.

If this additional information is available in another annual report, the facility may instead provide a copy of that report along with the information requirements in this subsection. Annual reports are due by June 30 for the previous calendar year's operations. **(WAC 246-247-080(3))**

Any report or application that contains proprietary or procurement-sensitive information shall be submitted to the department with those portions so designated. The department shall hold this information confidential, unless required to release the information pursuant to laws, regulations, or court order. **(WAC 246-247-080(4))**

The facility shall notify the department within twenty-four hours of any shutdown, or of any transient abnormal condition lasting more than four hours or other change in facility operations which, if allowed to persist, would result in emissions of radioactive material in excess of applicable standards or license requirements. If requested by the department, the facility shall submit a written report within ten days including known causes, corrective actions taken, and any preventive measures taken or planned to minimize or eliminate the chance of recurrence. **(WAC 246-247-080(5))**

The facility shall file a report of closure with the department whenever operations producing emissions of radioactive material are permanently ceased at any emission unit (except temporary emission units) regulated under this chapter. The closure report shall indicate whether, despite cessation of operations, there is still a potential for radioactive air emissions and a need for an active or passive ventilation system with emission control and/or monitoring devices. If decommissioning is planned and will constitute a modification, a NOC is required, as applicable, in accordance with WAC 246-247-060. **(WAC 246-247-080(6))**

The facility shall maintain a log for each emission unit that has received categorical approval under WAC 246-247-060(8). The log shall contain records of important operations parameters including the date, location, and duration of the release, measured or calculated radionuclide concentrations, the type of emissions (liquid, gaseous, solid), and the type of emission control and monitoring equipment. (WAC 246-247-080(7))

The facility shall maintain readily retrievable storage areas for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years. (WAC 246-247-080(8))

The facility shall ensure all emission units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restrictions or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. (WAC 246-247-080(9))

The facility shall make available, in a timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know. (WAC 246-247-080(10))

The facility shall respond in writing in a timely manner, or within a time limit set by the department, to inspection results which require the facility to implement corrective actions or any other actions so directed by the department. (WAC 246-247-080(11))

### ***Compliance determination for existing emission units and facilities***

The department may, upon request of a nonfederal licensee, authorize provisions specific to that nonfederal licensee, other than those already set forth in WAC 246-247-085 for determining compliance with appropriate dose equivalent standards by nonfederal emission units, so long as the department finds reasonable assurance of compliance with the performance objectives of this chapter. (WAC 246-247-085(1))

The determination of compliance with the dose equivalent standard of WAC 246-247-040 shall include all radioactive air emissions resulting from routine and nonroutine operations for the past calendar year. (WAC 246-247-085(3))

### ***Enforcement actions***

In accordance with RCW 70.94.422, the department may take any of the following actions to enforce compliance with the provisions of this chapter:

- (a) Notice of violation and compliance order (RCW 70.94.332).
  - (b) Restraining order or temporary or permanent injunction (RCW 70.94.425; also RCW 70.98.140).
  - (c) Penalty: Fine and/or imprisonment (RCW 70.94.430).
  - (d) Civil penalty: Up to ten thousand dollars for each day of continued noncompliance (RCW 70.94.431 (1) through (7)).
  - (e) Assurance of discontinuance (RCW 70.94.435).
- (WAC 246-247-100(1))**

The department, in accordance with RCW 70.98.050 (4)(1), may issue subpoenas in order to compel attendance of witnesses and/or production of records or documents in connection with any adjudicative or other administrative proceeding. **(WAC 246-247-100(2))**

The department, in accordance with RCW 70.98.160, may impound sources of ionizing radiation. **(WAC 246-247-100(3))**

The secretary of the department, in accordance with RCW 43.70.190, is authorized to bring an action to prohibit a violation or a threatened violation of any department rules or regulation, or to bring any legal proceeding authorized by law to a county superior court. **(WAC 246-247-100(4))**

Any party, against which an enforcement action is brought by the department, has the right to submit an application for the adjudicative process in accordance with chapter 246-10 WAC and chapter 34.05 RCW. **(WAC 246-247-100(5))**

*Enclosure 1 Emission Unit Specific License*

Emission Unit ID: 1206

**Richland**

**EAS Sample Processing Facility (Room 133)**

This is a MINOR, ACTIVELY ventilated emission unit.

Applied Process Engineering Laboratory

**Emission Unit Information**

Stack Height 10.00 ft. 3.05 m. Stack Diameter 5.11 ft. 1.56 m.

Average Stack Effluent Temperature: 65 degrees Fahrenheit. 18 degrees Celsius.

Average Stack Exhaust Velocity: 37.97 ft/second. 11.57 m/second.

**Abatement Technology** ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	HEPA filtration must be tested annually to ANSI 510 and have a removal efficiency of 99.99%.

**Monitoring Requirements**

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075[4]	As specified in the Environmental Assessment Services Radiation Safety Procedures.	alpha/beta/gamma	Daily counter top smears and material inventory during work days.

**Sampling Requirements** Material inventory log and radiological smear records.

**Additional Requirements**

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

**Operational Status** The EAS Sample Processing Facility is located in room 133 inside the Applied Process Engineering Laboratory (APEL) building at 350 Hills Street; Richland, WA 99354. The primary mission of EAS's sample processing facility is to prepare samples of water, soil, and biota for an accurate assessment of radionuclide and chemical levels in these samples. Radiological characterization is primarily done to support radiological environmental monitoring programs. Other sample preparation activities at the lab will include samples of water, soil, and food products. Most of the samples processed in the laboratory will be at or near environmental background levels.

**This Emission Unit has 1 active Notice(s) of Construction.**

Project Title	Approval #	Date Approved	NOC_ID
Operation of the EAS Sample Processing Facility (Room 133 Applied Engineering Laboratory (APEL))	AIR 08-108	1/22/2008	728

**Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)**

- 1) The total abated emission limit for this Notice of Construction is limited to 7.50E-06 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).
- 2) The primary mission of EAS's sample processing facility is to prepare samples of water, soil, and biota for an accurate assessment of radionuclide and chemical levels in these samples. Radiological characterization is primarily done to support radiological environmental monitoring programs. Other sample preparation activities at the lab will include samples of water, soil, and food products. Most of the samples processed in the laboratory will be at or near environmental background levels.
- 3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 7.50E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241	5.00E-10	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
C - 14	1.00E-06	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Co - 60	1.00E-09	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Cs - 134	1.00E-09	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Cs - 137	1.00E-09	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Eu - 152	1.00E-09	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Eu - 154	1.00E-09	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Eu - 155	1.00E-09	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
H - 3	5.00E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 238	5.00E-10	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 239	5.00E-10	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 240	5.00E-10	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sr - 89	1.00E-09	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Tc - 99	1.00E-09	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
U - 0	1.00E-09	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	C - 14	Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155	H - 3	Pu - 238
Pu - 239	Pu - 240	Sr - 89	Tc - 99	U - 0

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

- 4) Other isotopes may be present at this facility (Atomic numbers 1 through 100) with no single isotope to exceed 2.5 E-07 microcuries in liquid or solid particulate form (WAC 246-247-040(5)).
- 5) The licensee must immediately notify the department if there are changes in the stack height, stack flow rate, distance to the Maximally Exposed Individual, or distance to nearest farms producing vegetables, meat or milk (WAC 246-247-040(5)).
- 6) The final stage of HEPA filtration must be tested annually to ANSI 510 and have a removal efficiency of 99.99% (WAC 246-247-040(5)).
- 7) The licensee must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-040(5), 075(13)).
- 8) The licensee must meet all reporting and record keeping requirements of chapter 246-247 WAC. The licensee must

report all measured or calculated emissions from normal operations annually, as well emissions resulting from abnormal events, such as spills or broken containers. The report must be submitted to the department by June 30 for the previous calendar year's air emissions (WAC 246-247-040(5), 080(3)).

- 9) Except as specifically provided by the radioactive materials license, the licensee must possess and use radioactive material in accordance with statements, representations and procedures contained in the documents submitted to the department. The department's "Rules and Regulations for Radiation Protection" must govern the licensee's statements in applications or letters, unless the statements are more restrictive than the regulations (WAC 246-247-040(5)).

**Enclosure 2**

Statement of Basis for AOP Attachment 4, Health License RAEL-006

# Statement of Basis

For  
Attachment 4  
Washington State Department of Health  
EAS License RAEL -06

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## **GENERAL PROCESS INFORMATION**

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As licensed by the Washington State Department of Health in Radioactive Air Emissions License (RAEL) 06, the Environmental Assessment Services (EAS) Sample Processing Facility is located in room 133, inside the Applied Process Engineering Laboratory (APEL) building at 350 Hills Street, Richland, WA 99354. The primary mission of EAS's sample processing facility is to prepare water, soil, and biota samples for the Department of Energy's Hanford Site. This serves to provide an accurate assessment of sample radionuclide and chemical levels. Radiological characterization is done primarily to support environmental radiological monitoring programs. Other sample preparation activities at the lab will include samples of water, soil, and food products. Most of the samples processed in the laboratory will be at or near environmental background levels.

APEL provides opportunities for efficient and effective business startup and development, validation, and commercialization of new product lines. Entrepreneurs, engineers, scientists, and businessmen developing new product lines will all have access to the facility.

Pacific Northwest National Laboratory (PNNL) scientists, engineers, and other professional staff are available to APEL occupants for consultation, collaboration, or professional support. Up to 40 hours a year of free professional services is available to each tenant. Tenants also have access to PNNL's new molecular science laboratory, the Environmental Molecular Science Laboratory, and staff. Because many PNNL and other technical staff occupy APEL, there is opportunity for informal collaboration and synergism. Other forms of technical support are also readily available including a certified analytical laboratory and instrument calibration services.

## **EMISSION STANDARDS**

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Radioactive air emission standards for the State of Washington are contained in Washington Administrative Code (WAC) 173-480-040, 173-480-050, 173-480-060 and in Title 10 of the Code of Federal Regulation Part 20. In accordance with WAC 173-480-050, the Department of Health shall enforce the most stringent standard in effect.

Under WAC 246-247-040(5), the department may set limits on emission rates for specific radionuclides for specific emission units, and set requirements and limitations on the operation of emission unit(s) as specified in this license. The Department of Health establishes emission limits in Notice of Construction (NOC) approvals or upon baseline emissions from an emission unit.

All new construction and significant modifications of emission units from August 10, 1988, until the termination of this license, shall utilize Best Available Radionuclide Control Technology as required by WAC 246-247-040(3).

All existing emission units and insignificant modifications shall utilize As Low As Reasonably Achievable Control Technology (WAC 246-247-040[4]).

**MONITORING, TESTING, QUALITY ASSURANCE, REPORTING AND  
RECORD KEEPING**

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The licensee must meet all reporting and record keeping requirements of Chapter 246-247 WAC. The licensee must report all measured or calculated emissions from normal operations annually, as well emissions resulting from abnormal events, such as spills or broken containers. The report must be submitted to the department by June 30, for reporting the previous calendar year's air emissions (WAC 246-247-040[5], -080[3]).

The licensee must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-040[5], -075[13]).

The licensee must immediately notify the department if there are changes in the stack height, stack flow rate, distance to the Maximally Exposed Individual, or distance to nearest farms producing vegetables, meat or milk (WAC 246-247-040[5]).

WAC 246-247-075[11] requires the licensee to address accidental releases when planning for any new construction or significant modification of the emission unit if the probability of occurrence during the expected life of the emission unit is greater than one percent.

Except as specifically provided by the radioactive materials license, the licensee must possess and use radioactive material in accordance with statements, representations, and procedures contained in the documents submitted to the department. The department's "Rules and Regulations for Radiation Protection" must govern the licensee's statements in applications or letters, unless the statements are more restrictive than the regulations (WAC 246-247-040[5]).

**EMISSION UNIT IDENTIFICATION DESCRIPTIONS USED IN  
ATTACHMENT 4**

The Emission Unit ID number is the principle identifier used in Attachment 4 of the AOP.

In Attachment 4, the Department of Health used a four digit Emission Unit ID number in small font under the heading text. This number is created from the database the Department of Health uses to track and generate the emission unit requirements for each emission unit.

An example of the heading used in Attachment 4 would be as follows:

**Emission Unit ID: 1206.....*Health's database tracking number***  
**Richland .....*The regulatory ID***  
**EAS Sample Processing Facility (Room 133).....*The associated building***