



STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

1315 W. 4th Avenue • Kennewick, Washington 99336-6018 • (509) 735-7581

September 1, 1998

Mr. James E. Rasmussen  
U.S. Department of Energy  
P.O. Box 550, MSIN: A5-15  
Richland, WA 99352

Dear Mr. Rasmussen:

Re: 325 Building Notice of Construction (NOC) Approval Order

Enclosed is Order No. DE 98NWP-004. If you have any questions concerning the content of the document, please contact Jerry Hensley at (509) 736-3017. The enclosed Order may be appealed. The appeal procedures are described in the Order.

Sincerely,

Michael Wilson, Program Manager  
Nuclear Waste Program

MW:JH:sb  
Enclosure

cc: Gary McNair, PNNL  
Joe Nickels, PNNL  
Gerald Simiele, PNNL  
J.R. Wilkinson, CTUIR  
Donna Powaukee, NPT  
Russel Jim, YIN  
Mary Lou Blazek, OOE  
Administrative Record

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Central Files \_\_\_\_\_  
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Cross Reference: \_\_\_\_\_

*(Handwritten initials)*



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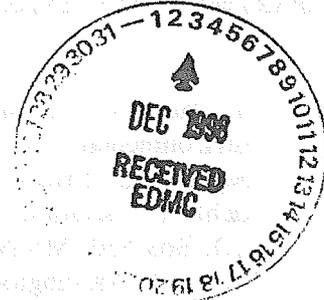


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STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

IN THE MATTER OF APPROVING A NONRADIO- ) NOC APPROVAL ORDER  
ACTIVE AIR EMISSIONS NOTICE OF ) No. DE 98NWP-004  
CONSTRUCTION FOR THE 325 BUILDING AND )  
HWTU/SAL, 300 AREA, HANFORD SITE FOR THE )  
DEPARTMENT OF ENERGY-RL )

To: Mr. James E. Rasmussen, Director  
Environmental Assurance, Permits and Policy Division  
Department of Energy  
Richland Operations Office  
P.O. Box 550, MSIN: A5-15  
Richland, Washington 99352

**FINDINGS:**

On July 1, 1998, the U.S. Department of Energy, Richland Location (DOE-RL), submitted a Notice of Construction (NOC) for the Radiochemical Processing Laboratory, 325 Building, located in the Hanford Site's 300 Area.

This Notice of Construction application describes research and development (R&D) of various waste treatment technologies in the Hazardous Waste Treatment Unit (HWTU) and Shielded Analytical Laboratory (SAL), located within the Radiochemical Processing Laboratory (325 Building). The proposed work will require a larger chemical inventory in the facility and potentially result in an increase of toxic air pollutants. This NOC includes the HWTU/SAL and the 325 Building.

In relation to the above, the Department of Ecology, State of Washington (Ecology), pursuant to Revised Code of Washington (RCW) 70.94.152, and Washington Administrative Code (WAC) 173-400-110, makes the following determinations:

1. The proposed project, if constructed and operated as herein required, will be in accordance with applicable rules and regulations, as set forth in Chapter 173-400 WAC and 173-460 WAC, and the operation thereof, at the location proposed, will not result in ambient air quality standards being exceeded.
2. The proposed project, if constructed and operated as herein required, will provide all known, available, and reasonable methods of emission control.

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**1. LAWS AND REGULATIONS**

The proposed operation of the HWTU/SAL and the 325 Building by DOE-RL, referred herein to as the permittee, shall comply with all requirements as specified in:

- Chapter 70.94 RCW, Washington Clean Air Act,
- Chapter 173-400 WAC, General Regulations for Air Pollution Sources,
- Chapter 173-460 WAC, Controls for New Sources of Toxic Air Pollutants, specifically, the HWTU/SAL and the 325 Building qualify as sources of air contaminants as allowed under:
  - WAC 173-400-110, December 23, 1997,
  - WAC 173-400-113, December 23, 1997.

**2. EMISSIONS**

All operations within the 325 Building have the potential to emit, based on 24 hrs/day, 365 days/year operation, the following estimated emissions of criteria and toxic air pollutants after controls:

2.1	Particulate Matter (PM)	<2E-8 tons per year
	PM-10 (< < 1.3E-8 tons per year)	
2.2	Volatile Organic Compound	< 6 tons per year
2.3	Nitrogen Oxides (NOx)	< 4 tons per year
2.4	Carbon Monoxide	<20 tons per year
2.5	Sulfur Dioxide	< 2 tons per year
2.6	Lead	<2E-9 tons per year

**3. BACT**

As required by WAC 173-400-113, this project shall use Best Available Control Technology (BACT) to control emissions. The project will use the following technologies and procedures to attain BACT for emissions:

- 3.1 PM - HEPA filtration is the existing emission control system for the facility. The filters will remain in place and an effective maintenance program will be instituted.

**4. T-BACT**

As required by WAC 173-460-040(4)(b), this project shall use Best Available Control Technology for Toxics (T-BACT) to control toxic emissions. BACT as described above for particulates shall constitute T-BACT.

**5. ADDITIONAL FINDINGS**

- 5.1 The modifications to 325 Building operations will include the addition of waste treatment process operations in the HWTU and the SAL. The HWTU and SAL are managed under a Resource Conservation and Recovery Act (RCRA) Part A/B permit.

The HWTU consists of Rooms 520 and 528. The SAL consists of Rooms 200, 201, and 203. Radioactive mixed waste is primarily generated from

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research activities in the Pacific Northwest National Laboratory (PNNL) facilities, but can include wastes generated at offsite locations. In the HWTU/SAL, hazardous materials and radioactive mixed waste will be stored, dispensed, used, handled, packaged in drums, and treated using various small bench-scale treatment processes. Treatment processes utilized at the HWTU/SAL could include pH adjustment, ion exchange, carbon absorption using polymer beads or mineral absorbents such as clays, chemical oxidation, chemical precipitation, chemical reduction, waste concentration by evaporation, neutralization, filtration, solvent extraction, solids washing, catalytic destruction, and grout encapsulation (cementation). Analysis (e.g., metals analysis, isotopic analysis) will be performed after the treatment process is completed to determine the effectiveness of the process and its applicability to waste management operations.

The waste resulting from treatment operations will be disposed of in accordance with PNNL waste management procedures.

The existing ventilation system will not be modified and the overall airflow from the building will not be changed.

5.2 OPERATING MODE - Normal operations of the 325 Building occur during an eight (8)-hour period of the day shift. The 325 Building has the potential to operate twenty-four (24) hours per day.

5.3 DESCRIPTION OF VENTILATION SYSTEM - Heating, ventilating, and air conditioning requirements within the laboratory areas of the 325 Building vary depending on the specific equipment and laboratory functional requirements. System design considers environmental conditions and cooling loads necessary to accommodate the research. The proposed modifications will not require establishment of a new emission point; and will not affect the existing ventilation system.

The 325 Building stack rises 27 m (88.6 ft) above the ground. The stack's inside diameter is 2.4 m (7.8 ft). The 325 Building structure is approximately 12 m (39 ft) in height, 104 m (341 ft) wide, and 83 m (272 ft) long. The exit velocity is 14.5 m/s (47.6 ft/s). The annual average stack temperature is estimated to be 25 °C (78 °F). The annual average ambient air temperature is 12 °C (53 °F). Nominal volumetric flow rate for stack (EP-325-01-S) is approximately 139,000 cfm (65.5 m<sup>3</sup>/s).

THEREFORE, IT IS ORDERED that the project as described in said Notice of Construction and more specifically detailed in plans, specifications and other information submitted to the Department of Ecology in reference thereto, is approved for construction, installation and operation, provided the following conditions are met:

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**APPROVAL CONDITIONS:**

**1. HTUW FEED RATE**

1.1 The process feed rate shall be limited to a rate that will control the WAC 173-460 listed Toxic Air Pollutants (TAPs) to meet the Acceptable Source Impact Level (ASIL), and in any case, not to exceed 8,000 kg of waste per calendar year total for the HWTU the permittee is proposing under this NOC application approval Order.

1.2 The above feed rate limit shall not be exceeded until a revised NOC application is submitted to Ecology and approved by Ecology.

**2. TOTAL BUILDING EMISSION LIMITS**

2.1 HWTU process and emission controls, and building research projects, supporting operations, and building equipment additions and changes, including control systems, can be made to accommodate changing research and support requirements. These changes can be made without filing an NOC, provided the total emissions meet the ASILs and the WAC 173-400-110 NSR thresholds.

2.2 A new Notice of Construction will be required if total building emissions of toxic air pollutants exceed the Small Quantity Emission Rates, unless a T-Screen analysis is run that shows that emissions would result in concentrations less than the ASILs. Results of these analyses will be maintained on file at PNNL for inspection.

2.3 A new NOC also is required if total building emissions of criteria pollutants would exceed the WAC 173-400-110 thresholds.

**3. GENERAL TESTING REQUIREMENTS**

DOE-RL shall demonstrate initial compliance for Volatile Organic Compounds (VOC) through source tests conducted no later than 180 days after start-up of the proposed HWTU/SAL activities. EPA Reference Method 25A shall be followed for testing, the test plan shall be submitted to Ecology upon request. After source tests are completed, mass balance calculations will be accepted for compliance purposes, and no further testing will be required.

**4. EMISSION CONTROL MONITORS**

No emission control monitoring is required under this Order.

**5. MANUALS**

O&M manuals are not required for temporary bench-top research or experimental treatment apparatus. O&M manuals for permanently-installed facility equipment and other equipment that is associated with the processes described in section 5.1 of Additional Findings, within the building that have the potential to exceed the

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conditions of this Order shall be developed and followed. Manufacturers' instructions may be referenced. The O&M manuals shall be updated to reflect any modifications of the processes or building operating procedures. Exceedances that result from failure to follow the requirements of the O&M manuals or manufacturer's instructions may be considered proof that the equipment was not properly operated, maintained and tested. Copies of the O&M manuals shall be available to Ecology.

**6. INITIAL NOTIFICATIONS & SUBMITTALS**

All notifications and submittals shall be sent to:

Washington State Department of Ecology  
Nuclear Waste Program  
1315 West 4th Avenue  
Kennewick, WA 99336-6018

**7. MONITORING AND RECORD KEEPING**

Specific records shall be kept on-site by the permittee and made available for inspection by Ecology upon request. The records shall be organized in a readily accessible manner and cover a minimum of the most recent 60-month period. The records to be kept shall include the following:

- 7.1 HWTU unit feed rates for WAC 173-460 listed toxic air pollutants and WAC 173-400 NSR threshold listed criteria pollutants.
- 7.2 HWTU treatment process destruction efficiency data or engineering estimates.
- 7.3 Engineering estimates of the maximum emissions of reaction products of the HWTU treatment processes
- 7.4 Each new bench-scale treatment process, or additions or changes in other building processes or equipment will be evaluated to demonstrate compliance with the building ASIL and NSR threshold limits (for additions or changes not otherwise exempt under WAC 173-400 or 173-460). Evaluations will be maintained in the project files, open to Ecology or EPA for oversight.

**8. ASIL AND NSR THRESHOLD EVALUATIONS**

Evaluations of emissions to demonstrate total building emissions are below the ASILs will be done as described above and using T-Screen modeling. Total building emissions will be the sum of HWTU/SAL emissions and other emission sources in the 325 Building.

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For ASIL/NSR Threshold evaluations, HWTU emissions will be determined as follows:

Organic & inorganic liquids: Feed rate x measured destruction efficiency x release fraction x bench-scale controls efficiency(if employed)

Organic and inorganic solids: Feed rate x measured destruction efficiency x release fraction x 1/(HEPA Control DF of 1000)

Reaction products: engineering estimates of maximum releases

Emissions from similar discrete emission units will be determined using similar methods

Emissions from the use of the chemical inventory in the building will be determined as follows:

Use Rate x Release Fraction x Control DF

If Use Rate information is not available the Inventory may be used. If the inventory is used, the annual ASILs will be determined assuming the inventory is released in a year, and the 24-hour ASILs will be determined assuming the inventory is released during 20 days. The above methods and assumptions may be modified with Ecology's concurrence.

Should any of the emissions become subject to 40 Code of Federal Regulations (CFR) 264/265 Subparts AA, those emissions would be regulated under that part and are then exempt from WAC 173-460. In that event, those exempted emissions would be excluded from ASIL and threshold evaluations.

## 9. REPORTING

The results of the initial and all subsequent annual source test reports shall be sent to:

Washington State Department of Ecology  
Nuclear Waste Program  
1315 West 4<sup>th</sup> Avenue  
Kennewick, WA 99336-6018

## 10. GENERAL CONDITIONS

- 10.1 Visible Emissions - No visible emissions shall be allowed beyond the property line, as determined by opacity readings when warranted.
- 10.2 Commencing/Discontinuing Construction and/or Operations - This approval shall become void if construction and operation of the HWTU/SAL is not

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commenced within eighteen (18) months after receipt of this Order approving the NOC application, or if construction or operation of the facility is discontinued for a period of eighteen (18) months.

- 10.3 Compliance Assurance Access - Access to the source by EPA or Ecology shall be allowed for the purposes of compliance assurance inspections. Failure to allow access is grounds for revocation of the Order approving the NOC.
- 10.4 Modification to Facility or Operating Procedures - Modification to equipment or operating procedures are subject to the requirements of Section 2, Approval Conditions of this Order.
- 10.5 Activities Inconsistent with this Order - Any activity undertaken by the permittee or others, in a manner that is inconsistent with the NOC application and this determination, shall be subject to Ecology enforcement under applicable regulations.
- 10.6 Obligations under Other Laws or Regulations - Nothing in this Order shall be construed to relieve the permittee of its obligations under any local, state, or federal laws or regulations.

Nothing in this approval shall be construed as obviating compliance with any requirement of law other than those imposed pursuant to the Washington Clean Air Act and rules and regulations thereunder.

A two (2) -month testing and break-in period is allowed, after any part or portion of this project becomes operational, to make any changes or adjustments required to comply with applicable rules and regulations pertaining to air quality and conditions of operation imposed herein. Thereafter, any violation of such rules and regulations or of the terms of this approval shall be subject to the sanctions provided in Chapter 70.94 RCW.

Authorization may be modified, suspended or revoked in whole or part for cause including, but not limited to, the following:

1. Violation of any terms or conditions of this authorization;
2. Obtaining this authorization by misrepresentation or failure to disclose fully all relevant facts.

The provisions of this authorization are severable and, if any provision of this authorization, or application of any provisions of this authorization to any circumstance, is held invalid, the application of such provision to their circumstances, and the remainder of this authorization, shall not be affected thereby.

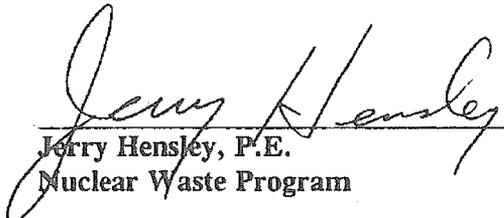
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Any person feeling aggrieved by this ORDER may obtain review thereof by application, within thirty (30) days of receipt of this ORDER to the Pollution Control Hearings Board, P.O. Box 40903, Olympia, WA 98504-0903. Concurrently, a copy of the application must be sent to the Department of Ecology, P.O. Box 47600, Olympia, WA 98504-7600 and to the Department of Ecology, 1315 West 4<sup>th</sup> Avenue, Kennewick, WA 99336-6018. These procedures are consistent with the provisions of Chapter 43.21B RCW and the rules and regulations adopted thereunder.

DATED at Kennewick, Washington, this 1<sup>ST</sup> day of September 1998.

PREPARED AND REVIEWED BY:

  
\_\_\_\_\_  
Jerry Hensley, P.E.  
Nuclear Waste Program

APPROVED BY:

  
\_\_\_\_\_  
Mike Wilson, Program Manager  
Nuclear Waste Program