



OFFICE OF RIVER PROTECTION

P.O. Box 450, MSIN H6-60
Richland, Washington 99352

APR 08 2013

13-ECD-0018

Ms. Jane A. Hedges, Program Manager
Nuclear Waste Program
Washington State
Department of Ecology
3100 Port of Benton Blvd.
Richland, Washington 99354

Ms. Hedges:

U.S. DEPARTMENT OF ENERGY, OFFICE OF RIVER PROTECTION (ORP) REQUESTS REVIEW AND APPROVAL OF SUBMITTAL OF CRITERIA AND TOXIC AIR EMISSIONS NOTICE OF CONSTRUCTION (NOC) MODIFICATION FORM FOR AY/AZ TANK FARM VENTILATION UPGRADES

Reference: Ecology letter from J. A. Hedges to S. L. Samuelson, ORP, "Approval of Criteria and Toxic Air Emissions Notice of Construction (NOC) Application for the Operation of the 241-AP, 241-SY, and 241-AY/AZ Tank Farm Ventilation System Upgrades (Approval Order DE11NWP-001)," 11-NWP-121, dated November 30, 2011.

ORP requests Washington State Department of Ecology (Ecology) review and approval of the attached Criteria and Toxic Air Emission NOC Modification Form (Attachment 1), and supporting air dispersion modeling results (Attachment 2). This modification supports the AY/AZ Tank Farm Ventilation Upgrades Project. Ventilation upgrades are needed in AY/AZ Tank Farm to implement safety significant requirements and to support future waste feed delivery activities. Modeling was performed and confirmed that dispersed concentrations due to changes in ventilation flow rates and changes in design do not change prior risk assessment conclusions submitted to Ecology.

This NOC modification serves multiple specific purposes which are:

- Propose facility upgrades to the existing ventilation system to allow replacement of the existing stack, add additional air monitoring and flow monitoring devices, and replace the variable speed drives for ventilation fans.
- Propose the addition of a separate and independent portable skid mounted cooling unit that is connected to tank risers that will be used primarily during future mixer pump operations due to heat generation to support waste feed delivery.

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- Propose modifications to existing permit conditions cited in Ecology NOC Approval Order DE11NWP-001 (Reference) to eliminate the requirement to construct and operate new ventilation systems that were approved as ORP intends to upgrade the existing system instead.
- Propose modifications to the existing permit conditions to support the changes to the existing 241-AY/AZ ventilation system noted above. No changes are proposed to permit conditions in place for newly constructed ventilation systems in AP and SY Tank Farms.

Submittal of the NOC modification is in accordance with Washington Administrative Code 173-400, General Regulations for Air Pollution Sources to support the AY/AZ Tank Farm Ventilation Upgrades Project. The proposed changes, when approved by Ecology, will result in a modification to Ecology's NOC Approval Order DE11NWP-001 for construction upgrades and operation of the 241-AY/AZ ventilation system.

Submittal of this NOC will require payment of \$875.00 as this modification is considered a "complex change."

If you have any questions, please contact Dennis W. Bowser, Environmental Compliance Division, (509) 373-2566.



Kevin W. Smith
Manager

ECD:DWB

Attachments: (2)

cc: See page 3

Ms. Jane A. Hedges
13-ECD-0018

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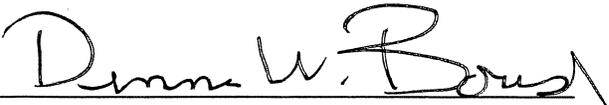
APR 08 2013

cc w/attach 1 only:

B. G. Erlandson, BNI
J. A. Bates, CHPRC
J. Cox, CTUIR
S. Harris, CTUIR
K. A. Conaway, Ecology
S. L. Dahl, Ecology
S. L. Derrick, Ecology
P. M. Gent, Ecology
D. Bartus, EPA (Region 10, Seattle)
D. Zhen, EPA (Region 10, Seattle)
R. H. Anderson, MSA
T. G. Beam, MSA
K. A. Peterson, MSA
P. C. Miller, North Wind
G. Bohnee, NPT
K. Niles, Oregon Energy
D. E. Jackson, RL
J. Martell, WDOH
L. L. Penn, WRPS
B. P. Rumburg, WRPS
R. Jim, YN
Administrative Record
BNI Correspondence
Environmental Portal, LMSI
WRPS Correspondence

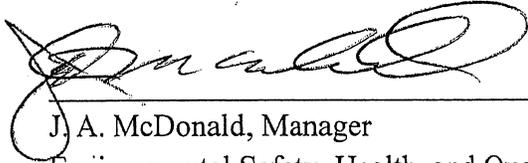
Attachment 1
13-ECD-0018
(47 Pages)

Notice of Construction Application: Changing
an Existing Permit or Equipment


Dennis W. Bowser
Dennis W. Bowser

CERTIFICATION FOR AY/AZ VENTILATION UPGRADES PROJECT FOR:
SUBMITTAL OF CRITERIA AND TOXICS AIR EMISSIONS NOTICE OF
CONSTRUCTION MODIFICATION FORM FOR ECOLOGY APPROVAL ORDER
DE11NWP-001

I certify under penalty of law that this document and all attachments that will be included in the *Notice of Construction Application: Changing an Existing Permit or Equipment*, for Ecology Approval Order DE11NWP-001, were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



J. A. McDonald, Manager
Environmental Safety, Health, and Quality
Washington River Protection Solutions, LLC

3/26/13

Date



Notice of Construction Application: Changing an Existing Permit or Equipment

INSTRUCTIONS

Submit this form to request a change in the conditions in your permit, or to alter control technology equipment. The existing permit conditions cannot be changed via this application if the proposed change would result in an emission increase. For proposed changes resulting in an emission increase, use form #070-410, "Notice of Construction Application: New Project or Modification to An Existing Stationary Source," found online at <http://www.ecy.wa.gov/biblio/ecy070410.html>. Contact Ecology if you are unsure where your change fits in the fee categories. If you misidentify the type of change, Ecology will contact you to correct the fee amount. State rules allow exemptions for certain levels of emission increases. Refer to WAC 173-400-110(5)(a)(ii) for more information. For \$875 initial fee covering 10 hours of review, Ecology will evaluate your application and make the determination.

Complete the front and back of this form. Attach a check for the initial fee to this form. Mail the form and a Notice of Construction application to:

Department of Ecology
Cashiering Unit
P.O. Box 47611
Olympia, WA 98504-7611

For Fiscal Office Use Only:
 001-NSR-216-0299-000404

Check one box to indicate which **initial fee** applies.

- \$200: Administrative or simple change** initial fee covers 3 hours of review
 Ecology may determine your change is complex during completeness review of your application. If your project is complex, you must pay the additional \$675 before we will continue working on your application.
-
- \$875: Complex change** initial fee covers 10 hours of review
-
- \$350 flat fee: Replace or alter control technology equipment under WAC 173-400-114**
 Ecology will contact you if we determine your change belongs in another fee category. You must pay the fee associated with that category before we will continue working on your application.

Check one box for the location of your proposal. For assistance, call the contact listed below.		
	Ecology Permitting Authority	Contact Info
<input type="checkbox"/> CRO	Chelan, Douglas, Kittitas, Klickitat, or Okanogan County Ecology Central Regional Office – Air Quality Program	Lynnette Haller (509) 457-7126 lynnette.haller@ecy.wa.gov
<input type="checkbox"/> ERO	Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Stevens, Walla Walla or Whitman County Ecology Eastern Regional Office – Air Quality Program	Greg Flibbert (509) 329-3400 gregory.flibbert@ecy.wa.gov
<input type="checkbox"/> NWRO	San Juan County Ecology Northwest Regional Office – Air Quality Program	David Adler (425) 649-7000 david.adler@ecy.wa.gov
<input type="checkbox"/> IND	For actions taken at Kraft and Sulfite Paper Mills and Aluminum Smelters Ecology Industrial Section – W2Resources Program Permit manager _____	Garin Schrieve (360) 407-6900 garin.schrieve@ecy.wa.gov
<input checked="" type="checkbox"/> NWP	For actions taken on the US Department of Energy Hanford Reservation Ecology Nuclear Waste Program	Philip Gent (509) 372-7950 philip.gent@ecy.wa.gov

Read each statement, then check the box next to it to acknowledge what you have read.



Notice of Construction Application: Changing an Existing Permit or Equipment

- The initial fee you submitted may not cover the cost of processing your application. Ecology will track the number of hours spent on your project. If the number of hours exceeds the number of hours included in your initial fee, Ecology will send you a bill for that extra time.
- Ecology will bill you \$95 per hour for each hour worked beyond the initial hours. You must pay the bill before we will issue a final decision on your request.
- When you get a permit, you give permission for Ecology staff to enter the premises for inspection.

Applicant Information

The applicant is the business requesting services from Ecology and is responsible for paying the costs incurred by Ecology.

Name of business United States Department of Energy, Office of River Protection

Physical location of project (city) Hanford Site, Richland Washington 99352

Name of project Project T3W02, AY/AZ Ventilation Upgrades Project

Responsible Official

The responsible official is the person responsible for overall operation of and ongoing compliance at the facility.

Name, Title Kevin W. Smith, Manager

Mailing address P.O. Box 550, MSIN H6-60

City, State, Zip Richland, WA 99352

Phone, Fax, E-mail (509) 372-2315, (509) 372-0712 (fax), Kevin_W_Smith@orp.doe.gov

Project Billing Contact Information

Ecology will send the responsible official the bills if there are any.

- If the project billing contact is different from the responsible official, check this box and provide the required information.

Name, Title Dennis W. Bowser, Physical Scientist

Mailing address P.O. Box 550, MSIN H6-60

City, State, Zip Richland, WA 99352

Phone, Fax, E-mail (509) 373-2566, (509)376-1097 (fax), Dennis_W_Bowser@orp.doe.gov

Project Consultant Information

- If you hired a consultant to prepare the application (or materials), check this box and provide the required information.

Consultant Name, Title _____

Organization _____

Mailing address _____

City, State, Zip _____

Phone, Fax, E-mail _____



Notice of Construction Application: Changing an Existing Permit or Equipment

I. RESPONSIBLE OFFICIAL SIGNATURE BLOCK (The responsible official is the person responsible for overall operation of and ongoing compliance at the facility.)

I certify, based on information and belief formed after reasonable inquiry, the statements and information in this application are true, accurate, and complete.

Printed Name Kevin W. Smith Title Manager
Signature *Kevin W. Smith* Date 4/7/13

II. COMPANY INFORMATION

1. Legal Name of Company U.S. Department of Energy, Office of River Protection	
2. Company Mailing Address (street, city, state, zip) P.O. Box 550 Richland, WA 99352	
3. Company Responsible Official & Title Kevin W. Smith, Manager	
4. Company Phone Number (509) 372-2315	5. Company FAX Number (509) 372-0712

III. FACILITY INFORMATION

1. Facility Name (if different from Legal Company Name above)	
2. Facility Mailing Address (if different from Company Mailing Address above)	
3. Facility Site Legal Description Hanford Site, 200 East Area	
4. Facility Contact Person (if different from Company Responsible Official above)	
5. Facility Phone Number (if different from Company Phone # above)	6. Facility FAX # (if different from Company FAX # above)
7. General Proposal for Facility (see section on next page for specific description of proposal). Upgrades to existing AY/AZ tank farm ventilation system.	
8. Proposal Construction Starting Date July 25, 2013	9. Proposal Construction Completion Date November 30, 2015



Notice of Construction Application: Changing an Existing Permit or Equipment

IV. PROPOSAL INFORMATION

1. Complete Description of Specific Proposal (attach Drawings, Schematics, Prints or Block Diagrams):

Introduction:

The 241-AY and 241-AZ Tank Farms ventilation systems have been permitted under Notice of Construction (NOC) Order 94-07, Revision 3, dated May 7, 2008. A NOC for construction and operation to replace the 241-AY/AZ ventilation system was submitted and approved under NOC Approval Order DE11NWP-001. A further analysis of the 241-AY/AZ ventilation system determined that upgrading the current system would support future tank operations for the storage, treatment, retrieval, sampling, and transfers of the waste to the Waste Treatment Plant. Therefore, the current ventilation system will be upgraded instead of being replaced.

There are no changes to the emissions estimate, only to the dispersion modeling due to a change in the stack flow rate and stack height from that proposed and approved in DE11NWP-001. The ambient air and deposition modeling results did not change for dimethyl mercury (CAS # 539-74-8) so the Second Tier Review Petition was not modified.

This application is being submitted to request modification to NOC Approval Order DE11NWP-001 for the construction upgrades and operation of the 241-AY/AZ ventilation system. No changes are proposed to permit conditions in place for newly constructed ventilation systems in AP and SY Tank Farms.

Proposed Action:

The upgrade of the current ventilation system will include the following:

- Addition of an optional portable closed loop Independent Cooling Module (ICM) which includes a chilled condenser, water separator, and fan;
- Replacement of the existing exhaust stack;
- Replacement of the ventilation system fans Variable Speed Drives (VSDs).

A depiction of the ventilation system and the upgrades scope is provided in Appendix A.

The ICM is a portable skid mounted unit that will be connected to two tank risers, one for inlet air and one for return air. The system will be pressure tested before operation to ensure there is no pathway for tank headspace air to escape. The ICM will take warm tank headspace air and cool it and then return it to the tank along with condensate collected in the condenser. The ICM will be used primarily during mixer pump operations to remove heat generated from the mixer pumps, but the unit could be used at other times depending upon operational needs. The ICM is not part of the air abatement system.

The existing stack will be replaced with a stack the same height (55 feet) and stack diameter (10 inches), but with a redundant radiological sampling system. The ventilation system fans horsepower is not changing and will have the same storage, retrieval, and sampling operations flow rate of 850 standard cubic feet per minute (scfm) and a flow rate of 1,000 scfm for waste feed delivery operations. Approval Order DE11NWP-001 currently identifies a stack height of 40 feet and a maximum flow rate of 3,000 scfm.

There is no change in the estimated emissions as a result of the change in design; the only change is a change in the dispersion factors as a result of change in the stack height and flow rate.



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Emissions Modeling

Emission modeling was conducted using AERMOD version 12060, using the same modeling parameters and meteorological data approved in DE11NWP-001. The emissions were the same for all the exhausters, the only difference being that for this case the stack was changed to 55 feet tall and the maximum flow rate was 1,000 scfm as opposed to 3,000 scfm.

The modeling results showed a minor difference in the dispersion factors for the 1-hour and annual averaging time periods as shown in Table 1 below.

Table 1. Revised air dispersion factors.

Averaging Period	DE11NWP-001 Air Dispersion Factor ($\mu\text{g}/\text{m}^3$ per g/s)	New Air Dispersion Factor ($\mu\text{g}/\text{m}^3$ per g/s)	Difference ($\mu\text{g}/\text{m}^3$ per g/s)
1-Hour	17	18	1
24-Hour	1.9	1.9	0
Annual	0.056	0.058	0.002

The change in dispersed concentrations and a comparison to the ASIL is shown in Appendix B. No additional TAPs exceed the ASIL values, only dimethyl mercury remained above the ASIL, but its dispersed concentration did not change due to the 24-hour averaging period dispersion factor not changing.

The 24-hour deposition modeling for dimethyl mercury deposition included in the Second Tier Review Petition was $1.9\text{E-}11$ g/m^2 the same as previously modeled, so there are no changes to the Second Tier Review Petition and it was not revised.

System Boundaries

The 241-AY/AZ Tank Farm is interconnected with other systems for the purpose of waste transfers. The connections and controls are shown in Table 2 below.

Table 2. Connections between AY/AZ Tank Farm and other systems.

AY/AZ Farm System	External System	Line	Boundary Control
AZ Valve Pit	AN-01A Pump Pit	SN-630	Valve
AZ Valve Pit	AP-02D Pump Pit	SN-634	Valve
AZ Valve Pit	WTP	SN-637	Blanked at WTP Boundary



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Approval Order Modification Request

See Appendix C

2. This Application is for (Check one):

- Existing Equipment / Facility Operating without a Permit
- Change of Control Technology Modification to Facility
- New Permit Conditions Production Increase

3. Complete Description of Best Available control Technology (BACT) for Proposal (see attached Summary of BACT Process):

The Best Available Control Technology (BACT) and Toxic Best Available Control Technology (tBACT) will be the operation of the tank ventilation systems not exceeding 1,000 scfm with a condenser, HEME, heater, and two stage HEPA filtration system in service in the treatment train. This is the same BACT and tBACT as in Order 94-07, Revision 3, dated May 7, 2008.

4. Maximum Potential Production Output per Year
No change

5. Maximum Potential Production Output per Hour
No change

6. Actual Production Output per Year
No change

7. Actual Production Output per Hour
No change

8. Operating Schedule	Hours Per Day <u>24 (no change)</u>	Days Per Week <u>7</u>	Weeks per Year <u>52</u>
9. Percentage of Production	Jan-Feb-Mar <u>25%</u>	April-May-June <u>25%</u>	July-Aug-Sept <u>25%</u>
	Oct-Nov-Dec <u>25%</u>		



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V. EMISSIONS ESTIMATIONS OF CRITERIA POLLUTANTS

1. Particulate Matter (PM) (Pounds or Tons per Year)	
Actual Emissions = no change	Potential Emissions = no change
2. Nitrogen Oxides (NO _x) (Pounds or Tons per Year)	
Actual Emissions =	Potential Emissions =
3. Carbon Monoxide (CO) (Pounds or tons per Year)	
Actual Emissions =	Potential Emissions =
4. Sulfur Dioxide (SO ₂) (Pounds or Tons per Year)	
Actual Emissions =	Potential Emissions =
5. Volatile Organic Compounds (VOCs) (Pounds or Tons per Year)	
Actual Emissions =	Potential Emissions =
6. Lead (Pb) (Pounds or Tons per Year)	
Actual Emissions =	Potential Emissions =

VI. EMISSIONS ESTIMATIONS OF TOXIC AIR POLLUTANTS (consult Chapter 173-460 WAC)

Pollutant #1 (List Pollutant Name, Pounds per Hour/Pounds per Year)		
Pollutant no change	Actual Emissions = no change	Potential Emissions = no change
Pollutant #2 (List Pollutant Name, Pounds per Hour/Pounds per Year)		
Pollutant	Actual Emissions =	Potential Emissions =
Pollutant #3 (List Pollutant Name, Pounds per Hour/Pounds per Year)		
Pollutant	Actual Emissions =	Potential Emissions =
Pollutant #4 (List Pollutant Name, Pounds per Hour/Pounds per Year)		
Pollutant	Actual Emissions =	Potential Emissions =
Pollutant #5 (List Pollutant Name, Pounds per Hour/Pounds per Year)		
Pollutant	Actual Emissions =	Potential Emissions =
Pollutant #6 (List Pollutant Name, Pounds per Hour/Pounds per Year)		
Pollutant	Actual Emissions =	Potential Emissions =
Pollutant #7 (List Pollutant Name, Pounds per Hour/Pounds per Year)		
Pollutant	Actual Emissions =	Potential Emissions =

VII. EMISSIONS ESTIMATIONS OF FUGITIVE AIR POLLUTANTS

Pollutant #1 (List Pollutant Name, Pounds per Hour/Pounds per Year)		
Pollutant no change	Pounds per Hour = no change	Pounds per Year = no change
Pollutant #1 (List Pollutant Name, Pounds per Hour/Pounds per Year)		
Pollutant	Pounds per Hour =	Pounds per Year =

VIII. MODELING RESULTS

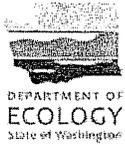
1. List Modeling Results of Criteria Air Pollutants (attach any Modeling Printouts)
A summary of modeling results are provided in Appendix B. As previously discussed with Ecology staff, due to the large size of the modeling data files, they will be hand delivered to Ecology on disk(s).



Notice of Construction Application: Changing an Existing Permit or Equipment

2. List Modeling Results of Toxic Air Pollutants (attach any Modeling Printouts)

A summary of modeling results are provided in Appendix B. As previously discussed with Ecology staff, due to the large size of the modeling data files, they will be hand delivered to Ecology on disk(s).



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IX. EMISSIONS DATA AT DISCHARGE POINT

Stack Parameters	Other than Stack Parameters
1. List the Number of Stacks under this Proposal 1 (no change)	1. List the Number of Discharge Points under this Proposal n/a
2. List the Gas Velocity for each Stack 30.56 ft/sec	2. List the Gas Velocity for each Discharge Point
3. List the Height for each Stack 55 ft	3. List the Height for each Discharge Point
4. List the Inside Diameter or Dimensions for each Stack 10 inches	4. List the Inside Diameter or dimensions for each Discharge Point
5. List the Gas Exit Temperature for each Stack 75° F	5. List the Gas Exit Temperature for each Discharge Point
6. List the Building Height, Width, Length for each Stack No change	6. List the Building Height, Width, Length for each Discharge Point
7. List the Height of the Tallest Building On-site or in the Vicinity No change	7. List the Height of the Tallest Building On-site or in the Vicinity
8. List Whether the Facility is in an Urban or Rural Location No change	8. List Whether the Facility is in an Urban or Rural Location
9. List the Distance from each Stack to the Property Line No change	9. List the Distance from each Discharge Point to the Property Line
10. Is this Stack Shared by more than One Source? No change	10. Is this a Shared Discharge Point?
11. List the Volumetric Flow Rate for each Stack 1,000 scfm	11. List the Volumetric Flow Rate for each Discharge Point
12. How does each Stack Discharge, Vertically or Horizontally? Vertically	12. How does each Discharge Point Vent, Vertically or Horizontally?



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X. FUEL DATA

	PRIMARY FUEL	SECONDARY FUEL
1. Type (Natural Gas, Oil, Coal, Hogged Fuel, etc.)	n/a	n/a
2. Unit of Measure (Gallons, Cubic Feet, Tons, etc)		
3. Maximum Consumption Units per Hour		
4. Maximum Consumption Units per Year		
5. Actual Consumption Units per Hour		
6. Actual Consumption Units per Year		
7. BTU per Unit of Measure		
8. Percent Sulfur (if applicable)		
9. Percent Ash (if applicable)		



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XI. AIR POLLUTION CONTROL EQUIPMENT (ATTACH VENDOR'S INFO.)

BAGHOUSE	SCRUBBER	CYCLONE	E.S.P.	ADSORPTION
1. Type <u> n/a </u>	1. Type <u> n/a </u>	1. Type <u> n/a </u>	1. Type <u> n/a </u>	1. Type <u> n/a </u>
2. Efficiency <u> </u>	2. Efficiency <u> </u>	2. Efficiency <u> </u>	2. Efficiency <u> </u>	2. Efficiency <u> </u>
3. Bag height <u> </u>	3. Dimensions <u> </u>	3. Dimensions <u> </u>	3. Dimensions: Plate spacing, height, length (attach layout) <u> </u>	3. Gas Flow Rate (cfm) <u> </u>
4. Bag diameter <u> </u>	4. Gas Differential Pressure <u> </u>	4. Gas Differential Pressure <u> </u>	4. Fields <u> </u>	4. Bed Media <u> </u>
5. Number of bags <u> </u>	5. Type of scrubber liquid <u> </u>	5. Gas Flow Rate (cfm) <u> </u>	5. Configuration <u> </u>	5. Adsorption Isotherm (attach graph) <u> </u>
6. Filter Area (sq. feet) <u> </u>	6. Liquid Flow Rate (gpm) <u> </u>	6. Other <u> </u>	6. Gas Velocity (fpm) <u> </u>	6. Surface Area (sq. feet) <u> </u>
7. Filter Media <u> </u>	7. Gas Flow Rate (cfm) <u> </u>		7. Gas Flow Rate (cfm) <u> </u>	7. Gas Velocity (fpm) <u> </u>
8. Gas Flow Rate (cfm) <u> </u>	8. Scrubber Packing Material <u> </u>		8. Residence Time <u> </u>	8. Gas Temperature (deg. F) <u> </u>
9. Air- to-Cloth Ratio <u> </u>			9. Gas Differential Pressure <u> </u>	9. Bed Volume (cubic feet) <u> </u>
10. Overall Dimensions <u> </u>			10. Precipitation Rate <u> </u>	10. Bed Dimensions <u> </u>
11. Cleaning Mechanism <u> </u>			11. Prim/Sec. Voltage <u> </u>	11. Capacity (hours) <u> </u>
12. Other <u> </u>			12. Prim/Sec. Current <u> </u>	12. Contaminant <u> </u>
13. Other <u> </u>			13. Corona Strength <u> </u>	13. Regeneration Time <u> </u>
14. Other <u> </u>			14. Gas Temperature (deg. F) <u> </u>	14. Regeneration Type <u> </u>



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XII. OTHER DATA

1. Site Plan and Equipment Layout for the site attached?	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
2. MSDS Sheets for Chemicals or Materials related to this proposal attached?	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
3. Vendor's and/or Manufacturer's information attached?	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
4. Modeling Information attached?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
5. Fugitive Dust Control Plan attached?	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
6. All Enclosures for your Specific Proposal attached?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
7. Name and Title of Person Filling out this Form Dennis W. Bowser, Printed Name <u>Physical Scientist</u> Signature _____ Date _____	
8. Name and Title of Responsible Official Kevin W. Smith, Printed Name <u>Manager</u> Signature _____ Date _____	



Notice of Construction Application: Changing an Existing Permit or Equipment

XIII. ADDITIONAL INFORMATION FOR SPECIFIC EQUIPMENT (Attach Vendor's Information)

BOILER	BURNER	ASPHALT PLANT	SAND / GRAVEL	PAINT BOOTH
1. Type and Number n/a	1. Type and Number n/a	1. Type (Drum, Batch) n/a	1. Crusher Type (Prim., Sec., Tertiary) (attach layout) n/a	1. Operation Type n/a
2. Size (BTU per hour input) _____	2. Size (BTU per hour input) _____	2. Size (tons per hour) _____	2. Size (tons per hour) _____	2. Application Method _____
3. Size (steam pounds per hour) _____	3. NOx Rating (PPPM@7% Oxygen) _____	3. VOC Emission Points (attach layout) _____	3. Number of Screens _____	3. Filter Bank Area _____
4. Efficiency _____	4. CO Rating (PPM @ 7% Oxygen) _____	4. VOC Controls _____	4. Number of Conveyors _____	4. Filter Exhaust Flow _____
5. NOx Rating (PPM@ 7% Oxygen) _____		5. Aggregate Piles (acres) _____	5. Fog Spray Location (attach layout) _____	5. Coating & Solvent Types & MSDS Sheets (attach details) _____
6. CO Rating (PPM @ 7% Oxygen) _____		6. Off Road Vehicle Use (miles per year) _____	6. Aggregate Piles (acres) _____	6. Gun Cleaning Method _____
		7. Power (Line, Genset, etc.) _____	7. Off Road Vehicle Use (miles per year) _____	7. Drying Method _____
		8. Number of Vehicles _____	8. Number of Vehicles _____	



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LANDFILL	ABRASIVE BLASTING	CONCRETE BATCH	OTHER	OTHER
1. Type <u>n/a</u>	1. Attach details of booth or hanger to be used <u>n/a</u>	1. Size (tons or cubic yards of product) <u>n/a</u>		
2. Capacity (tons) <u> </u>	2. Abrasive Materials to be used. Attach MSDS Sheet(s) <u> </u>	2. Cement Silo Controls (baghouse, etc.) <u> </u>		
3. Year started <u> </u>	3. Filter Bank Area <u> </u>	3. Charging Station Controls (baghouse, enclosure, etc.) <u> </u>		
4. Year closed <u> </u>	4. Filter Exhaust Flow <u> </u>	4. Conveyor Controls <u> </u>		
5. Area of Landfill (attach site plan) <u> </u>	5. Approximate Number of Items to be Abrasively Blasted each Calendar Year. <u> </u>			

If you need this document in a format for the visually impaired, call the Air Quality Program at 360-407-6800. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.

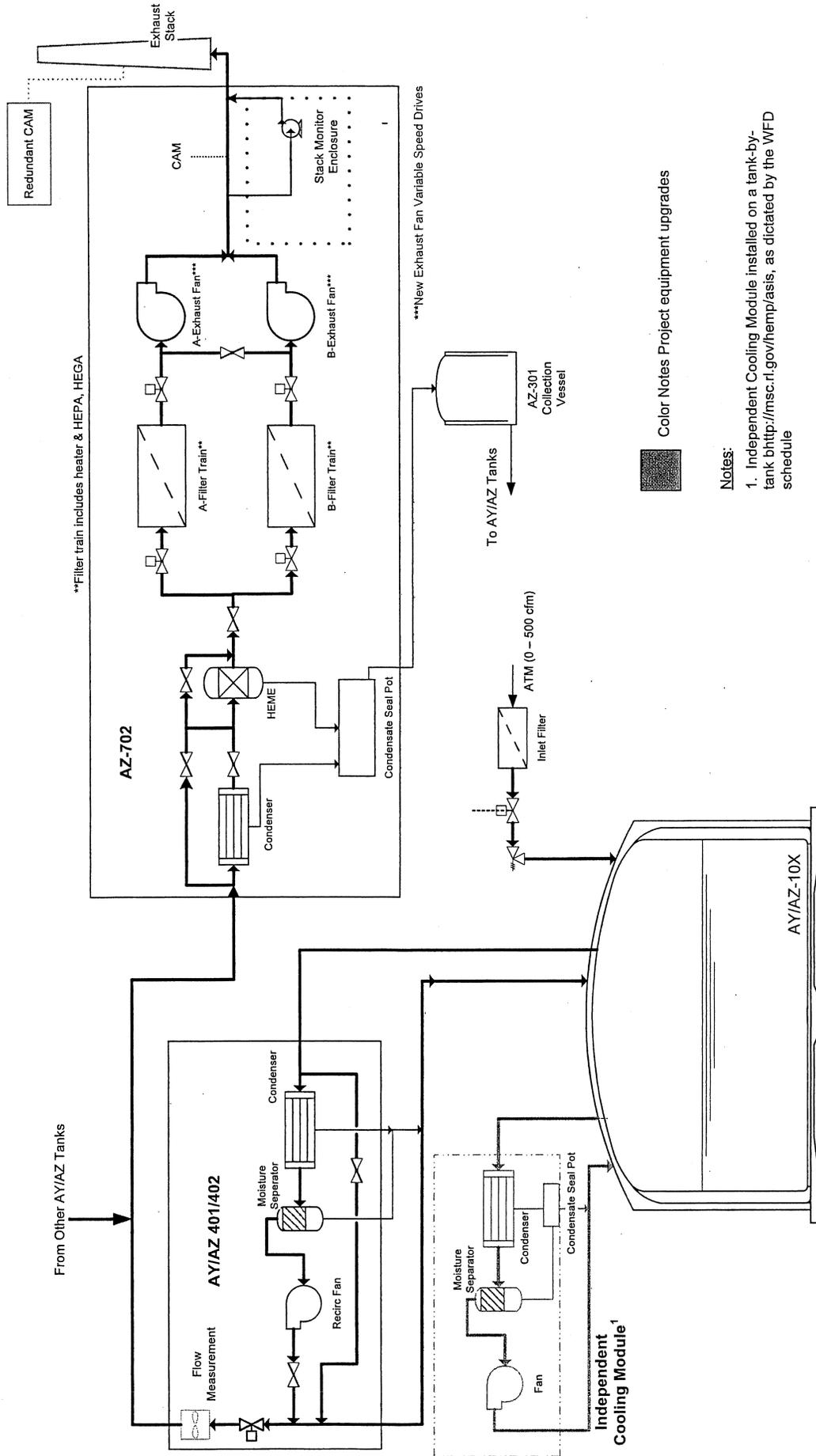


Notice of Construction Application: Changing an Existing Permit or Equipment

Appendix A:

AY/AZ Ventilation Upgrades Scope

Notice of Construction Application: Changing an Existing Permit or Equipment



Color Notes Project equipment upgrades

Notes:

1. Independent Cooling Module installed on a tank-by-tank basis, as dictated by the WFD schedule



Notice of Construction Application: Changing an Existing Permit or Equipment

Appendix B:

**Summary of Modeling Results for Criteria and Toxic Air Pollutants
to Support Revision of DE11NWP-001 Table 2**



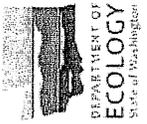
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WAC 173-460-150 Name	Chemical ID	Averaging Period	Emission Rate (g/s)	Emissions		De Minimis		Above SQER	Above SQER	Dispersed Conc. ($\mu\text{g}/\text{m}^3$)	ASIL ($\mu\text{g}/\text{m}^3$)	Above ASIL
				lbs/hr	lbs/24-hr	lbs/avg period	Minimis					
Ethylbenzene	100-41-4	Year	1.41E-03	-	98.1	3.84	Yes	76.8	Yes	8.18E-05	0.4	No
Styrene	100-42-5	24-hr	4.62E-04	-	0.088	5.91	No	118	No	8.79E-04	900	No
Benzyl Chloride	100-44-7	Year	1.34E-05	-	0.932	0.196	Yes	3.91	No	7.77E-07	0.0204	No
Nitrogen dioxide	10102-44-0	1-hr	5.51E-02	0.438	-	0.457	No	1.03	No	9.93E-01	470	No
n-Nitroso-n-methylethylamine	10595-95-6	Year	1.94E-06	-	0.135	0.00153	Yes	0.0305	Yes	1.12E-07	0.000159	No
p-Xylene	106-42-3	24-hr	1.63E-03	-	0.310	1.45	No	29	No	3.09E-03	221	No
1,4-Dichlorobenzene	106-46-7	Year	6.21E-05	-	4.32	0.872	Yes	17.4	No	3.60E-06	0.0909	No
1,2-Epoxybutane	106-88-7	24-hr	4.04E-05	-	0.00769	0.131	No	2.63	No	7.67E-05	20	No
1,2-Dibromoethane	106-93-4	Year	7.97E-05	-	5.54	0.135	Yes	2.71	Yes	4.62E-06	0.0141	No
1,3-Butadiene	106-99-0	Year	1.99E-04	-	13.9	0.0564	Yes	1.13	Yes	1.16E-05	0.00588	No
Acrolein	107-02-8	24-hr	2.98E-06	-	0.000568	0.000394	Yes	0.00789	No	5.66E-06	0.06	No
Allyl Chloride	107-05-1	Year	1.02E-05	-	0.709	1.6	No	32	No	5.91E-07	0.167	No
1,2-Dichloroethane	107-06-2	Year	1.63E-03	-	113.20	0.369	Yes	7.39	Yes	9.44E-05	0.0385	No
Acrylonitrile	107-13-1M	Year	1.23E-05	-	0.856	0.0331	Yes	0.662	Yes	7.14E-07	0.00345	No
Vinyl acetate	108-05-4	24-hr	4.48E-07	-	8.53E-05	1.31	No	26.3	No	8.51E-07	200	No
Methyl isobutyl ketone	108-10-1	24-hr	2.77E-03	-	0.527	19.7	No	394	No	5.26E-03	3000	No
m-Xylene	108-38-3M	24-hr	9.42E-04	-	0.179	1.45	No	29	No	1.79E-03	221	No
3-Methylphenol	108-39-4	24-hr	4.74E-06	-	0.00090	3.94	No	78.9	No	9.01E-06	600	No
Toluene	108-88-3	24-hr	4.09E-02	-	7.78	32.9	No	657	No	7.76E-02	5000	No
Chlorobenzene	108-90-7	24-hr	4.99E-04	-	0.095	6.57	No	131	No	9.49E-04	1000	No
Phenol	108-95-2	24-hr	8.14E-03	-	1.55	1.31	Yes	26.3	No	1.55E-02	200	No
n-Hexane	110-54-3	24-hr	5.16E-03	-	0.98	4.6	No	92	No	9.81E-03	700	No
Cyclohexane	110-82-7	24-hr	1.58E-03	-	0.301	39.4	No	789	No	3.01E-03	6001	No
Ethylene glycol monoethyl ether acetate	111-76-2	24-hr	1.52E-04	-	0.029	85.4	No	1710	No	2.88E-04	13000	No
Propylene	115-07-1	24-hr	3.93E-03	-	0.748	19.7	No	394	No	7.46E-03	3000	No



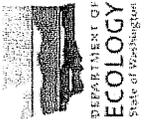
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Di(2-ethylhexyl)phthalate	117-81-7	Year	7.46E-07	-	0.0518	0.4	No	8	No	4.33E-08	0.0417	No
1,4-Dioxane	123-91-1	Year	7.02E-04	-	48.8	1.25	Yes	24.9	Yes	4.07E-05	0.13	No
Perchloroethylene	127-18-4	Year	1.62E-03	-	112.4	1.62	Yes	32.4	Yes	9.38E-05	0.169	No
Vanadium Pentoxide	1314-62-1	1-hr	1.17E-04	0.00093	-	0.00329	No	0.0657	No	2.11E-03	30	No
Polychlorinated Biphenyls (PCBs)	1336-36-3	Year	2.04E-05	-	1.415	0.0168	Yes	0.336	Yes	1.18E-06	0.00175	No
Trans-1,2-dichloroethene	156-60-5	24-hr	1.19E-07	-	2.27E-05	5.3	No	106	No	2.27E-07	807	No
Butylated hydroxyanisole	25013-16-5	Year	1.42E-06	-	0.0989	168	No	3360	No	8.25E-08	17.5	No
Formaldehyde	50-00-0	Year	2.35E-05	-	1.64	1.6	Yes	32	No	1.36E-06	0.167	No
n-Nitrosodiethylamine	55-18-5	Year	1.94E-06	-	0.135	0.000959	Yes	0.0192	Yes	1.12E-07	0.0001	No
Carbon Tetrachloride	56-23-5	Year	1.64E-03	-	114.0	0.228	Yes	4.57	Yes	9.51E-05	0.0238	No
1,1-Dimethylhydrazine	57-14-7	24-hr	1.74E-06	-	0.000332	0.00329	No	0.0657	No	3.31E-06	0.5	No
Propylene Glycol	57-55-6	24-hr	2.25E-04	-	0.0429	0.187	No	3.75	No	4.28E-04	28.5	No
n-Nitrosomorpholine	59-89-2	Year	8.96E-06	-	0.623	0.00505	Yes	0.101	Yes	5.19E-07	0.000526	No
Dimethyl Mercury	593-74-8	24-hr	4.12E-08	-	7.85E-06	1E-99	Yes	1E-99	Yes	7.83E-08	1E-99	Yes
Acetamide	60-35-5	Year	6.05E-06	-	0.421	0.48	No	9.59	No	3.51E-07	0.05	No
n-Nitrosodimethylamine	62-75-9	Year	2.65E-03	-	184	0.00208	Yes	0.0416	Yes	1.53E-04	0.000217	No
n-Nitrosodi-n-propylamine	621-64-7	Year	1.94E-06	-	0.135	0.0048	Yes	0.0959	Yes	1.12E-07	0.0005	No
Methyl Isocyanate	624-83-9	24-hr	1.77E-06	-	0.000337	0.00657	No	0.131	No	3.36E-06	1	No
Carbon monoxide	630-08-0	1-hr	3.73E-02	0.296	-	1.14	No	50.4	No	6.71E-01	23000	No
Methyl Alcohol	67-56-1	24-hr	7.11E-02	-	-	26.3	No	526	No	1.35E-01	4000	No
Isopropyl Alcohol	67-63-0	1-hr	3.37E-03	0.0268	-	0.35	No	7.01	No	6.07E-02	3200	No
Chloroform	67-66-3	Year	1.64E-03	-	114.0	0.417	Yes	8.35	Yes	9.51E-05	0.0435	No
Hexachloroethane	67-72-1	Year	1.68E-03	-	117.0	0.872	Yes	17.4	Yes	9.76E-05	0.0909	No
Benzene	71-43-2	Year	1.63E-03	-	113.2	0.331	Yes	6.62	Yes	9.44E-05	0.0345	No
1,1,1-Trichloroethane	71-55-6	24-hr	6.74E-05	-	0.0128	6.57	No	131	No	1.28E-04	1000	No
Methyl Bromide	74-83-9	24-hr	6.42E-05	-	0.0122	0.0629	No	0.657	No	1.22E-04	5	No
Methyl Chloride	74-87-3	24-hr	2.24E-04	-	0.0426	0.591	No	11.8	No	4.25E-04	90	No
Hydrogen Cyanide	74-90-8	24-hr	5.69E-06	-	0.00108	0.0591	No	1.18	No	1.08E-05	9	No
Lead and compounds (NOS)	7439-92-1	Year	6.55E-05	-	4.56	10	No	16	No	3.80E-06	0.0833	No
Manganese & Compounds	7439-96-5	24-hr	6.55E-05	-	0.0125	0.000263	Yes	0.00526	Yes	1.25E-04	0.04	No



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Mercury, Elemental	7439-97-6	24-hr	1.99E-05	-	0.00378	-	0.000591	Yes	0.0118	No	3.77E-05	0.09	No
Arsenic & Inorganic Arsenic Compounds	7440-38-2	Year	6.55E-05	-	-	4.56	0.00291	Yes	0.0581	Yes	3.80E-06	0.000303	No
Beryllium & Compounds (NOS)	7440-41-7	Year	3.28E-06	-	-	0.228	0.004	Yes	0.08	Yes	1.91E-07	0.000417	No
Cadmium & Compounds	7440-43-9	Year	3.28E-05	-	-	2.28	0.00228	Yes	0.0457	Yes	1.91E-06	0.000238	No
Chromium Hexavalent: Soluble, except Chromic Trioxide	7440-47-3	Year	1.00E-04	-	-	6.98	0.000064	Yes	0.00128	Yes	5.83E-06	6.67E-06	No
Cobalt	7440-48-4	24-hr	6.55E-05	-	0.0125	-	0.000657	Yes	0.013	No	1.25E-04	0.1	No
Copper & Compounds	7440-50-8	1-hr	3.28E-05	0.000261	-	-	0.011	No	0.219	No	5.91E-04	100	No
Sulfur dioxide	7446-09-05	1-hr	2.43E-04	0.00193	-	-	0.457	No	1.45	No	4.37E-03	660	No
Ethyl Chloride	75-00-3	24-hr	2.87E-04	-	0.0546	-	197	No	3940	No	5.44E-04	30000	No
Vinyl Chloride	75-01-4	Year	1.64E-03	-	-	114.0	0.123	Yes	2.46	Yes	9.51E-05	0.0128	No
Acetonitrile	75-05-8	Year	3.83E-03	-	-	266	576	No	11500	No	2.22E-04	60	No
Acetaldehyde	75-07-0	Year	4.10E-03	-	-	285	3.55	Yes	71	Yes	2.38E-04	0.37	No
Dichloromethane	75-09-2	Year	1.11E-02	-	-	773	9.59	Yes	192	Yes	6.45E-04	1	No
Carbon disulfide	75-15-0	24-hr	4.01E-04	-	0.0763	-	5.26	No	105	No	7.61E-04	800	No
Ethylene oxide	75-21-8	Year	7.73E-06	-	-	0.538	0.109	Yes	2.19	No	4.49E-07	0.0114	No
Bromoform	75-25-2	Year	8.76E-06	-	-	0.609	8.72	No	174	No	5.08E-07	0.909	No
1,1-Dichloroethane	75-34-3	Year	2.72E-05	-	-	1.89	6	No	120	No	1.58E-06	0.625	No
1,1-Dichloroethylene	75-35-4	24-hr	3.13E-03	-	0.595	-	1.31	No	26.3	No	5.94E-03	200	No
Chlorodifluoromethane	75-45-6	24-hr	9.98E-04	-	0.190	-	328	No	6570	No	1.90E-03	50000	No
1-Chloro-1,1-difluoroethane	75-68-3	24-hr	1.08E-03	-	0.206	-	329	No	6570	No	2.06E-03	50000	No
Ammonia	7664-41-7	24-hr	1.00E-00	-	191	-	0.465	Yes	9.31	Yes	1.90E-00	70.8	No
Selenium & Selenium Compounds (other than Hydrogen Selenide)	7782-49-2	24-hr	5.70E-06	-	0.00109	-	0.131	No	2.63	No	1.08E-05	20	No
1,2-Dichloropropane	78-87-5	Year	4.78E-05	-	-	3.32	0.959	Yes	19.2	No	2.77E-06	0.1	No
Methyl Ethyl Ketone	78-93-3	24-hr	9.59E-03	-	1.83	-	32.9	No	657	No	1.82E-02	5000	No
1,1,2-Trichloroethane	79-00-5	Year	5.92E-04	-	-	41.1	0.6	Yes	12	Yes	3.43E-05	0.0625	No
Trichloroethylene	79-01-6	Year	1.63E-03	-	-	113.2	4.8	Yes	95.9	Yes	9.44E-05	0.5	No
Acrylic Acid	79-10-7	24-hr	6.51E-04	-	0.124	-	0.00657	Yes	0.131	No	1.24E-03	1	No
1,1,2,2-Tetrachloroethane	79-34-5	Year	7.45E-04	-	-	51.8	0.165	Yes	3.3	Yes	4.32E-05	0.0172	No
2-Nitropropane	79-46-9M	24-hr	1.91E-04	-	0.0365	-	0.131	No	2.63	No	3.64E-04	20	No



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Hexachlorobutadiene	87-68-3	Year	1.16E-03	-	-	80.8	0.437	Yes	8.73	Yes	6.74E-05	0.0455	No
Naphthalene	91-20-3M	Year	1.30E-05	-	-	0.903	0.282	Yes	5.64	No	7.54E-07	0.0294	No
n-Nitroso-di-n-butylamine	924-16-3	Year	1.94E-06	-	-	0.135	0.0031	Yes	0.062	Yes	1.12E-07	0.000323	No
n-Nitrosopyrrolidine	930-55-2	Year	1.94E-06	-	-	0.135	0.016	Yes	0.32	No	1.12E-07	0.00167	No
o-Xylene	95-47-6	24-hr	1.61E-03	-	0.306	-	1.45	No	29	No	3.05E-03	221	No
2-Methylphenol	95-48-7M	24-hr	2.85E-05	-	0.00542	-	3.94	No	78.9	No	5.41E-05	600	No
Cumene	98-82-8	24-hr	7.03E-05	-	0.0134	-	2.63	No	52.6	No	1.34E-04	400	No



Notice of Construction Application: Changing an Existing Permit or Equipment

Appendix C

Notice of Construction Approval Order #DE11NWP-001 Proposed Revisions

**NON-RADIOACTIVE AIR EMISSIONS NOTICE OF
CONSTRUCTION APPROVAL ORDER
CONDITIONS AND RESTRICTIONS**

DEINWP-001

REGULATORY AUTHORITY:

Pursuant to the Washington State Department of Ecology (Ecology) General Regulations for Air Pollution Sources, Chapter 173-400 Washington Administrative Code (WAC), and Controls for New Sources of Toxic Air Pollutants, Chapter 173-460 WAC, Ecology now finds the following:

FINDINGS:

1. The United States Department of Energy proposes to modify their existing facility (Hanford) located in Richland, Washington.
2. A Notice of Construction (NOC) application was submitted on February 11, 2011 and supplemented on April 27, 2011. The application was found to be complete on May 18, 2011.
3. Extant operations of 241-AY and 241-AZ Tank Farms ventilation associated with the NOC application have been permitted under NOC Order 94-07, Revision 3, dated May 7, 2008.
4. Hanford is an existing major stationary source that emits more than 250 tons of a regulated pollutant per year.
5. The proposed project consists of replacement of primary tank ventilation exhaust systems (ventilation systems) for each of the 241-AP, and 241-SY, tank farms, and component upgrades to the existing ventilation system for 241-AY/AZ tank farms. Activities and includes installation of two mixer pumps per tank farm during Waste Feed Delivery operations. The tank farm ventilation systems will be constructed, installed, tested, and fully operational in three phases, beginning with 241-AP, to be followed by 241-SY and 241-AY/AZ, respectively.
6. Emissions of criteria pollutants from the proposed project are below the Prevention of Significant Deterioration Significant Emission Rates.
7. Hanford is located in a Class II Area designated as "attainment" for the purpose of NOC permitting for all pollutants.
8. Criteria air pollutant emission increases from the proposed project are below the *de minimis* levels in WAC 173-400-110(5)(d) with the exception of nitrogen oxides (NOx) and volatile organic compounds (VOCs) and identified Toxic Air Pollutants (TAPs).

9. The proposed project anticipates emission of dimethyl mercury (Chemical Abstract Services [CAS] # 593-74-8), resulting in an ambient consequence above its Acceptable Source Impact Levels (ASIL) of WAC 173-460-150. Emissions of a TAP with ambient consequences above

its ASIL require approval of a Second Tier Petition [WAC 173-460-090]. Second Tier analysis indicated exhauster emissions are permissible as they fall within the risk limits identified in WAC 173-460-090(7).

10. As proposed, the project would emit 32 TAPs exceeding small quantity emission rates (SQERs) of WAC 173-460-150. All TAPs met the ASILs except for dimethyl mercury (see finding 9, above).

11. Best Available Control Technology (BACT) and Toxics Best Available Control Technology (tBACT) for the 241-SY and 241-AP tank ventilation systems this project have been determined to be operation of each primary tank ventilation exhauster system not exceeding the maximum ventilation rates in Table 1 with a moisture de-entrainer, heater, pre-filters, and a two-stage High Efficiency Particulate Air (HEPA) filtration system in service in each treatment train. The BACT and tBACT for the 241-AY/AZ Ventilation System have been determined to be the operation of the tank ventilation systems not exceeding the maximum ventilation rates in Table 1 with a condenser, HEME, heater, and two-stage HEPA filtration system in service of the treatment train.

12. The proposed project, if constructed and operated as herein required, will provide BACT and tBACT.

13. The proposed project, if operated as herein required, will be in accordance with applicable rules and regulations, as set forth in Chapter 173-400 WAC and Chapter 173-460 WAC, and the operation thereof will not result in ambient air quality standards being exceeded.

14. The project will have no significant impact on air quality.

THEREFORE, IT IS ORDERED that the project as described in said Notice of Construction application, and as detailed in emissions estimates and impact and control technology assessments submitted to the Washington State Department of Ecology in reference thereto, is approved for construction, installation, and operation, provided compliance with the conditions and restrictions described below. This Order shall be identified as NOC Order DEINWP-001. This Order does not apply to the existing ventilation systems and will become effective upon each ventilation system, 241- AP, 241-SY, and 241-AY/AZ, becoming fully operational. Upon the effective date of this Order covering the fully operational status of the 241-AY/AZ ventilation system, NOC Order 94-07, Revision 3, is voided.

1.0 APPROVAL CONDITIONS

1.1 Effective Date

The effective date of this authorization shall be that as signed in Section 4.0. All references to procedures or test methods shall be to those in effect as of the effective date of this ORDER.

1.2 Emission Limits

- 1.2.1 Visible emissions from each stack shall not exceed five (5) percent opacity.
- 1.2.2 Volatile organic compound emissions shall not exceed 10.1 tons per year from the 241-AP, 241-SY and 241-AY/AZ ventilations systems. As the ventilation systems become fully operational the volatile organic emissions from the 241-SY, 241-AP, and 241-AY/AZ ventilation system shall not exceed 3.1, 3.8, and 3.2 tons per year, respectively. Emissions of VOCs are based upon the operation of two tanks being mixed per tank farm.
- 1.2.3 All TAPs, as submitted in the Permittee's Notice of Construction Application (Table 2), shall be below their respective ASIL or approved through a Second Tier review.
- 1.2.4 Ammonia emissions from the project shall not exceed 190.8 pounds per day from the 241-AP, 241-SY and 241-AY/AZ ventilation systems. As the ventilation systems become fully operational, the ammonia emissions from the 241-SY, 241- AP, and 241-AY/AZ ventilation system shall not exceed 58.1, 71.9, and 60.8 pounds per day, respectively. Emissions of ammonia are based upon the operation of two tanks being mixed per tank farm.

1.3 Operational Limits

- 1.3.1 Normal Double-Shell Tank (DST) primary tank ventilation system flow rates during Normal Operations (e.g. storage, retrieval, and sampling) are shown in Table 1. The maximum flow rates for the DST ventilation systems shall not exceed ventilation rates for Maximum Operations (Table 1).

Table 1: Project Farm Ventilation Rates

Tank Farm(s)	Normal Operations	Maximum Operations
241-SY	1,360 scfm	2,500 scfm
241-AP	1,500 scfm	3,000 scfm
241-AY/AZ	850 1,500 scfm	<u>1,000</u> 3000 scfm

scfm = standard cubic feet per minute, 1 atmosphere pressure at 20°C

- 1.3.2 At no time shall more than two of the three tanks in the 241-SY tank farm (241SY-101 through 241-SY-103) be under active mixing and Waste Feed Delivery operations. Waste Feed Delivery operations are defined as those

which mix and transfer waste, including transfers to the Waste Treatment and Immobilization Plant.

- 1.3.3 At no time shall more than two of the eight tanks in the 241-AP Tank Farm (241-AP-101 through 241-AP-108) be under active mixing and Waste Feed Delivery operations.
- 1.3.4 At no time shall more than two of the four tanks within the 241-AY and 241-AZ Tank Farms [241-AY-101, 241-AY-102, 241-AZ-101, and 241-AZ-102] be under active mixing and Waste Feed Delivery operations.
- 1.3.5 The ventilation systems shall be operated in compliance with tBACT controls in Finding 11.

1.4 Compliance Demonstration

- 1.4.1 Compliance with Approval Condition 1.2.1 shall be met by Tier 3 Visible Emissions Survey requirements of the Hanford Air Operating Permit.
- 1.4.2 Should visible emissions be observed which are not solely attributable to water condensation, compliance with Approval Condition 1.2.1 shall be met by performing an opacity determination utilizing 40 Code of Federal Regulations (CFR) Part 60, Appendix A, Method 9, providing that such determination shall not place the visible emission observer in hazard greater than that identified for the general worker.
- 1.4.3 Compliance with Approval Condition 1.2.2 shall be demonstrated by VOC stack sampling as described in Section 3.0, and applying these concentration readings with contemporaneous stack flow rate and temperatures to determine mass release rate of VOCs in pounds per year.
- 1.4.4 Compliance with Approval Condition 1.2.3 shall be demonstrated by stack sampling as described in Section 3.0 for TAPs, and applying these concentration readings with contemporaneous stack flow rate and temperatures to determine the mass release rate of these TAPs in pounds and their respective release rate averaging times in WAC 173-460-150.
- 1.4.5 Compliance with Approval Condition 1.2.4 shall be demonstrated by stack sampling as described in Section 3.0 for ammonia, and applying these concentration readings with contemporaneous stack flow rate and temperatures to determine daily release rate of ammonia.
- 1.4.6 Compliance with Approval Condition 1.3.1 shall be demonstrated by stack gas flow and temperature measurement annually.
- 1.4.7 Compliance with Approval Conditions 1.3.2, 1.3.3 and 1.3.4 shall each be demonstrated through operational record keeping provisions of Section 2.4.
- 1.4.8 Compliance with Approval Condition 1.3.5 shall be met by operating the exhausters systems in accordance with tBACT emission controls found for this project.

2.0 NOTIFICATIONS AND SUBMITTALS

2.1 Addressing

Any required notifications and submittals required under these Approval Conditions shall be sent to:

Washington State Department of Ecology
Nuclear Waste Program
3100 Port of Benton Boulevard
Richland, Washington 99354

2.2 Schedule

A schedule of installation and operation activities for these exhauster systems shall be submitted within thirty (30) days of issuance of this order. Ecology shall be notified 30 days prior to the starting of construction of each tank farm ventilation system.

2.3 Operational Notice

Notification will be made at least ten (10) days prior to initial testing. The initial testing period may include periodic alternate operation of either the old exhauster or the new exhausters covered by this order. Notification will be made at least ten (10) days prior to the new ventilations systems becoming fully operational.

2.4 Recordkeeping

Specific records shall be kept on the Hanford 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 sixty (60) month period. The records to be kept shall include the following:

1. Records of calibration of stack gas flow rate and temperature measurement devices.
2. Exhauster system stack flow rates and temperatures records.
3. Emission monitoring results required in Section 3.0.
4. Supporting data and calculations to demonstrate compliance as detailed in Approval Conditions 1.4.3, 1.4.4, and 1.4.5.
5. All monitoring and operations records required to operate and maintain the emission control equipment which implements tBACT as described in Section 1.0.
6. Laboratory analysis result summaries taken in accordance with these approval conditions of any samples undertaken after the effective date of this ORDER from 241-AP, 241-SY or 241-AY/AZ tank farm tank headspaces or primary tank ventilation system exhaust which are examined for organic species or other TAPS.
7. Waste Feed Delivery operations will be recorded into operational records sufficient to determine the onset and cessation of such operations for each tank subject to this Order.

2.5 Reporting

Results of emission assessments conducted pursuant to Section 3.1 shall be submitted to Ecology within ninety (90) days of completion of such assessment.

Identification of any TAP not previously identified within the Notice of Construction Application emissions estimate shall be submitted to Ecology within ninety (90) days of completion of laboratory analyses which verify emissions of that toxic air pollutant from the project.

Visible emission surveys, conducted pursuant to Compliance Demonstration requirement 1.4.2, shall be submitted to Ecology within thirty (30) days of completion of the survey with an assessment of the cause of visible emissions and a report of the maintenance conducted to maintain the subject exhaust system's tBACT operations.

3.0 EMISSION MONITORING

The following sampling and monitoring are required in order to verify emissions estimates and compliance with Section 1.3, above. The term 'each exhauster system,' herein, shall mean each primary tank ventilation exhauster system within the 241-AP Tank Farm, 241-SY Tank Farm, and 241-AY/AZ Tank Farms.

3.1 Baseline Assessment

All baseline assessments shall be conducted within ninety (90) days of commencement of operations of each exhauster system.

3.1.1 Ammonia Baseline

Ammonia stack concentrations shall be sampled a minimum of three times. Ammonia sampling and analysis will be in accord with approved alternative sampling procedures including the use of Draeger tubes to measure stack gas concentration of ammonia providing such devices are spanned to appropriately measure the stack gas ammonia concentration. Stack flow rate and temperature will be applied with the ammonia stack gas concentration to report ammonia emission in terms of pounds per day.

3.1.2 Dimethyl Mercury Baseline

Dimethyl mercury sampling and analysis will be in accord with the United States Environmental Protection Agency (EPA) approved procedures for each exhauster system.

3.2 VOC Emission Assessment

VOC emissions shall be assessed annually in accord with EPA approved procedures for each exhauster system.

3.3 TAPs Emission Assessment

Permittee will develop and implement an annual sampling and analysis plan (SAP) for each exhauster system. Each SAP shall address the emission of a minimum of the three TAPs with the highest potential ambient concentration relative to their ASILs of WAC 173-460-150 in addition to dimethyl mercury. The TAPs addressed in the SAP shall be identified from Table 2 and based upon best engineering judgment and most current tank content data. Analytical methods for the analyses shall be the EPA, Occupational Safety and Health Administration (OSHA), or National Institute for Occupational Safety and Health (NIOSH) approved, or by approved equivalent method.

3.4 Ammonia Emission Assessment

In order to maintain reasonable assurance of continued compliance with emission limitations from these exhauster systems, quarterly assessment of ammonia stack emissions will be conducted according to Section 3.1.1. A minimum of three samples shall be used to assess these emissions.

4.0 APPROVAL ORDER AND RESTRICTIONS

Operation of the subject primary tank ventilation systems is intended for the storage, treatment, sampling, and Waste Feed Delivery of waste contained in the tanks as described in the NOC application. For the purposes of this Authorization, "Waste Feed Delivery" includes mixing and pumping as necessary and sufficient for transfer of wastes to or from the subject tank. Waste Feed Delivery operations may encompass waste sampling activity but such sampling shall not, in and of itself, be deemed the basis for identifying operations as Waste Feed Delivery operations.

Approved TAP emissions, for purposes of evaluation of potential future emission increases, shall be as identified within the NOC application and detailed in Table 2 for the 241-AP, 241-SY, and 241-AY/AZ ventilation systems. Approved TAP emissions per ventilation system are detailed in Table 3 for the 241-SY ventilation system, Table 4 for the 241-AP ventilation system, and Table 5 for the 241-AY/AZ ventilation system.

5.0 GENERAL CONDITIONS

All plans, specifications, and other information submitted to the Department of Ecology relative to this project and any authorizations or approvals or denials in relation thereto shall be incorporated herein and made a part thereof.

- 5.1 **Availability of Order and O&M Manual:** Legible copies of this Order and the O&M manual shall be available to employees in direct operation of the tank farm exhaust systems, and be available for review upon request by Ecology.
- 5.2 **Registration fees.** The applicant will pay the required registration fees within the deadline date specified on the invoice from Ecology.
- 5.3 **Discontinuing Construction and/or Operations:** It shall be grounds for rescission of this approval if physical construction and/or operation is discontinued for a period of eighteen (18) months or more. Ecology may extend the 18-month period upon a satisfactory showing that an extension is justified.
- 5.4 **Compliance Assurance Access:** Access to the source by representatives of Ecology or the EPA shall be permitted upon request. Failure to allow such access is grounds for enforcement action under the federal Clean Air Act or the Washington State Clean Air Act, and may result in revocation of this Approval Order.
- 5.5 **Equipment Operation:** Operation of the tank farm ventilation system and related equipment shall be conducted in compliance with all data and specifications submitted as part of the NOC application and in accordance with the O&M manual, unless otherwise approved in writing by Ecology.
- 5.6 **Activities Inconsistent with the NOC Application and this Approval 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.
- 5.7 **Obligations under Other Laws or Regulations:** Nothing in this Approval Order shall be construed to relieve the permittee of its obligations under any local, state or federal laws or regulations.
- 5.8 **Modifications:** Any modifications to the tank farm ventilation system's operating and maintenance procedures, contrary to information in the NOC application, shall be reported to Ecology at least 60 days before such modification. Such modification may require a new or amended NOC Approval Order.

YOUR RIGHT TO APPEAL

You have a right to appeal this Order to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of this Order. The appeal process is governed by Chapter 43.21B RCW and Chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal you must do all of the following within 30 days of the date of receipt of this Order:

- File your appeal and a copy of this Order with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.
- Serve a copy of your appeal and this Order on Ecology in paper form - by mail or in person. (See addresses below.) E-mail is not accepted.

You must also comply with other applicable requirements in Chapter 43.21B RCW and Chapter 371-08 WAC.

ADDRESS AND LOCATION INFORMATION

Street Addresses	Mailing Addresses
<p>Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503</p> <p>Pollution Control Hearings Board 1111 Israel RD SW STE 301 Tumwater, WA 98501</p>	<p>Department of Ecology Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608</p> <p>Pollution Control Hearings Board PO Box 40903 Olympia, WA 98504-0903</p>

This Authorization may be modified, suspended, or revoked in whole, or in 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 fully disclose 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.

The New Source Review Fee has been assessed according to WAC 173-455. No approval of a permit or service for any activity covered in this Order will be valid until the required fee is paid in full.

DATED at Richland, Washington, this _____

Table 2: Toxic Air Pollutants from the 241-SY, 241-AP, and 241-AY/AZ Ventilation Systems (DE11NWP-001)

Chemical Name	CAS #	Avg. Period	Emissions (g/s)	Emissions (lbs/avg period)	SQER (lbs/avg. period)	Emissions Above SQER?	ASL ($\mu\text{g}/\text{m}^3$)	Dispersed Conc. ($\mu\text{g}/\text{m}^3$)
Ethylbenzene	100-41-4	Year	1.41E-03	98.1	76.8	Yes	0.4	7.90E-05
Styrene	100-42-5	24-hr	4.62E-04	0.038	118	No	900	8.79E-04
Benzyl Chloride	100-44-7	Year	1.34E-05	0.932	3.91	No	0.0204	7.51E-07
Nitrogen dioxide	10102-44-0	1-hr	5.51E-02	0.438	1.03	No	470	9.37E-01
n-Nitroso-n-methylethylamine	10595-95-6	Year	1.94E-06	0.135	0.0305	Yes	0.000159	1.09E-07
p-Xylene	106-42-3	24-hr	1.63E-03	0.310	29	No	221	3.09E-03
1,4-Dichlorobenzene	106-46-7	Year	6.21E-05	4.32	17.4	No	0.0909	3.48E-06
1,2-Epoxybutane	106-88-7	24-hr	4.04E-05	0.00769	2.63	No	20	7.67E-05
1,2-Dibromoethane	106-93-4	Year	7.97E-05	5.54	2.71	Yes	0.0141	4.46E-06
1,3-Butadiene	106-99-0	Year	1.99E-04	13.9	1.13	Yes	0.00588	1.12E-03
Acrolein	107-02-8	24-hr	2.98E-06	0.000568	0.00789	No	0.06	5.66E-06
Allyl Chloride	107-05-1	Year	1.02E-03	0.709	32	No	0.167	5.71E-07
1,2-Dichloroethane	107-06-2	Year	1.63E-03	113.20	7.39	Yes	0.0385	9.12E-05
Acrylonitrile	107-13-1M	Year	1.23E-05	0.856	0.662	Yes	0.00345	6.90E-07
Vinyl acetate	108-05-4	24-hr	4.48E-07	8.53E-05	26.3	No	200	8.51E-07
Methyl Isobutyl Ketone	108-10-1	24-hr	2.77E-03	0.527	394	No	3000	5.26E-03
m-Xylene	108-38-3M	24-hr	9.43E-04	0.179	29	No	221	1.79E-03
3-Methylphenol	108-39-4	24-hr	4.74E-06	0.00090	78.9	No	600	9.01E-06
Toluene	108-88-3	24-hr	4.09E-02	7.78	657	No	5000	7.76E-02
Chlorobenzene	108-90-7	24-hr	4.99E-04	0.095	131	No	1000	9.49E-04
Phenol	108-95-2	24-hr	8.14E-03	1.55	26.3	No	200	1.55E-02
n-Hexane	110-54-3	24-hr	5.16E-03	0.98	92	No	700	9.81E-03
Cyclohexane	110-82-7	24-hr	1.58E-03	0.301	789	No	6001	3.01E-03
Ethylene glycol monoethyl ether	111-76-2	24-hr	1.52E-04	0.029	1710	No	13000	2.88E-04
Propylene	115-07-1	24-hr	3.93E-03	0.748	394	No	3000	7.46E-03
Di(2-ethylhexyl)phthalate	117-81-7	Year	7.46E-07	0.0518	8	No	0.0417	4.18E-08
1,4-Dioxane	123-91-1	Year	7.02E-04	48.8	24.9	Yes	0.13	3.93E-05
Perchloroethylene	127-18-4	Year	1.62E-03	112.4	32.4	Yes	0.169	9.06E-05
Vanadium Pentoxide	1314-62-1	1-hr	1.17E-04	0.00093	0.0657	No	30	1.99E-03
Polychlorinated Biphenyls (PCBs)	1336-36-3	Year	2.04E-05	1.415	0.336	Yes	0.00175	1.14E-06
Trans-1,2-dichloroethene	156-60-5	24-hr	1.19E-07	2.27E-05	106	No	807	2.27E-07
Butylated hydroxyanisole	25013-16-5	Year	1.42E-06	0.0989	3360	No	17.5	7.97E-08
Formaldehyde	50-00-0	Year	2.35E-05	1.64	32	No	0.167	1.32E-06
n-Nitrosodiethylamine	55-18-5	Year	1.94E-06	0.135	0.0192	Yes	0.0001	1.09E-07
Carbon Tetrachloride	56-23-5	Year	1.64E-03	114.0	4.57	Yes	0.0238	9.18E-05
1,1-Dimethylhydrazine	57-14-7	24-hr	1.74E-06	0.000332	0.0657	No	0.5	3.31E-06
Propylene Glycol	57-55-6	24-hr	2.25E-04	0.0429	3.75	No	28.5	4.28E-04
n-Nitrosomorpholine	59-89-2	Year	8.96E-06	0.623	0.101	Yes	0.000526	3.01E-07
Dimethyl Mercury	593-74-8	24-hr	4.12E-08	7.85E-06	1.00E-99	Yes	1.00E-99	7.83E-08
Acetamide	60-35-5	Year	6.05E-06	0.421	9.59	No	0.05	3.39E-07
n-Nitrosodimethylamine	62-75-9	Year	2.65E-03	184	0.0416	Yes	0.000217	1.48E-04

Table 2: Toxic Air Pollutants from the 241-SY, 241-AP, and 241-AY/AZ Ventilation Systems (DE11NWP-001)

Chemical Name	CAS #	Avg. Period	Emissions (g/s)	Emissions (lbs/avg period)	SQER (lbs/avg. period)	Emissions Above SQER?	ASIL ($\mu\text{g}/\text{m}^3$)	Dispersed Conc. ($\mu\text{g}/\text{m}^3$)
n-Nitrosodi-n-propylamine	621-64-7	Year	1.94E-06	0.135	0.0959	Yes	0.0005	1.09E-03
Methyl Isocyanate	624-83-9	24-hr	1.77E-06	0.002337	0.131	No	1	3.36E-06
Carbon monoxide	630-08-0	1-hr	3.73E-02	0.296	50.4	No	23000	6.34E-01
Methyl Alcohol	67-56-1	24-hr	7.11E-02	13.5	526	No	4000	1.35E-01
Isopropyl Alcohol	67-63-0	1-hr	3.37E-03	0.0268	7.01	No	3200	5.74E-02
Chloroform	67-66-3	Year	1.64E-03	114.0	8.35	Yes	0.0435	9.18E-05
Hexachloroethane	67-72-1	Year	1.68E-03	117.0	17.4	Yes	0.0909	9.42E-05
Benzene	71-43-2	Year	1.63E-03	113.2	6.62	Yes	0.0345	9.12E-05
1,1,1-Trichloroethane	71-55-6	24-hr	6.74E-05	0.0128	131	No	1000	1.28E-04
Methyl Bromide	74-83-9	24-hr	6.42E-05	0.0122	0.657	No	5	1.22E-04
Methyl Chloride	74-87-3	24-hr	2.24E-04	0.0426	11.8	No	90	4.25E-04
Hydrogen Cyanide	74-90-8	24-hr	5.69E-06	0.00108	1.18	No	9	1.08E-05
Lead and compounds (NOS)	7439-92-1	Year	6.55E-05	4.56	16	No	0.0833	3.67E-06
Manganese & Compounds	7439-96-5	24-hr	6.55E-05	0.0123	0.00526	Yes	0.04	1.29E-04
Mercury, Elemental	7439-97-6	24-hr	1.99E-05	0.00378	0.0118	No	0.09	3.77E-05
Arsenic & Inorganic Arsenic Compounds	7440-38-2	Year	6.55E-05	4.56	0.0581	Yes	0.000503	3.67E-06
Beryllium & Compounds (NOS)	7440-41-7	Year	3.28E-06	0.228	0.08	Yes	0.000417	1.84E-07
Cadmium & Compounds	7440-43-9	Year	3.28E-05	2.27	0.0457	Yes	0.000238	1.84E-06
Chromium Hexavalent Soluble, except Chromium Trioxide	7440-47-3	Year	1.00E-04	6.98	0.00128	Yes	6.67E-06	5.63E-06
Cobalt	7440-48-4	24-hr	6.55E-05	0.0125	0.013	No	0.1	1.25E-04
Copper & Compounds	7440-50-8	1-hr	3.28E-05	0.000261	0.219	No	100	5.58E-04
Sulfur dioxide	7446-09-05	1-hr	2.43E-04	0.00193	1.45	No	660	4.13E-03
Ethyl Chloride	75-00-3	24-hr	2.87E-04	0.0546	3940	No	30000	5.44E-04
Vinyl Chloride	75-01-4	Year	1.64E-03	114.0	2.46	Yes	0.0128	9.18E-05
Acetonitrile	75-05-8	Year	3.83E-03	266	11500	No	60	2.14E-04
Acetaldehyde	75-07-0	Year	4.10E-03	285	71	Yes	0.37	2.30E-04
Dichloromethane	75-09-2	Year	1.11E-02	773	192	Yes	1	6.23E-04
Carbon disulfide	75-15-0	24-hr	4.01E-04	0.0763	103	No	800	7.61E-04
Ethylene oxide	75-21-8	Year	7.73E-06	0.538	2.19	No	0.0114	4.33E-07
Bromoform	75-25-2	Year	8.76E-06	0.609	174	No	0.909	4.91E-07
1,1-Dichloroethane	75-34-3	Year	2.72E-05	1.85	120	No	0.625	1.52E-06
1,1-Dichloroethylene	75-35-4	24-hr	3.13E-03	0.595	26.3	No	200	5.94E-03
Chlorodifluoromethane	75-45-6	24-hr	9.98E-04	0.190	6570	No	50000	1.90E-03
1-Chloro-1,1-difluoroethane	75-68-3	24-hr	1.08E-03	0.206	6570	No	50000	2.06E-03
Ammonia	7664-41-7	24-hr	1.00E+00	191	9.31	Yes	70.8	1.90E+00
Selenium & Selenium Compounds (other than Hydrogen Selenide)	7782-49-2	24-hr	5.70E-06	0.00109	2.63	No	20	1.08E-05
1,2-Dichloropropane	78-87-5	Year	4.78E-05	3.32	19.2	No	0.1	2.68E-06
Methyl Ethyl Ketone	78-93-3	24-hr	9.59E-03	1.83	657	No	5000	1.82E-02
1,1,2-Trichloroethane	79-00-5	Year	5.92E-04	41.1	12	Yes	0.0625	3.31E-05

Table 2: Toxic Air Pollutants from the 241-SY, 241-AP, and 241-AY/AZ Ventilation Systems (DE11NWP-001)

Chemical Name	CAS #	Avg. Period	Emissions (g/s)	Emissions (lbs/avg period)	SQER (lbs/avg. period)	Emissions Above SQER?	ASIL ($\mu\text{g}/\text{m}^3$)	Dispersed Conc. ($\mu\text{g}/\text{m}^3$)
Trichloroethylene	79-01-6	Year	1.63E-03	113.2	95.9	Yes	0.5	9.12E-05
Acrylic Acid	79-10-7	24-hr	6.51E-04	0.124	0.131	No	8	1.24E-03
1,1,2,2-Tetrachloroethane	79-34-5	Year	7.45E-04	51.8	3.3	Yes	0.0172	4.17E-05
2-Nitropropane	79-46-9M	24-hr	1.91E-04	0.0365	2.63	No	20	3.64E-04
Hexachlorobutadiene	87-68-3	Year	1.16E-03	80.8	8.73	Yes	0.0455	6.50E-05
Naphthalene	91-20-3M	Year	1.30E-05	0.903	5.64	No	0.0294	7.28E-07
n-Nitroso-di-n-butylamine	924-16-3	Year	1.94E-06	0.135	0.062	Yes	0.000323	1.09E-07
n-Nitrosopyrrolidine	930-55-2	Year	1.94E-06	0.135	0.32	No	0.00167	1.09E-07
o-Xylene	95-47-6	24-hr	1.61E-03	0.300	29	No	221	3.05E-03
2-Methylphenol	95-48-7M	24-hr	2.85E-05	0.00542	78.9	No	606	5.41E-05
Cumene	98-82-8	24-hr	7.03E-05	0.0134	52.6	No	400	1.34E-04

Note: CAS # = Chemical Abstracts Service registry number

Table 3: Toxic Air Pollutants from the 241-SY Ventilation System
(DEINWP-001)

Chemical Name	CAS #	Avg. Period	Emissions (g/s)	Emissions (lbs/avg. period)	SQER (lbs/avg. period)	Emissions Above SQER?
Ethylbenzene	100-41-4	Year	4.29E-04	2.98E+01	76.8	No
Styrene	100-42-5	24-hr	1.41E-04	2.69E-02	118	No
Benzyl Chloride	100-44-7	Year	4.08E-06	2.84E-01	3.91	No
Nitrogen dioxide	10102-44-0	1-hr	1.68E-02	1.33E-01	1.03	No
n-Nitroso-n-methylethylamine	10595-95-6	Year	5.90E-07	4.10E-02	0.0305	Yes
p-Xylene	106-42-3	24-hr	4.96E-04	9.45E-02	29	No
1,4-Dichlorobenzene	106-46-7	Year	1.89E-05	1.31E+00	17.4	No
1,2-Epoxybutane	106-88-7	24-hr	1.23E-05	2.34E-03	2.63	No
1,2-Dibromoethane	106-93-4	Year	2.43E-05	1.69E+00	2.71	No
1,3-Butadiene	106-99-0	Year	6.06E-05	4.21E+00	1.13	Yes
Acrolein	107-02-8	24-hr	9.07E-07	1.73E-04	0.00789	No
Allyl Chloride	107-05-1	Year	3.10E-06	2.16E-01	32	No
1,2-Dichloroethane	107-06-2	Year	4.96E-04	3.45E+01	7.39	Yes
Acrylonitrile	107-13-1M	Year	3.75E-06	2.61E-01	0.662	No
Vinyl acetate	108-05-4	24-hr	1.36E-07	2.59E-05	26.3	No
Methyl Isobutyl Ketone	108-10-1	24-hr	8.42E-04	1.60E-01	394	No
m-Xylene	108-38-3M	24-hr	2.87E-04	5.47E-02	29	No
3-Methylphenol	108-39-4	24-hr	1.44E-06	2.74E-04	78.9	No
Toluene	108-88-3	24-hr	1.24E-02	2.36E+00	657	No
Chlorobenzene	108-90-7	24-hr	1.52E-04	2.90E-02	131	No
Phenol	108-95-2	24-hr	2.48E-03	4.72E-01	26.3	No
n-Hexane	110-54-3	24-hr	1.57E-03	2.99E-01	92	No
Cyclohexane	110-82-7	24-hr	4.81E-04	9.16E-02	789	No
Ethylene glycol monoethyl ether	111-76-2	24-hr	4.61E-05	8.78E-03	1710	No
Propylene	115-07-1	24-hr	1.20E-03	2.29E-01	394	No
Di(2-ethylhexyl)phthalate	117-81-7	Year	2.27E-07	1.58E-02	8	No
1,4-Dioxane	123-91-1	Year	2.14E-04	1.49E+01	24.9	No
Perchloroethylene	127-18-4	Year	4.92E-04	3.42E+01	32.4	Yes
Vanadium Pentoxide	1314-62-1	1-hr	3.57E-05	2.83E-04	0.0657	No
Polychlorinated Biphenyls (PCBs)	1336-36-3	Year	6.19E-06	4.30E-01	0.336	Yes
Trans-1,2-dichloroethene	156-60-5	24-hr	3.63E-08	6.91E-06	106	No
Butylated hydroxyanisole	25013-16-5	Year	4.33E-07	3.01E-02	3360	No
Formaldehyde	50-00-0	Year	7.16E-06	4.98E-01	32	No
n-Nitrosodiethylamine	55-18-5	Year	5.90E-07	4.10E-02	0.0192	Yes
Carbon Tetrachloride	56-23-5	Year	4.99E-04	3.47E+01	4.57	Yes
1,1-Dimethylhydrazine	57-14-7	24-hr	5.30E-07	1.01E-04	0.0657	No
Propylene Glycol	57-55-6	24-hr	6.85E-05	1.30E-02	3.75	No
n-Nitrosomorpholine	59-89-2	Year	2.73E-06	1.90E-01	0.101	Yes
Dimethyl Mercury	593-74-8	24-hr	1.25E-08	2.38E-06	1.00E-99	Yes
Acetamide	60-35-5	Year	1.84E-06	1.28E-01	9.59	No

**Table 3: Toxic Air Pollutants from the 241-SY Ventilation System
(DE11NWP-001)**

Chemical Name	CAS #	Avg. Period	Emissions (g/s)	Emissions (lbs/avg. period)	SQER (lbs/avg. period)	Emissions Above SQER?
n-Nitrosodimethylamine	62-75-9	Year	8.05E-04	5.60E+01	0.0416	Yes
n-Nitrosodi-n-propylamine	621-64-7	Year	5.90E-07	4.10E-02	0.0959	No
Methyl Isocyanate	624-83-9	24-hr	5.38E-07	1.02E-04	0.131	No
Carbon monoxide	630-08-0	1-hr	1.13E-02	8.97E-02	50.4	No
Methyl Alcohol	67-56-1	24-hr	2.16E-02	4.11E+00	526	No
Isopropyl Alcohol	67-63-0	1-hr	1.03E-03	8.17E-03	7.01	No
Chloroform	67-66-3	Year	4.99E-04	3.47E+01	8.35	Yes
Hexachloroethane	67-72-1	Year	5.12E-04	3.56E+01	17.4	Yes
Benzene	71-43-2	Year	4.96E-04	3.45E+01	6.62	Yes
1,1,1-Trichloroethane	71-55-6	24-hr	2.05E-05	3.90E-03	131	No
Methyl Bromide	74-83-9	24-hr	1.95E-05	3.71E-03	0.657	No
Methyl Chloride	74-87-3	24-hr	6.81E-05	1.30E-02	11.8	No
Hydrogen Cyanide	74-90-8	24-hr	1.73E-06	3.30E-04	1.18	No
Lead and compounds (NOS)	7439-92-1	Year	1.99E-05	1.38E+00	16	No
Manganese & Compounds	7439-96-5	24-hr	1.99E-05	3.79E-03	0.00526	No
Mercury, Elemental	7439-97-6	24-hr	6.05E-06	1.15E-03	0.0118	No
Arsenic & Inorganic Arsenic Compounds	7440-38-2	Year	1.99E-05	1.38E+00	0.0581	Yes
Beryllium & Compounds (NOS)	7440-41-7	Year	1.00E-06	6.95E-02	0.08	No
Cadmium & Compounds	7440-43-9	Year	1.00E-05	6.95E-01	0.0457	Yes
Chromium Hexavalent; Soluble, except Chromic Trioxide	7440-47-3	Year	3.06E-05	2.13E+00	0.00128	Yes
Cobalt	7440-48-4	24-hr	1.99E-05	3.79E-03	0.013	No
Copper & Compounds	7440-50-8	1-hr	1.00E-05	7.94E-05	0.219	No
Sulfur dioxide	7446-09-05	1-hr	7.39E-05	5.87E-04	1.45	No
Ethyl Chloride	75-00-3	24-hr	8.72E-05	1.66E-02	3940	No
Vinyl Chloride	75-01-4	Year	4.99E-04	3.47E+01	2.46	Yes
Acetonitrile	75-05-8	Year	1.16E-03	8.06E+01	11500	No
Acetaldehyde	75-07-0	Year	1.25E-03	8.69E+01	71	Yes
Dichloromethane	75-09-2	Year	3.39E-03	2.36E+02	192	Yes
Carbon disulfide	75-15-0	24-hr	1.22E-04	2.32E-02	105	No
Ethylene oxide	75-21-8	Year	2.35E-06	1.63E-01	2.19	No
Bromoform	75-25-2	Year	2.67E-06	1.86E-01	174	No
1,1-Dichloroethane	75-34-3	Year	8.28E-06	5.76E-01	120	No
1,1-Dichloroethylene	75-35-4	24-hr	9.51E-04	1.81E-01	26.3	No
Chlorodifluoromethane	75-45-6	24-hr	3.04E-04	5.79E-02	6570	No
1-Chloro-1,1-difluoroethane	75-68-3	24-hr	3.30E-04	6.29E-02	6570	No
Ammonia	7664-41-7	24-hr	3.05E-01	5.81E+01	9.31	Yes
Selenium & Selenium Compounds (other than Hydrogen Selenide)	7782-49-2	24-hr	1.73E-06	3.30E-04	2.63	No

**Table 3: Toxic Air Pollutants from the 241-SY Ventilation System
(DE11NWP-001)**

Chemical Name	CAS #	Avg. Period	Emissions (g/s)	Emissions (lbs/avg. period)	SQER (lbs/avg. period)	Emissions Above SQER?
1,2-Dichloropropane	78-87-5	Year	1.46E-05	1.02E+00	19.2	No
Methyl Ethyl Ketone	78-93-3	24-hr	2.92E-03	5.56E-01	657	No
1,1,2-Trichloroethane	79-00-5	Year	1.80E-04	1.25E+01	12	Yes
Trichloroethylene	79-01-6	Year	4.96E-04	3.45E+01	95.9	No
Acrylic Acid	79-10-7	24-hr	1.98E-04	3.77E-02	0.131	No
1,1,2,2-Tetrachloroethane	79-34-5	Year	2.27E-04	1.58E+01	3.3	Yes
2-Nitropropane	79-46-9M	24-hr	5.83E-05	1.11E-02	2.63	No
Hexachlorobutadiene	87-68-3	Year	3.53E-04	2.45E+01	8.73	Yes
Naphthalene	91-20-3M	Year	3.95E-06	2.75E-01	5.64	No
n-Nitroso-di-n-butylamine	924-16-3	Year	5.90E-07	4.10E-02	0.062	No
n-Nitrosopyrrolidine	930-55-2	Year	5.90E-07	4.10E-02	0.32	No
o-Xylene	95-47-6	24-hr	4.89E-04	9.31E-02	29	No
2-Methylphenol	95-48-7M	24-hr	8.66E-06	1.65E-03	78.9	No
Cumene	98-82-8	24-hr	2.14E-05	4.08E-03	52.6	No

Note: CAS # = Chemical Abstracts Service registry number

Table 4: Toxic Air Pollutants from the 241-AP Ventilation System
(DE11NWP-001)

Chemical Name	CAS #	Avg. Period	Emissions (g/s)	Emissions (lbs/avg. period)	SQER (lbs/avg. period)	Emissions Above SQER?
Ethylbenzene	100-41-4	Year	5.32E-04	3.70E+01	76.8	No
Styrene	100-42-5	24-hr	1.74E-04	3.32E-02	118	No
Benzyl Chloride	100-44-7	Year	5.05E-06	3.51E-01	3.91	No
Nitrogen dioxide	10102-44-0	1-hr	2.08E-02	1.65E-01	1.03	No
n-Nitroso-n-methylethylamine	10595-95-6	Year	7.30E-07	5.08E-02	0.0305	Yes
p-Xylene	106-42-3	24-hr	6.14E-04	1.17E-01	29	No
1,4-Dichlorobenzene	106-46-7	Year	2.34E-05	1.63E+00	17.4	No
1,2-Epoxybutane	106-88-7	24-hr	1.52E-05	2.90E-03	2.63	No
1,2-Dibromoethane	106-93-4	Year	3.00E-05	2.09E+00	2.71	No
1,3-Butadiene	106-99-0	Year	7.51E-05	5.22E+00	1.13	Yes
Acrolein	107-02-8	24-hr	1.12E-06	2.14E-04	0.00789	No
Allyl Chloride	107-05-1	Year	3.84E-06	2.67E-01	32	No
1,2-Dichloroethane	107-06-2	Year	6.14E-04	4.27E+01	7.39	Yes
Acrylonitrile	107-13-1M	Year	4.64E-06	3.23E-01	0.662	No
Vinyl acetate	108-05-4	24-hr	1.69E-07	3.21E-05	26.3	No
Methyl Isobutyl Ketone	108-10-1	24-hr	1.04E-03	1.99E-01	394	No
m-Xylene	108-38-3M	24-hr	3.55E-04	6.76E-02	29	No
3-Methylphenol	108-39-4	24-hr	1.79E-06	3.40E-04	78.9	No
Toluene	108-88-3	24-hr	1.54E-02	2.93E+00	657	No
Chlorobenzene	108-90-7	24-hr	1.88E-04	3.58E-02	131	No
Phenol	108-95-2	24-hr	3.07E-03	5.84E-01	26.3	No
n-Hexane	110-54-3	24-hr	1.94E-03	3.70E-01	92	No
Cyclohexane	110-82-7	24-hr	5.96E-04	1.14E-01	789	No
Ethylene glycol monoethyl ether	111-76-2	24-hr	5.71E-05	1.09E-02	1710	No
Propylene	115-07-1	24-hr	1.48E-03	2.82E-01	394	No
Di(2-ethylhexyl)phthalate	117-81-7	Year	2.81E-07	1.95E-02	8	No
1,4-Dioxane	123-91-1	Year	2.65E-04	1.84E+01	24.9	No
Perchloroethylene	127-18-4	Year	6.09E-04	4.24E+01	32.4	Yes
Vanadium Pentoxide	1314-62-1	1-hr	4.42E-05	3.51E-04	0.0657	No
Polychlorinated Biphenyls (PCBs)	1336-36-3	Year	7.67E-06	5.33E-01	0.336	Yes
Trans-1,2-dichloroethene	156-60-5	24-hr	4.50E-08	8.57E-06	106	No
Butylated hydroxyanisole	25013-16-5	Year	5.36E-07	3.73E-02	3360	No
Formaldehyde	50-00-0	Year	8.87E-06	6.16E-01	32	No
n-Nitrosodiethylamine	55-18-5	Year	7.30E-07	5.08E-02	0.0192	Yes
Carbon Tetrachloride	56-23-5	Year	6.18E-04	4.29E+01	4.57	Yes
1,1-Dimethylhydrazine	57-14-7	24-hr	6.56E-07	1.25E-04	0.0657	No
Propylene Glycol	57-55-6	24-hr	8.48E-05	1.62E-02	3.75	No
n-Nitrosomorpholine	59-89-2	Year	3.37E-06	2.35E-01	0.101	Yes
Dimethyl Mercury	593-74-8	24-hr	1.55E-08	2.96E-06	1.00E-99	Yes
Acetamide	60-35-5	Year	2.28E-06	1.59E-01	9.59	No

Table 4: Toxic Air Pollutants from the 241-AP Ventilation System
(DE11NWP-001)

Chemical Name	CAS #	Avg. Period	Emissions (g/s)	Emissions (lbs/avg. period)	SQER (lbs/avg. period)	Emissions Above SQER?
n-Nitrosodimethylamine	62-75-9	Year	9.97E-04	6.93E+01	0.0416	Yes
n-Nitrosodi-n-propylamine	621-64-7	Year	7.30E-07	5.08E-02	0.0959	No
Methyl Isocyanate	624-83-9	24-hr	6.66E-07	1.27E-04	0.131	No
Carbon monoxide	630-08-0	1-hr	1.40E-02	1.12E-01	50.4	No
Methyl Alcohol	67-56-1	24-hr	2.68E-02	5.10E+00	526	No
Isopropyl Alcohol	67-63-0	1-hr	1.27E-03	1.01E-02	7.01	No
Chloroform	67-66-3	Year	6.18E-04	4.29E+01	8.35	Yes
Hexachloroethane	67-72-1	Year	6.34E-04	4.41E+01	17.4	Yes
Benzene	71-43-2	Year	6.14E-04	4.27E+01	6.62	Yes
1,1,1-Trichloroethane	71-55-6	24-hr	2.54E-05	4.84E-03	131	No
Methyl Bromide	74-83-9	24-hr	2.42E-05	4.61E-03	0.657	No
Methyl Chloride	74-87-3	24-hr	8.43E-05	1.60E-02	11.8	No
Hydrogen Cyanide	74-90-8	24-hr	2.14E-06	4.09E-04	1.18	No
Lead and compounds (NOS)	7439-92-1	Year	2.47E-05	1.72E+00	16	No
Manganese & Compounds	7439-96-5	24-hr	2.47E-05	4.70E-03	0.00526	No
Mercury, Elemental	7439-97-6	24-hr	7.49E-06	1.43E-03	0.0118	No
Arsenic & Inorganic Arsenic Compounds	7440-38-2	Year	2.47E-05	1.72E+00	0.0581	Yes
Beryllium & Compounds (NOS)	7440-41-7	Year	1.24E-06	8.61E-02	0.08	Yes
Cadmium & Compounds	7440-43-9	Year	1.24E-05	8.61E-01	0.0457	Yes
Chromium Hexavalent: Soluble, except Chromic Trioxide	7440-47-3	Year	3.79E-05	2.63E+00	0.00128	Yes
Cobalt	7440-48-4	24-hr	2.47E-05	4.70E-03	0.013	No
Copper & Compounds	7440-50-8	1-hr	1.24E-05	9.82E-05	0.219	No
Sulfur dioxide	7446-09-05	1-hr	9.15E-05	7.26E-04	1.45	No
Ethyl Chloride	75-00-3	24-hr	1.08E-04	2.06E-02	3940	No
Vinyl Chloride	75-01-4	Year	6.18E-04	4.29E+01	2.46	Yes
Acetonitrile	75-05-8	Year	1.44E-03	1.00E+02	11500	No
Acetaldehyde	75-07-0	Year	1.55E-03	1.07E+02	71	Yes
Dichloromethane	75-09-2	Year	4.19E-03	2.91E+02	192	Yes
Carbon disulfide	75-15-0	24-hr	1.51E-04	2.87E-02	105	No
Ethylene oxide	75-21-8	Year	2.91E-06	2.03E-01	2.19	No
Bromoform	75-25-2	Year	3.30E-06	2.29E-01	174	No
1,1-Dichloroethane	75-34-3	Year	1.03E-05	7.13E-01	120	No
1,1-Dichloroethylene	75-35-4	24-hr	1.18E-03	2.24E-01	26.3	No
Chlorodifluoromethane	75-45-6	24-hr	3.76E-04	7.16E-02	6570	No
1-Chloro-1,1-difluoroethane	75-68-3	24-hr	4.08E-04	7.77E-02	6570	No
Ammonia	7664-41-7	24-hr	3.78E-01	7.19E+01	9.31	Yes
Selenium & Selenium Compounds (other than Hydrogen Selenide)	7782-49-2	24-hr	2.15E-06	4.09E-04	2.63	No

**Table 4: Toxic Air Pollutants from the 241-AP Ventilation System
(DE11NWP-001)**

Chemical Name	CAS #	Avg. Period	Emissions (g/s)	Emissions (lbs/avg. period)	SQER (lbs/avg. period)	Emissions Above SQER?
1,2-Dichloropropane	78-87-5	Year	1.80E-05	1.25E+00	19.2	No
Methyl Ethyl Ketone	78-93-3	24-hr	3.61E-03	6.88E-01	657	No
1,1,2-Trichloroethane	79-00-5	Year	2.23E-04	1.55E+01	12	Yes
Trichloroethylene	79-01-6	Year	6.14E-04	4.27E+01	95.9	No
Acrylic Acid	79-10-7	24-hr	2.45E-04	4.67E-02	0.131	No
1,1,2,2-Tetrachloroethane	79-34-5	Year	2.81E-04	1.95E+01	3.3	Yes
2-Nitropropane	79-46-9M	24-hr	7.21E-05	1.37E-02	2.63	No
Hexachlorobutadiene	87-68-3	Year	4.38E-04	3.04E+01	8.73	Yes
Naphthalene	91-20-3M	Year	4.90E-06	3.40E-01	5.64	No
n-Nitroso-di-n-butylamine	924-16-3	Year	7.30E-07	5.08E-02	0.062	No
n-Nitrosopyrrolidine	930-55-2	Year	7.30E-07	5.08E-02	0.32	No
o-Xylene	95-47-6	24-hr	6.05E-04	1.15E-01	29	No
2-Methylphenol	95-48-7M	24-hr	1.07E-05	2.04E-03	78.9	No
Cumene	98-82-8	24-hr	2.65E-05	5.05E-03	52.6	No

Note: CAS # = Chemical Abstracts Service registry number

Table 5: Toxic Air Pollutants from the 241-AV/AZ Ventilation System
(DE11NWP-001)

Chemical Name	CAS #	Avg. Period	Emissions (g/s)	Emissions (lbs/avg. period)	SQER (lbs/avg. period)	Emissions Above SQER?
Ethylbenzene	100-41-4	Year	4.50E-04	3.13E+01	76.8	No
Styrene	100-42-5	24-hr	1.47E-04	2.81E-02	118	No
Benzyl Chloride	100-44-7	Year	4.27E-06	2.97E-01	3.91	No
Nitrogen dioxide	10102-44-0	1-hr	1.76E-02	1.40E-01	1.03	No
n-Nitroso-n-methylethylamine	10595-95-6	Year	6.18E-07	4.30E-02	0.0305	Yes
p-Xylene	106-42-3	24-hr	5.19E-04	9.89E-02	29	No
1,4-Dichlorobenzene	106-46-7	Year	1.98E-05	1.38E+00	17.4	No
1,2-Epoxybutane	106-88-7	24-hr	1.29E-05	2.45E-03	2.63	No
1,2-Dibromoethane	106-93-4	Year	2.54E-05	1.77E+00	2.71	No
1,3-Butadiene	106-99-0	Year	6.35E-05	4.42E+00	1.13	Yes
Acrolein	107-02-8	24-hr	9.50E-07	1.81E-04	0.00789	No
Allyl Chloride	107-05-1	Year	3.25E-06	2.26E-01	32	No
1,2-Dichloroethane	107-06-2	Year	5.19E-04	3.61E+01	7.39	Yes
Acrylonitrile	107-13-1M	Year	3.93E-06	2.73E-01	0.662	No
Vinyl acetate	108-05-4	24-hr	1.43E-07	2.72E-05	26.3	No
Methyl Isobutyl Ketone	108-10-1	24-hr	8.83E-04	1.68E-01	394	No
m-Xylene	108-38-3M	24-hr	3.00E-04	5.72E-02	29	No
3-Methylphenol	108-39-4	24-hr	1.51E-06	2.88E-04	78.9	No
Toluene	108-88-3	24-hr	1.30E-02	2.48E+00	657	No
Chlorobenzene	108-90-7	24-hr	1.59E-04	3.03E-02	131	No
Phenol	108-95-2	24-hr	2.60E-03	4.94E-01	26.3	No
n-Hexane	110-54-3	24-hr	1.65E-03	3.13E-01	92	No
Cyclohexane	110-82-7	24-hr	5.04E-04	9.61E-02	789	No
Ethylene glycol monoethyl ether	111-76-2	24-hr	4.83E-05	9.21E-03	1710	No
Propylene	115-07-1	24-hr	1.25E-03	2.39E-01	394	No
Di(2-ethylhexyl)phthalate	117-81-7	Year	2.38E-07	1.65E-02	8	No
1,4-Dioxane	123-91-1	Year	2.24E-04	1.56E+01	24.9	No
Perchloroethylene	127-18-4	Year	5.16E-04	3.59E+01	32.4	Yes
Vanadium Pentoxide	1314-62-1	1-hr	3.74E-05	2.97E-04	0.0657	No
Polychlorinated Biphenyls (PCBs)	1336-36-3	Year	6.49E-06	4.51E-01	0.336	Yes
Trans-1,2-dichloroethene	156-60-5	24-hr	3.81E-08	7.25E-06	106	No
Butylated hydroxyanisole	25013-16-5	Year	4.54E-07	3.15E-02	3360	No
Formaldehyde	50-00-0	Year	7.50E-06	5.22E-01	32	No
n-Nitrosodiethylamine	55-18-5	Year	6.18E-07	4.30E-02	0.0192	Yes
Carbon Tetrachloride	56-23-5	Year	5.23E-04	3.63E+01	4.57	Yes
1,1-Dimethylhydrazine	57-14-7	24-hr	5.55E-07	1.06E-04	0.0657	No
Propylene Glycol	57-55-6	24-hr	7.18E-05	1.37E-02	3.75	No
n-Nitrosomorpholine	59-89-2	Year	2.86E-06	1.99E-01	0.101	Yes
Dimethyl Mercury	593-74-8	24-hr	1.31E-08	2.50E-06	1.00E-99	Yes
Acetamide	60-35-5	Year	1.93E-06	1.34E-01	9.59	No

Table 5: Toxic Air Pollutants from the 241-AY/AZ Ventilation System
(DE11NWP-001)

Chemical Name	CAS#	Avg. Period	Emissions (g/s)	Emissions (lbs/avg. period)	SQER (lbs/avg. period)	Emissions Above SQER?
n-Nitrosodimethylamine	62-75-9	Year	8.44E-04	5.87E+01	0.0416	Yes
n-Nitrosodi-n-propylamine	621-64-7	Year	6.18E-07	4.30E-02	0.0959	No
Methyl Isocyanate	624-83-9	24-hr	5.64E-07	1.07E-04	0.131	No
Carbon monoxide	630-08-0	1-hr	1.19E-02	9.44E-02	50.4	No
Methyl Alcohol	67-56-1	24-hr	2.27E-02	4.32E+00	526	No
Isopropyl Alcohol	67-63-0	1-hr	1.08E-03	8.54E-03	7.01	No
Chloroform	67-66-3	Year	5.23E-04	3.63E+01	8.35	Yes
Hexachloroethane	67-72-1	Year	5.36E-04	3.73E+01	17.4	Yes
Benzene	71-43-2	Year	5.19E-04	3.61E+01	6.62	Yes
1,1,1-Trichloroethane	71-55-6	24-hr	2.15E-05	4.09E-03	131	No
Methyl Bromide	74-83-9	24-hr	2.05E-05	3.90E-03	0.657	No
Methyl Chloride	74-87-3	24-hr	7.13E-05	1.36E-02	11.8	No
Hydrogen Cyanide	74-90-8	24-hr	1.81E-06	3.46E-04	1.18	No
Lead and compounds (NOS)	7439-92-1	Year	2.09E-05	1.45E+00	16	No
Manganese & Compounds	7439-96-5	24-hr	2.09E-05	3.98E-03	0.00526	No
Mercury, Elemental	7439-97-6	24-hr	6.33E-06	1.21E-03	0.0118	No
Arsenic & Inorganic Arsenic Compounds	7440-38-2	Year	2.09E-05	1.45E+00	0.0581	Yes
Beryllium & Compounds (NOS)	7440-41-7	Year	1.05E-06	7.28E-02	0.08	No
Cadmium & Compounds	7440-43-9	Year	1.05E-05	7.28E-01	0.0457	Yes
Chromium Hexavalent: Soluble, except Chromic Trioxide	7440-47-3	Year	3.20E-05	2.23E+00	0.00128	Yes
Cobalt	7440-48-4	24-hr	2.09E-05	3.98E-03	0.013	No
Copper & Compounds	7440-50-8	1-hr	1.05E-05	8.31E-05	0.219	No
Sulfur dioxide	7446-09-05	1-hr	7.74E-05	6.14E-04	1.45	No
Ethyl Chloride	75-00-3	24-hr	9.14E-05	1.74E-02	3940	No
Vinyl Chloride	75-01-4	Year	5.23E-04	3.63E+01	2.46	Yes
Acetonitrile	75-05-8	Year	1.22E-03	8.48E+01	11500	No
Acetaldehyde	75-07-0	Year	1.31E-03	9.10E+01	71	Yes
Dichloromethane	75-09-2	Year	3.55E-03	2.47E+02	192	Yes
Carbon disulfide	75-15-0	24-hr	1.28E-04	2.43E-02	105	No
Ethylene oxide	75-21-8	Year	2.47E-06	1.71E-01	2.19	No
Bromoform	75-25-2	Year	2.79E-06	1.94E-01	174	No
1,1-Dichloroethane	75-34-3	Year	8.68E-06	6.03E-01	120	No
1,1-Dichloroethylene	75-35-4	24-hr	9.97E-04	1.90E-01	26.3	No
Chlorodifluoromethane	75-45-6	24-hr	3.18E-04	6.06E-02	6570	No
1-Chloro-1,1-difluoroethane	75-68-3	24-hr	3.45E-04	6.58E-02	6570	No
Ammonia	7664-41-7	24-hr	3.19E-01	6.08E+01	9.31	Yes
Selenium & Selenium Compounds (other than Hydrogen Selenide)	7782-49-2	24-hr	1.82E-06	3.46E-04	2.63	No

**Table 5: Toxic Air Pollutants from the 241-AY/AZ Ventilation System
(DE11NWP-001)**

Chemical Name	CAS #	Avg. Period	Emissions (g/s)	Emissions (lbs/avg. period)	SQER (lbs/avg. period)	Emissions Above SQER?
1,2-Dichloropropane	78-87-5	Year	1.52E-05	1.06E+00	19.2	No
Methyl Ethyl Ketone	78-93-3	24-hr	3.06E-03	5.82E-01	657	No
1,1,2-Trichloroethane	79-00-5	Year	1.89E-04	1.31E+01	12	Yes
Trichloroethylene	79-01-6	Year	5.19E-04	3.61E+01	95.9	No
Acrylic Acid	79-10-7	24-hr	2.08E-04	3.96E-02	0.131	No
1,1,2,2-Tetrachloroethane	79-34-5	Year	2.37E-04	1.65E+01	3.3	Yes
2-Nitropropane	79-46-9M	24-hr	6.10E-05	1.16E-02	2.63	No
Hexachlorobutadiene	87-68-3	Year	3.70E-04	2.57E+01	8.73	Yes
Naphthalene	91-20-3M	Year	4.14E-06	2.88E-01	5.64	No
n-Nitroso-di-n-butylamine	924-16-3	Year	6.18E-07	4.30E-02	0.062	No
n-Nitrosopyrrolidine	930-55-2	Year	6.18E-07	4.30E-02	0.32	No
o-Xylene	95-47-6	24-hr	5.12E-04	9.76E-02	29	No
2-Methylphenol	95-48-7M	24-hr	9.07E-06	1.73E-03	78.9	No
Cumene	98-82-8	24-hr	2.24E-05	4.27E-03	52.6	No

Note: CAS # = Chemical Abstracts Service registry number

RECEIPT

Department of Ecology (4610)
PO Box 47611
Olympia, WA 98504-7611
(360) 407-7095

Receipt Number
Manual Receipt

13CJ018206

Document Number **461R2799CJ** Date **05/06/2013** FM 23

Remitter Name **ENERGY DEPT** Receipt Name

OAK RIDGE OFFICE

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Document Amount **875.00**

Method of Payment **Wire**

Comment Description **NOTICE OF CONSTRUCTION - CRO; NO APP SENT**

REF DOC NR	INV NR	ID NR	SUB ID NR	T C R	FUND	MAJ	MAG	SUB	SRC	CNTY	WORK	PIC	AI	ORG	PRJ	SUB	PRJ	SUB	PHS	OBJ	SUB	OBJ	SUB	GL	DR	CR	ALLOC AMT

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875.00