NON-RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION (NOC) APPROVAL ORDER
CONDITIONS AND RESTRICTIONS

REGULATORY AUTHORITY:

Pursuant to the Washington State Department of 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. Hanford is an existing major stationary source that emits more than 250 tons of a regulated pollutant per year.

3. A NOC application for installation and operation of a new ventilation exhaust system for the 241-AY and 241-AZ tank farms on March 7, 1994.
    a. The application was approved as Order 94-07 on August 24, 1994.
    b. Order 94-07 established emission limitations of 0.001 pound per hour (lb/hr) of volatile organic compounds (VOC), 0.05 lb/hr of ammonia, and opacity of five percent as measured by U.S. Environmental Protection Agency (EPA) Method 9 (40 Code of Federal Regulations Part 60, Appendix A).
    c. Order 94-07 established Best Available Control Technology (BACT) as a condenser, high efficiency mist eliminator (HEME), heater, and two high efficiency particulate air filters (HEPAs) with a high efficiency gas adsorber (HEGA) between the HEPA filters.

4. An NOC application for modification of Order 94-07 was received on August 29, 1997.
    a. The application requested approval for an increase in maximum VOC emission rate from 0.001 lb/hr to 50 parts per million (ppm).
    b. VOC emissions of 50 ppm are estimated to be 0.14 lb/hr and 1,230 lb/year (lb/yr) for normal ventilation flows for this project.
    c. The application requested the use of field analytical instruments for measurement of VOC and ammonia emissions.
    d. The application was found to be complete and approved as revision 1 of Order 94-07 (94-07-01) on December 22, 1997.

5. An NOC application for modification of Order 94-07 was received on October 25, 1999.
    a. The application described and requested a ventilation rate increase from 800 standard cubic feet per minute (scfm) to 1,000 scfm.
    b. The application described dates and duration of anticipated mixer pump operation.

c. VOC emissions of 50 ppm are estimated to be 0.175 lb/hr and 1,534 (lb/yr) for normal ventilation flows for this project.
d. The application was found to be complete and approved as Revision 2 of Order 94-07 on October 25, 1999.

6. An NOC application for modification was received on January 23, 2008.
   a. The proposed modification includes removal of the HEGA, a component of the primary tank ventilation exhaust system for the 241-AY and 241-AZ tank farms.
   b. The application requested approval for an increase in maximum ammonia emissions from 0.05 lb/hr (440 lb/yr) to 0.34 lb/hr (3,000 lb/yr).
   c. The proposed modification includes the withdrawal of 10 toxic air pollutants (TAPs) from their approval and the addition of 101 TAPs newly identified or anticipated in the 241-AY and 241-AZ tank farms primary tank ventilation exhaust system.
   d. The application was found to be complete on February 20, 2008.

7. Emissions of criteria pollutants from the proposed project are below the Prevention of Significant Deterioration Significant Emission Rates.

8. Hanford is located in a Class II Area designated as "attainment" for the purpose of NOC permitting for all pollutants.

9. Criteria air pollutant emissions from the proposed project are below the *de minimus* levels in WAC 173-400-110(5)(d).

10. Acceptable Source Impact Levels (ASILs) do not exist for the TAPs propionaldehyde, acetophenone, carbonyl sulfide, n-nitrosomorpholine, n-nitrosomethylethylamine, and n-nitrosodi-n-propylamine which the proposed project may emit; therefore Ecology has developed Screening Levels for these pollutants as detailed in Table 1**.**

Table 1: Development of Screening Levels

Toxic Air Pollutant	Chemical Abstracts Service #	Screening Level [μg/m^3]	Basis for Screening Level (S.L.)
Propionaldehyde	123-38-6	160 (24-hr average)	The current ACGIH Threshold Limit Value (TLV) for this material is 20 ppm (TWA). At 25˚C and one atmosphere this TLV is 47,477.6 μg/m^3. Application of WAC 173-460-110(2)(b) divides the TLV by 300 resulting in a value of 158.26 μg/m^3 (24 hr average). Assessment rounded to two significant digits.
Acetophenone	98-86-2	350 (24-hr average)	Applying, under WAC 173-460-110(3)(a), IRIS general toxicity data of this material with RfD of 100 μg/Kg-day, for average adult of 70 Kg weight and inhaled air of 20 m^3/day, results in a value of: $S.L. = \frac{100\mu g}{Kg \cdot day} \bullet \frac{day}{20m^3 air} \bullet 70Kg = \frac{350\mu g}{m^3} \ (24hr\ average)$
Carbonyl Sulfide	463-58-1	10 (24-hr average)	Based upon carbonyl sulfide metabolysis to hydrogen sulfide and carbon dioxide, the chronic reference exposure level (REL) of hydrogen sulfide is established as the basis for exposure to carbonyl sulfide:

Table 1: Development of Screening Levels

Toxic Air Pollutant	Chemical Abstracts Service #	Screening Level [μg/m^3]	Basis for Screening Level (S.L.)
			$S.L. = REL_{H_2S} = \frac{10\mu g}{m^3}\ (24\,hr\ average)$
n-Nitrosomorpholine	59-89-2	5.3E-04 (Annual average)	Unit cancer unit risk factor of 1.90E-03/μg/m^3 with estimated continuous inhalation exposure resulting in excess lifetime cancer risk by 1/1,000,000 results in a value of: $S.L. = \frac{1}{1E+06} \Big/ \frac{1.9E-03\,m^3}{\mu g} = \frac{5.263E-04\mu g}{m^3}\ (Annual\ average)$ Assessment rounded to two significant digits.
n-Nitrosomethylethylamine	10595-95-6	1.6E-04 (Annual average)	Unit cancer unit risk factor of 6.3E-03/μg/m^3 with estimated continuous inhalation exposure resulting in excess lifetime cancer risk by 1/1,000,000 results in a value of: $S.L. = \frac{1}{1E+06} \Big/ \frac{6.3E-03\,m^3}{\mu g} = \frac{1.587E-04\mu g}{m^3}\ (Annual\ average)$ Assessment rounded to two significant digits.
n-Nitrosodi-n-propylamine	621-64-7	5 E-04 (Annual average)	Unit cancer unit risk factor of 2E-03/μg/m^3 with estimated continuous inhalation exposure resulting in excess lifetime cancer risk by 1/1,000,000 results in a value of: $S.L. = \frac{1}{1E+06} \Big/ \frac{2E-03\,m^3}{\mu g} = \frac{5.0E-04\mu g}{m^3}\ (Annual\ average)$ Assessment limited to one significant digit.

References:

Propionaldehyde: ACGIH 2004, American Conference of Government Industrial Hygienists, *2004 TLVs® and BEIs®*, Cincinnati, Ohio.

Acetophenone: IRIS, Integrated Risk Information System, http://www.epa.gov/iris/subst/0321.htm

Carbonyl Sulfide: California Office of Environmental Health Hazard Assessment (OEHHA), Chronic Reference Exposure Levels (http://www.oehha.ca.gov/air/chronic_rels/AllChrels.html).

n-Nitrosomorpholine, n-Nitrosomethylethylamine, and n-Nitrosodi-n-propylamine: California Office of Environmental Health Hazard Assessment (OEHHA) Toxicity Criteria Database (TCDB). (http://www.oehha.ca.gov/risk/ChemicalDB/index.asp)

11. Dispersion factors for TAPs are found to be 0.05979 μg/m^3/g/s for TAPs with annual exposure assessment and 1.81318 μg/m^3/g/s for TAPs with 24 hour exposure assessment.

12. TAPs from the proposed project are below the ASILs of WAC 173-460-150 and WAC 173-460-160 or Screening Levels of Table 1.

13. Toxics Best Available Control Technology (T-BACT) for this project has been determined to be operation of the primary tank ventilation exhauster systems not exceeding 1,000 cubic feet per minute (ft^3/min) with a condenser, HEME, heater, and two-stage HEPA filtration in service in the treatment train.

14. The proposed project, if constructed and operated as herein required, will provide T-BACT.

15. 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.

16. 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 94-07, Revision 3**.

1.0 GENERAL 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 at the stack shall not exceed five percent.

1.2.2 The primary tank ventilation exhauster system for the 241-AY and 241-AZ double-shell tank (DST) farms shall not exceed daily average flow rates of 1,000 ft^3/min (standard temperature and pressure).

1.2.3 All TAPs, as submitted in the Permittee's NOC Application (Table 2), shall be below their respective ASIL or Screening Level of Table 1.

1.2.4 Emissions of ammonia shall not exceed 0.34 pounds per hour from the primary tank ventilation exhauster system.

1.2.5 Emissions of VOCs shall not exceed 0.175 lb/hr from the primary tank ventilation exhauster system.

1.3 Compliance Demonstration

1.3.1 Compliance with Approval Condition 1.2.1 shall be met by Tier 3 Visible Emissions Survey requirements of the Hanford Air Operating Permit.

1.3.2 Should visible emissions be observed, the excess emissions shall be discontinued by removing the emission unit from service and the Washington Department of Health notified immediately.

1.3.3 Compliance with Approval Condition 1.2.2 shall be demonstrated by stack gas flow and temperature measurement.

1.3.4 Compliance with Approval Condition 1.2.3 shall be met by operating the exhauster systems only when in accord with T-BACT emission controls found for this project.

1.3.5 Compliance with Approval Condition 1.2.4 shall be demonstrated by the conduct of ammonia concentration readings as described in Section 3.0, and applying these concentration readings with contemporaneous stack flow rate and temperatures to determine instantaneous mass release rate of ammonia.

1.3.6 Compliance with Approval Condition 1.2.5 shall be demonstrated by the conduct of VOC concentration readings less than or equal to 50 ppm measured as Total Organic Carbon as described in Section 3.0, and applying these concentration readings with contemporaneous stack flow and temperatures to determine instantaneous mass release rate of VOC.

1.4 Manuals

Existing Operations and Maintenance (O&M) manuals for all equipment, procedures, and controls associated with the proposed activities that have the potential to affect emissions to the atmosphere shall be followed. Manufacturer's instructions may be referenced. The O&M manuals shall be updated to reflect any modifications of the process or operating procedures. Copies of the O&M manuals shall be available to Ecology upon request.

2.0 RECORDKEEPING AND REPORTING

2.1 Addressing

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

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

Any Washington Department of Health notice required under Approval Condition 1.3.2 shall be provided to:

Manager, Richland Office
Washington Department of Health
Radioactive Air Emissions
309 Bradley Boulevard
Richland, Washington 99352
509-946-3798

2.2 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 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. Semi-annual ammonia and VOC emission monitoring results required in Section 3.0.
4. Supporting data and calculations to demonstrate compliance as detailed in Sections 1.3.5 and 1.3.6.
5. All monitoring and operations records required to operate and maintain the emission control equipment that implements T-BACT as described in Section 1.0.

6. Laboratory analysis result summaries of any samples undertaken after the effective date of this ORDER from 241-AY and 241-AZ tank farm tank headspaces or primary tank ventilation system exhaust which are examined for organic species or other TAPS.

2.3 Reporting

Identification of any TAP not previously identified within the NOC Application emissions estimate shall be submitted to Ecology within 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 1.3.2, shall be submitted to Ecology within 30 days of completion of the survey. An assessment of the cause of visible emissions and a report of the maintenance conducted to maintain the subject exhaust system's T-BACT operations shall also be submitted.

3.0 EMISSION MONITORING

Although all toxic air pollutants from this project are estimated below their ASILs or Screening Levels, the following sampling and monitoring are required in order to verify emissions estimates and compliance with Section 1.3, above.

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

Ammonia and VOC 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 or VOCs providing such devices are spanned to appropriately measure the stack gas concentration of these pollutants. Stack flow rate and temperature will be applied with the pollutant stack gas concentration to report emission in terms of lb/hr.

4.0 APPROVAL ORDER AND RESTRICTIONS

Operation of the subject primary tank ventilation systems is intended for the storage, treatment, and retrieval of waste contained in the tanks as described in the NOC application. "Storage" and "Retrieval," for the purposes of this Authorization, include routine mixing and pumping as necessary and sufficient for safe waste management, transfer, and disposal.

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

1. Violating 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. 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.

Any person aggrieved by this ORDER may obtain review thereof by application, within 30 days of receipt of this order, to:

Pollution Control Hearings Board
P.O. Box 40903
Olympia, Washington 98504-0903

Concurrently, copies of the application must be sent to:

Washington State Department of Ecology
P.O. Box 47600
Olympia, Washington 98504-7600

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

These procedures are consistent with the provisions of Chapter 43.21B RCW, and the rules and regulations adopted thereunder.

DATED at Richland, Washington, this 7th day of May 2008.

REVIEWED AND PREPARED BY:

Doug Hendrickson, P.E.

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33907
REGISTERED
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APPROVED BY:

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Waste Management Section Manager
Nuclear Waste Program
Washington State Department of Ecology

Table 2: Toxic Air Pollutants for Order 94-07, Revision 3

Material Data			ASIL/ Screening Level [1]	SQER [2]	Emissions Estimate		Emissions Consequence
Chemical Name	CAS [3]	Class	µg/m^3	lb/period	lb/hr	lb/yr	µg/m^3
n-Nitrosomethylethylamine	10595-95-6	A	1.60E-04		5.30E-07	4.64E-03	3.99E-09
n-Nitrosomorpholine	59-89-2	A	5.30E-04		8.73E-05	7.65E-01	6.58E-07
n-Nitrosodi-n-propylamine	621-64-7	A	5.00E-04		1.01E-07	8.88E-04	7.64E-10
1,4-Dichlorobenzene	106-46-7	A	1.50E+00	500	1.61E-05	1.41E-01	1.21E-07
1,3-Butadiene	106-99-0	A	3.60E-03	0.5	2.12E-04	1.86E+00	1.60E-06
1,2-Dichloroethane (ethylene chloride)	107-06-2	A	3.80E-02	10	9.34E-05	8.18E-01	7.04E-07
Acrylonitrile	107-13-1	A	1.50E-02	10	1.06E-05	9.31E-02	8.02E-08
Bis(2-ethylhexyl)phthalate (DEHP)	117-81-7	A	2.50E+00	500	8.73E-06	7.65E-02	6.58E-08
1,4-Dioxane	123-91-1	A	3.20E-02	10	1.79E-04	1.57E+00	1.35E-06
Perchloroethylene (tetrachloroethylene)	127-18-4	A	1.10E+00	500	1.01E-04	8.83E-01	7.60E-07
Polychlorinated Biphenyls (PCBs)	1336-36-3	A	4.50E-03	0.5	2.66E-05	2.33E-01	2.00E-07
Formaldehyde	50-00-0	A	7.70E-02	20	3.70E-05	3.24E-01	2.79E-07
Carbon tetrachloride	56-23-5	A	6.70E-02	20	4.11E-04	3.60E+00	3.10E-06
n-Nitrosodimethylamine	62-75-9	A	7.10E-05	0	2.38E-04	2.08E+00	1.79E-06
Chloroform	67-66-3	A	4.30E-02	10	3.58E-05	3.13E-01	2.70E-07
Benzene	71-43-2	A	1.20E-01	20	1.56E-04	1.37E+00	1.18E-06
Cadmium	7440-43-9	A	5.60E-04	0	7.22E-06	6.33E-02	5.45E-08
Vinyl chloride	75-01-4	A	1.20E-02	10	4.87E-05	4.26E-01	3.67E-07
Acetaldehyde	75-07-0	A	4.50E-01	50	1.31E-03	1.14E+01	9.85E-06
Dichloromethane (methylene chloride)	75-09-2	A	5.60E-01	50	6.63E-04	5.80E+00	5.00E-06
Trichloroethylene	79-01-6	A	5.90E-01	50	8.03E-05	7.04E-01	6.06E-07
n-Nitrosodi-n-butylamine	924-16-3	A	6.30E-04	0	1.75E-05	1.54E-01	1.32E-07
1,2-Dichloropropane	78-87-5	A	4.00E+00	0.02	4.90E-05	4.29E-01	1.12E-05
p-Nitrochlorobenzene	100-00-5	B	2.00E+00	0.02	9.31E-06	8.15E-02	2.13E-06
Ethyl benzene	100-41-4	B	1.00E+03	5	1.28E-04	1.12E+00	2.94E-05
Styrene	100-42-5	B	1.00E+03	5	2.00E-04	1.75E+00	4.58E-05
Nitric oxide	10102-43-9	B	1.00E+02	2	9.27E-04	8.12E+00	2.12E-04
Phenyl ether	101-84-8	B	2.30E+01	0.2	1.60E-04	1.40E+00	3.66E-05
Ethyl butyl ketone	106-35-4	B	7.80E+02	5	1.01E-03	8.87E+00	2.32E-04
1,2-Epoxybutane	106-88-7	B	2.00E+01	0.2	4.73E-04	4.14E+00	1.08E-04
Butane	106-97-8	B	6.30E+03	5	2.49E-03	2.18E+01	5.69E-04
Acrolein	107-02-8	B	2.00E-02	0.02	2.67E-05	2.34E-01	6.11E-06
Allyl chloride	107-05-1	B	1.00E+00	0.02	2.99E-05	2.62E-01	6.85E-06
Allyl alcohol	107-18-6	B	1.70E+01	0.2	9.01E-06	7.89E-02	2.06E-06
Methyl formate	107-31-3	B	8.20E+02	5	5.88E-05	5.15E-01	1.34E-05
Methyl propyl ketone	107-87-9	B	2.30E+03	5	5.85E-04	5.12E+00	1.34E-04
1-Nitropropane	108-03-2	B	2.00E+01	0.2	1.37E-04	1.20E+00	3.14E-05
Vinyl acetate	108-05-4	B	2.00E+02	2.6	5.24E-06	4.59E-02	1.20E-06

Table 2: Toxic Air Pollutants for Order 94-07, Revision 3

Material Data			ASIL/ Screening Level [1]	SQER [2]	Emissions Estimate		Emissions Consequence
Chemical Name	CAS [3]	Class	µg/m^3	lb/period	lb/hr	lb/yr	µg/m^3
Methyl isobutyl ketone (MIBK)	108-10-1	B	6.80E+02	5	3.67E-04	3.21E+00	8.38E-05
Isopropyl ether	108-20-3	B	3.50E+03	5	7.68E-04	6.73E+00	1.76E-04
Methylcyclohexane	108-87-2	B	5.40E+03	5	6.23E-04	5.46E+00	1.43E-04
Toluene	108-88-3	B	4.00E+02	5	6.55E-04	5.74E+00	1.50E-04
Chlorobenzene	108-90-7	B	1.50E+02	2.6	3.54E-05	3.10E-01	8.10E-06
Cyclohexanol	108-93-0	B	6.90E+02	5	3.84E-06	3.36E-02	8.78E-07
Cyclohexanone	108-94-1	B	3.30E+02	5	1.79E-04	1.57E+00	4.09E-05
Phenol	108-95-2	B	6.30E+01	1.2	5.49E-04	4.81E+00	1.26E-04
Pentane	109-66-0	B	6.00E+03	5	1.92E-03	1.68E+01	4.39E-04
Tetrahydrofuran	109-99-9	B	2.00E+03	5	1.23E-03	1.08E+01	2.82E-04
Methyl isoamyl ketone	110-12-3	B	7.80E+02	5	1.33E-04	1.17E+00	3.05E-05
Methyl n-amyl ketone	110-43-0	B	7.80E+02	5	3.54E-04	3.11E+00	8.11E-05
Hexane	110-54-3	B	2.00E+02	2.6	9.82E-04	8.61E+00	2.25E-04
n-Valeraldehyde	110-62-3	B	5.90E+02	5	4.62E-04	4.05E+00	1.06E-04
Cyclohexane	110-82-7	B	3.40E+03	5	4.79E-04	4.20E+00	1.10E-04
Cyclohexene	110-83-8	B	3.40E+03	5	1.75E-05	1.53E-01	3.99E-06
Pyridine	110-86-1	B	5.30E+01	0.6	1.48E-04	1.29E+00	3.38E-05
Octane	111-65-9	B	4.70E+03	5	3.63E-04	3.18E+00	8.30E-05
2-Butoxyethanol	111-76-2	B	4.00E+02	5	2.63E-04	2.30E+00	6.01E-05
Nonane	111-84-2	B	3.50E+03	5	2.83E-04	2.48E+00	6.46E-05
1,2,4-Trichlorobenzene	120-82-1	B	1.20E+02	2	7.55E-05	6.61E-01	1.73E-05
Diphenylamine	122-39-4	B	3.30E+01	0.6	6.74E-05	5.91E-01	1.54E-05
Diprophyl ketone	123-19-3	B	7.80E+02	5	3.74E-04	3.28E+00	8.56E-05
Propionaldehyde	123-38-6	B	1.60E+02	0.02	5.75E-04	5.03E+00	1.31E-04
Isoamyl alcohol	123-51-3	B	1.20E+03	5	1.02E-04	8.95E-01	2.34E-05
n-Butyl acetate	123-86-4	B	2.40E+03	5	3.47E-03	3.04E+01	7.94E-04
Tributyl phosphate	126-73-8	B	7.30E+00	0.02	9.49E-04	8.32E+00	2.17E-04
Methylacrylonitrile	126-98-7	B	9.00E+00	0.02	1.92E-04	1.68E+00	4.39E-05
Dimethyl acetamide	127-19-5	B	1.20E+02	2	8.73E-05	7.65E-01	2.00E-05
2,6-Ditert, butyl-p-cresol	128-37-0	B	3.30E+01	0.6	1.03E-03	9.02E+00	2.36E-04
Xylenes (m-,o-,p-isomers)	1330-20-7	B	1.50E+03	5	1.39E-03	1.22E+01	3.18E-04
Ethyl acetate	141-78-6	B	4.80E+03	5	2.77E-02	2.42E+02	6.33E-03
Mesityl oxide	141-79-7	B	2.00E+02	2.6	8.07E-05	7.07E-01	1.84E-05
Heptane (n-Heptane)	142-82-5	B	5.50E+03	5	7.49E-04	6.56E+00	1.71E-04
Cyclopentane	287-92-3	B	5.70E+03	5	3.75E-04	3.28E+00	8.56E-05
Crotonaldehyde	4170-30-3	B	2.00E+01	0.2	6.04E-05	5.29E-01	1.38E-05
Carbonyl sulfide	463-58-1	B	1.00E+01	0.02	8.73E-05	7.65E-01	2.00E-05
Cyanides, as CN (mg/m^3 of CN)	57-12-5	B	1.70E+01	0.2	2.27E-03	1.98E+01	5.18E-04
3-Heptanone, 5-methyl-	541-85-5	B	4.40E+02	5	4.31E-04	3.78E+00	9.87E-05
Methyl isopropyl ketone	563-80-4	B	2.30E+03	5	8.25E-04	7.23E+00	1.89E-04
2-Hexanone (MBK)	591-78-6	B	6.70E+01	1.2	3.02E-04	2.64E+00	6.90E-05
Methyl isocyanate	624-83-9	B	1.60E-01	0.02	8.03E-05	7.04E-01	1.84E-05

Table 2: Toxic Air Pollutants for Order 94-07, Revision 3

Material Data			ASIL/ Screening Level [1]	SQER [2]	Emissions Estimate		Emissions Consequence
Chemical Name	CAS [3]	Class	µg/m^3	lb/period	lb/hr	lb/yr	µg/m^3
n-Propyl nitrate	627-13-4	B	3.60E+02	5	1.11E-03	9.69E+00	2.53E-04
Ethyl alcohol	64-17-5	B	6.30E+03	5	2.87E-03	2.51E+01	6.56E-04
Acetic acid	64-19-7	B	8.30E+01	1.2	2.19E-04	1.92E+00	5.01E-05
Methyl alcohol	67-56-1	B	8.70E+02	5	7.01E-03	6.14E+01	1.60E-03
Isopropyl alcohol	67-63-0	B	3.30E+03	5	6.27E-04	5.49E+00	1.43E-04
Acetone	67-64-1	B	5.90E+03	5	4.41E-03	3.86E+01	1.01E-03
n-Propyl alcohol	71-23-8	B	1.60E+03	5	1.10E-03	9.65E+00	2.52E-04
n-Butyl alcohol	71-36-3	B	5.00E+02	5	1.15E-02	1.01E+02	2.64E-03
Methyl chloroform (1,1,1-Trichloroethane)	71-55-6	B	6.40E+03	5	2.66E-05	2.33E-01	6.08E-06
Mercury (total)	7439-97-6	B	3.30E-01	0.02	4.60E-05	4.03E-01	1.05E-05
Silver	7440-22-4	B	3.30E-01	0.02	9.24E-06	8.10E-02	2.11E-06
Chromium	7440-47-3	B	1.70E+00	0.02	1.15E-03	1.00E+01	2.62E-04
Methyl bromide	74-83-9	B	5.00E+00	0.02	3.58E-05	3.14E-01	8.18E-06
Methyl chloride	74-87-3	B	3.40E+02	5	4.51E-05	3.95E-01	1.03E-05
Methyl acetylene	74-99-7	B	5.50E+03	5	5.97E-04	5.23E+00	1.37E-04
Ethyl chloride	75-00-3	B	1.00E+04	5	4.24E-05	3.72E-01	9.70E-06
Ethanamine	75-04-7	B	6.00E+01	1.2	1.72E-04	1.51E+00	3.93E-05
Acetonitrile	75-05-8	B	2.20E+02	2.6	1.32E-03	1.16E+01	3.02E-04
Formamide	75-12-7	B	6.00E+01	1.2	9.50E-05	8.32E-01	2.17E-05
Carbon disulfide	75-15-0	B	1.00E+02	2	1.28E-03	1.12E+01	2.92E-04
1,1-Dichloroethane	75-34-3	B	2.70E+03	5	4.34E-05	3.80E-01	9.93E-06
Vinylidene chloride	75-35-4	B	6.70E+01	1.2	2.73E-05	2.39E-01	6.24E-06
Dichlorofluoromethane	75-43-4	B	1.30E+02	2.6	7.68E-05	6.72E-01	1.76E-05
Chlorodifluoromethane	75-45-6	B	1.20E+04	5	1.54E-03	1.35E+01	3.52E-04
Nitromethane	75-52-5	B	8.30E+02	5	8.78E-05	7.69E-01	2.01E-05
tert-Butyl alcohol	75-65-0	B	1.00E+03	5	2.08E-04	1.82E+00	4.75E-05
Trichlorofluoromethane	75-69-4	B	1.90E+04	5	2.36E-03	2.07E+01	5.39E-04
Dichlorodifluoromethane	75-71-8	B	1.60E+04	5	5.40E-05	4.73E-01	1.23E-05
1,1,2-Trichloro-1,2,2-trifluorethane	76-13-1	B	2.70E+04	5	2.28E-04	2.00E+00	5.22E-05
Dichlorotetrafluoroethane	76-14-2	B	2.30E+04	5	7.86E-05	6.88E-01	1.80E-05
Ammonia	7664-41-7	B	1.00E+02	2	3.40E-01	2.98E+03	7.78E-02
Isobutyl alcohol	78-83-1	B	5.10E+02	5	3.91E-05	3.43E-01	8.95E-06
sec-Butyl alcohol	78-92-2	B	1.00E+03	5	2.35E-04	2.06E+00	5.38E-05
Methyl ethyl ketone (MEK)	78-93-3	B	1.00E+03	5	1.77E-03	1.55E+01	4.05E-04
1,1,2-Trichloroethane	79-00-5	B	1.80E+02	2.6	1.04E-04	9.07E-01	2.37E-05
Propionic acid	79-09-4	B	1.00E+02	2	1.51E-05	1.32E-01	3.44E-06
Methyl acetate	79-20-9	B	2.00E+03	5	1.48E-04	1.29E+00	3.38E-05
1,1,2,2-Tetrachloroethane	79-34-5	B	2.30E+01	0.2	7.04E-05	6.17E-01	1.61E-05
Diethyl phthalate	84-66-2	B	1.70E+01	0.2	2.94E-04	2.57E+00	6.72E-05
Dibutyl phthalate	84-74-2	B	1.70E+01	0.2	1.05E-05	9.18E-02	2.40E-06
Naphthalene	91-20-3	B	1.70E+02	2.6	3.73E-05	3.27E-01	8.53E-06
Biphenyl	92-52-4	B	4.30E+00	0.02	5.49E-03	4.81E+01	1.26E-03

Table 2: Toxic Air Pollutants for Order 94-07, Revision 3

Material Data			ASIL/ Screening Level [1]	SQER [2]	Emissions Estimate		Emissions Consequence
Chemical Name	CAS [3]	Class	µg/m^3	lb/period	lb/hr	lb/yr	µg/m^3
o-Dichlorobenzene (1,2-Dichlorobenzene)	95-50-1	B	1.00E+03	5	2.32E-05	2.03E-01	5.31E-06
Diethyl ketone	96-22-0	B	2.30E+03	5	1.57E-04	1.37E+00	3.58E-05
Cumene	98-82-8	B	8.20E+02	5	4.42E-04	3.87E+00	1.01E-04
a-Methyl styrene	98-83-9	B	8.10E+02	5	1.24E-04	1.09E+00	2.84E-05
Acetophenone	98-86-2	B	3.50E+02	0.02	2.68E-04	2.34E+00	6.12E-05
Nitrobenzene	98-95-3	B	1.70E+00	0.02	1.64E-05	1.44E-01	3.75E-06

Notes: 1: ASILs for materials identified in Table 1 do not exist within WAC 173-460-150 or WAC 173-460-160. Table 1 establishes Screening Levels to be applied. Periods of exposure assessment are Annual for "A" TAPs and 24 hours for "B" TAPs.

2: Small Quantity Emission Rate (SQER) periods are Annual for "A" TAPs and 24-hours for "B" TAPS. "A" TAP 1,2-Dichloropropane is treated with "B" class periods. SQER values do not exist within WAC 173-460-080 for ASILs or Screening Levels below 0.001 µg/m^3.

3: CAS = Chemical Abstracts Service registry number.