U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, Washington 99352

0072884

MAY 16 2007

07-ESQ-091

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

RECEIVED
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EDMC

Dear Ms. Hedges:

REQUEST FOR MODIFICATION OF NON-RADIOLOGICAL AIR EMISSIONS NOTICE OF CONSTRUCTION (NOC) APPLICATION FOR OPERATION OF NEW VENTILATION SYSTEMS IN AN AND AW TANK FARMS

Pursuant to Washington Administrative Code 173-400-110(2)(a), and in accordance with Washington State Department of Ecology (Ecology) Approval Order DE05NWP-001, CH2M HILL Hanford Group, Inc. requests a modification to the Criteria and Toxics Air Emissions NOC Application for Operations of New Ventilation Systems in AN and AW Tank Farms. Attached for submittal, is a Hanford Site Air Operating Permit Notification of Administrative Permit Amendment.

The modification consists of a request to include 37 additional Toxic Air Pollutants (TAP) in the list of chemicals identified in Table 1 of the NOC. Stack sampling from the AN Farm exhauster during retrieval activities indicated the presence of TAPs, which have not been identified in previous versions of this permit. The chemicals found include formaldehyde (CAS #50-00-0), n-Nitrosodi-n-butylamine (CAS #924-16-3), and n-Nitrosomethylethylamine (CAS #10595-95-6). The remaining TAPs listed are expected to migrate to the double-shell tanks some time in the future as retrieval from single-shell tanks continues.

No new construction activities or process changes will take place as a result of this modification; and no actual emission increases of criteria air pollutants or TAPs are expected as a result of the changes.

Potential emission estimates of these chemicals were calculated using methods consistent with the original NOC. An analysis of the dispersed concentrations at the Site boundary was performed using AERMOD (American Meteorological Society/U.S. Environmental Protection Agency Regulatory Model). The emissions estimates and dispersion analysis are presented in the attached Hanford Site Air Operating Permit Administrative Permit Amendment. All results were below their respective acceptable source impact levels and below Ecology suggested screening levels.

The Toxics Best Available Control Technology (T-BACT) analysis, originally performed for this NOC was determined to be operations of the standard exhauster configuration (moisture eliminator, preheater, high-efficiency particulate air filters, fan, stack with monitoring instrumentation) with periodic monitoring to confirm that the estimated emission parameters are accurate. This treatment technology remains T-BACT for these pollutants.

Upon approval of this modification, please process the attached Air Operating Permit Administrative Permit Amendment.

If you have any questions, please contact me, or your staff may contact Dennis W. Bowser, Office of Environmental Safety and Quality, (509) 373-2566.

Sincerely,

W.J. Taylor

for Shirley J. Olinger, Acting Manager
Office of River Protection

ESQ:DWB

Attachment

cc: See page 3

cc w/attach:
D. W. Hendrickson, Ecology
O. S. Wang, Ecology
N. A. Homan, FHI
Administrative Record H-0-9
CH2M HILL Correspondence
Environmental Portal, LMSI

cc w/o attach:
J. M. Atwood, BNI
B. G. Erlandson, BNI
C. J. Kemp, CH2M HILL
L. L. Penn, CH2M HILL
M. S. Spears, CH2M HILL
P. C. Miller, CH2M HILL
J. Cox, CTUIR
S. Harris, CTUIR
B. Becker-Khaleel, Ecology
K. A. Conaway, Ecology
S. L. Dahl, Ecology
S. L. Derrick, Ecology
J. L. Hensley, Ecology
J. J. Lyon, Ecology
D. Bartus, EPA
D. Zhen, EPA
J. A. Bates, FHI
K. A. Peterson, FHI
G. Bohnee, NPT
K. Niles, Oregon Energy
M. F. Jarvis, RL
J. Martell, WDOH
R. Jim, YN

Attachment
07-ESQ-091

Hanford Site Air Operating Permit Number 00-05-006
Notification of Administrative Permit Amendment

HANFORD SITE AIR OPERATING PERMIT

Notification of Administrative Permit Amendment

This notification is provided to the Washington State Department of Ecology, Washington State Department of Health, and the U.S. Environmental Protection Agency as notice of an administrative permit amendment described as follows.

This change is allowed pursuant to WAC 173-401-720(1) and WAC 173-401-720(2):
1. Corrects typographical errors,
2. Identifies a change in the name, address, or phone number of any person identified in the permit, or provides a similar minor administrative change at the source,
3. Requires more frequent monitoring or reporting by the permittee,
4. Allows for a change in ownership or operational control of a source where the permitting authority determines that no other change is necessary, provided that a written agreement containing the specific information of the transfer between the current and new permittee has been submitted to the permitting authority,
5. Incorporates into the chapter 401 permit the terms, conditions, and provisions from orders approving notice of construction applications processed under an EPA-approved program; provided that the program meets procedural requirements listed in WAC 173-401, and
6. Changes addressed in the administrative permit amendment can be implemented immediately upon submittal.

Permit Number: 00-05-006

Provide the following information pursuant to *Washington Administrative Code* 173-401-720:

Description of the change:

Thirty-seven toxic air pollutants (TAP) are to be added to the *Non-Radioactive Air & Toxics Air Emissions Notice of Construction Application for Operations of New Ventilation Systems in AN and AW Tank Farms* and the *NOC Approval Order DE05NWP-001* as follows:

Compound	CAS #	Compound	CAS #
Nitric oxide	10102-43-9	Carbonyl sulfide	463-58-1
Phenyl ether	101-84-8	1,1-Dimethylhydrazine	57-14-7
1,2-Epoxybutane	106-88-7	Methyl hydrazine	60-34-4
Acrolein	107-02-8	Methyl isocyanate	624-83-9
Allyl alcohol	107-18-6	Methyl acetylene	74-99-7
Methyl formate	107-31-3	Formamide	75-12-7
1-Nitropropane	108-03-2	Ethylene oxide	75-21-8
Isopropyl ether	108-20-3	Dichlorofluoromethane	75-43-4
Cyclohexanol	108-93-0	Chlorodifluoromethane	75-45-6
Methyl isoamyl ketone	110-12-3	Isobutyl alcohol	78-83-1
Diphenylamine	122-39-4	Propionic acid	79-09-4
Isoamyl alcohol	123-51-3	Methyl acetate	79-20-9
Methylacrylonitrile	126-98-7	Diethyl ketone	96-22-0
Dimethyl acetamide	127-19-5	Cumene	98-82-8
Xylenes (m-,o-,p-isomers)	1330-20-7	Formaldehyde	50-00-0
Polychlorinated biphenyls (PCB)	1336-36-3	n-Nitrosodi-n-butylamine	924-16-3
Mesityl oxide	141-79-7	n-Nitrosomethylethylamine	10595-95-6
Cyclopentane	287-92-3	n-Nitrosodi-n-propylamine	621-64-7
Crotonaldehyde	4170-30-3		

Three of these TAPS, n-Nitrosodi-n-butylamine, n-Nitrosomethylethylamine, and formaldehyde have been newly identified. The remaining TAPs listed are expected to migrate to the double-shell tanks some time in the future as retrieval from single-shell tanks continues.

Pages 24 through 28 of the NOC consist of *Table 1. Estimated emissions from AN and AW Tank Farm Exhausters*. A replacement for Table 1 is attached, which provides an update of potential emissions of the additional chemicals.

The Toxics Best Available Control Technology (T-BACT) analysis, originally performed for retrieval activities, considered these chemicals as part of the total volatile organic compounds (VOC). The nitrosoamines were considered as a family. T-BACT was determined to be operation of the standard exhauster configuration (moisture eliminator, preheater, high-efficiency particulate air filters, fan, stack with monitoring instrumentation) with periodic monitoring to confirm that the estimated emission parameters are accurate.

Submittal Date of Change:

Upon approval of modification.

Describe the emissions from orders approving notice of construction applications processed under an EPA-approved program; provided that the program meets procedural requirements listed in WAC 173-401:

No new construction activities, nor process changes, will take place as a result of this modification; and no actual emission increases of criteria air pollutants nor TAPs are expected as a result of the changes. The total calculated VOCs were 5.3E-00 lbs/hour or 1.9E03 lbs/year (9.5E-01 tons/yr).

Emission concentrations for the newly identified TAPs were estimated using dispersion modeling unit concentration dispersion factors developed with AERMOD. Concentration factors for 24-hour and annual average releases in both the 200 East and 200 West areas were developed. Averages are based on Hanford Site wind data collected from 2000 through 2005. The input files and resulting factors are as follows:

Source Name	Description	24 Hr Max	Annual Max	Location
E10_2000	2000 cfm, 10" dia., 28' release height	1.10331	0.05182	15 km east
E6_1000	1000 cfm, 6" dia., 17'release height	1.3288	0.05548	15 km east
E6_500	500 cfm, 6" dia., 17' release height	1.81318	0.05979	15 km east

For conservatism, the resulting maximum factor for East Area of 0.05979 was applied to stack emissions to estimate the annual average contaminant concentrations and 1.81318 for a 24 hour average concentration at the Hanford Site boundary. These factors were multiplied by the emissions in g/s. The results give pollutant concentrations at the Site boundary in micrograms per cubic meter. The location on the Site boundary for the East Area with the highest potential impact was determined to be 15 kilometer (9.3 miles) in the east direction.

The emission rates and method of calculation were performed consistent with the original NOC application, using simultaneous operation of two 2,000 cfm exhausters. The results were below acceptable source impact levels (ASILs) for thirty-five TAPs, including n-Nitrosodi-n-butylamine, and below Ecology suggested screening levels for two TAPs, n-Nitrosodi-n-propylamine and n-Nitrosomethylethylamine, which currently have no assigned ASILs.	
List the terms, conditions, and provisions from orders approving notice of construction applications processed under an EPA-approved program; provided that the program meets procedural requirements listed in WAC 173-401:	
Agency provides.	
For Hanford Site Use Only:	
AOP Change Control Number:	**Date:**

Table 1: Estimated Emissions from AN and AW Exhausters

Compound	CAS #	TAP CLASS	SQER (A lbs/yr, B lbs/hr)	ASIL (ug/m3)	Ratio of Emissions to SQER	Ratio of Dispersed Emissions to ASIL	Estimated Emissions		Estimated Dispersed Emissions	
							lbs/hr	lbs/yr	24hr avg (ug/m3)	annual (ug/m3)
1,4-dichlorobenzene (p)	106-46-7	AI, AII	500	1.5E+00	3.8E-06	1.4E-09	5.3E-06	1.9E-03	1.9E-06	2.2E-09
Ethylene dibromide (dibromethane)	106-93-4	AI, AII	0.5	4.5E-03	9.7E-02	1.2E-05	1.3E-04	4.8E-02	4.7E-05	5.5E-08
1,2-dichloroethane	107-06-2	AI, AII	10	3.8E-02	4.0E-07	1.2E-10	1.1E-08	4.0E-06	3.9E-09	4.6E-12
Acrylonitrile	107-13-1	AI, AII	10	1.5E-02	1.8E-04	1.4E-07	5.0E-06	1.8E-03	1.8E-06	2.1E-09
Bis(2-ethylhexyl)phthalate (DEHP) (J)	117-81-7	AI, AII	500	2.5E+00	4.2E-05	9.6E-09	5.8E-05	2.1E-02	2.0E-05	2.4E-08
1,4-dioxane (1,3-diethyleneoxide)	123-91-1	AI, AII	10	3.2E-02	6.3E-01	2.2E-04	1.7E-02	6.3E+00	6.1E-03	7.2E-06
Perchlorethyleme (Tetrachloroethylene)	127-18-4	AI, AII	500	1.1E+00	7.4E-05	3.8E-08	1.0E-04	3.7E-02	3.6E-05	4.2E-08
Benzo(a)pyrene	50-32-8	AI, AII	0.5	4.8E-04	2.1E-02	2.5E-05	3.0E-05	1.1E-02	1.0E-05	1.2E-08
Carbon tetrachloride	56-23-5	AI, AII	20	6.7E-02	1.7E-04	5.9E-08	9.6E-06	3.5E-03	3.4E-06	4.0E-09
N-Nitrosodimethylamine	62-75-9	AI, AII	0.5	7.1E-05	2.0E+00	1.6E-02	2.8E-03	1.0E+00	1.0E-03	1.2E-06
Chloroform	67-66-3	AI, AII	10	4.3E-02	9.0E-03	2.4E-06	2.5E-04	9.0E-02	8.8E-05	1.0E-07
Benzene	71-43-2	AI, AII	20	1.2E-01	2.3E-02	4.3E-06	1.3E-03	4.6E-01	4.5E-04	5.2E-07
vinyl chloride	75-01-4	AI, AII	10	1.2E-02	1.3E-04	1.3E-07	3.7E-06	1.3E-03	1.3E-06	1.5E-09
Acetaldehyde	75-07-0	AI, AII	50	4.5E-01	1.9E-01	2.4E-05	2.6E-02	9.4E+00	9.2E-03	1.1E-05
Dichloromethane (methylene chloride)	75-09-2	AI, AII	50	5.6E-01	1.8E-01	1.9E-05	2.5E-02	9.2E+00	9.0E-03	1.0E-05
Bromoform	75-25-2	AI, AII	50	9.1E-01	1.1E-07	6.9E-12	1.5E-08	5.5E-06	5.4E-09	6.3E-12
Heptachlor	76-44-8	AI, AII	0.5	7.7E-04	5.5E-04	4.1E-07	7.6E-07	2.8E-04	2.7E-07	3.1E-10
Trichloroethylene	79-01-6	AI, AII	50	5.9E-01	5.6E-03	5.5E-07	7.8E-04	2.8E-01	2.8E-04	3.2E-07
1,2-Dichloropropane	78-87-5	AI, AIII	500	4.0E+00	1.9E-08	2.3E-09	2.6E-08	9.5E-06	9.3E-09	1.1E-11
1,3-Butadiene	106-99-0	AI,AII	0.5	3.6E-03	2.8E+00	4.5E-04	3.9E-03	1.4E+00	1.4E-03	1.6E-06
p-Nitrochlorobenzene	100-00-5	B	0.02	2.0E+00	7.4E-02	2.6E-04	1.5E-03	5.3E-01	5.2E-04	6.1E-07
4-nitrophenol	100-02-7	B	0.02	3.3	1.39E+00	1.93E-03	2.8E-02	1.0E+01	9.8E-03	1.1E-05
Ethyl benzene	100-41-4	B	5	1.0E+03	5.8E-04	1.0E-06	2.9E-03	1.0E+00	1.0E-03	1.2E-06
Styrene	100-42-5	B	5	1.0E+03	7.2E-04	1.3E-06	3.6E-03	1.3E+00	1.3E-03	1.5E-06
Ethyl butyl ketone	106-35-4	B	5	7.8E+02	1.0E-02	2.3E-05	5.1E-02	1.8E+01	1.8E-02	2.1E-05
Butane	106-97-8	B	5	6.3E+03	1.4E-02	3.9E-06	7.1E-02	2.5E+01	2.5E-02	2.9E-05
Methyl propyl ketone	107-87-9	B	5	2.3E+03	5.2E-03	4.0E-06	2.6E-02	9.4E+00	9.2E-03	1.1E-05
Vinyl acetate	108-05-4	B	2.60	2.0E+02	1.1E-06	5.0E-09	2.8E-06	1.0E-03	1.0E-06	1.2E-09

Table 1: Estimated Emissions from AN and AW Exhausters										
Compound	CAS #	TAP CLASS	SQER (A lbs/yr, B lbs/hr)	ASIL (ug/m3)	Ratio of Emissions to SQER	Ratio of Dispersed Emissions to ASIL	Estimated Emissions		Estimated Dispersed Emissions	
							lbs/hr	lbs/yr	24hr avg (ug/m3)	annual (ug/m3)
Methyl isobutyl ketone (MIBK)	108-10-1	B	5	6.8E+02	2.3E-03	6.0E-06	1.2E-02	4.2E+00	4.1E-03	4.8E-06
Isopropyl acetate	108-21-4	B	5	3.5E+03	4.3E-04	2.2E-07	2.1E-03	7.7E-01	7.5E-04	8.8E-07
Methylcyclohexane	108-87-2	B	5	5.4E+03	3.5E-03	1.2E-06	1.8E-02	6.4E+00	6.2E-03	7.3E-06
Toluene	108-88-3	B	5	4.0E+02	5.0E-03	2.2E-05	2.5E-02	9.0E+00	8.8E-03	1.0E-05
Chlorobenzene	108-90-7	B	2.60	1.5E+02	4.2E-05	2.5E-07	1.1E-04	3.9E-02	3.8E-05	4.4E-08
Cyclohexanone	108-94-1	B	5	3.3E+02	8.7E-06	4.6E-08	4.4E-05	1.6E-02	1.5E-05	1.8E-08
Phenol	108-95-2	B	1.20	6.3E+01	2.2E-02	1.5E-04	2.6E-02	9.4E+00	9.2E-03	1.1E-05
Pentane	109-66-0	B	5	6.0E+03	8.0E-03	2.4E-06	4.0E-02	1.4E+01	1.4E-02	1.7E-05
Tetrahydrofuran	109-99-9	B	5	2.0E+03	1.3E-02	1.1E-05	6.5E-02	2.3E+01	2.3E-02	2.7E-05
Methyl n-amyl ketone	110-43-0	B	5	7.8E+02	2.1E-03	4.6E-06	1.0E-02	3.7E+00	3.6E-03	4.2E-06
hexane (n-hexane)	110-54-3	B	2.60	2.0E+02	2.3E-02	1.0E-04	5.9E-02	2.1E+01	2.1E-02	2.4E-05
n-Valeraldehyde	110-62-3	B	5	5.9E+02	6.4E-04	1.9E-06	3.2E-03	1.2E+00	1.1E-03	1.3E-06
Cyclohexane	110-82-7	B	5	3.4E+03	4.8E-03	2.5E-06	2.4E-02	8.6E+00	8.4E-03	9.8E-06
Cyclohexene	110-83-8	B	5	3.4E+03	2.8E-01	1.5E-04	1.4E+00	5.1E+02	5.0E-01	5.8E-04
Pyridine	110-86-1	B	0.60	5.3E+01	7.2E-01	2.9E-03	4.3E-01	1.6E+02	1.5E-01	1.8E-04
Octane	111-65-9	B	5	4.7E+03	4.7E-03	1.7E-06	2.3E-02	8.4E+00	8.2E-03	9.6E-06
2-Butoxyethanol	111-76-2	B	5	4.0E+02	1.1E-01	4.9E-04	5.5E-01	2.0E+02	1.9E-01	2.3E-04
Nonane	111-84-2	B	5	3.5E+03	1.5E-03	7.4E-07	7.4E-03	2.7E+00	2.6E-03	3.0E-06
1,2,4-Trichlorobenzene	120-82-1	B	2.00	1.2E+02	3.9E-05	2.3E-07	7.8E-05	2.8E-02	2.8E-05	3.2E-08
Dipropyl ketone	123-19-3	B	5	7.8E+02	4.7E-03	1.1E-05	2.4E-02	8.5E+00	8.4E-03	9.8E-06
propionaldehyde	123-38-6	B	0.02	2.5E+00	3.06E-05	5.60E-08	6.1E-07	2.2E-04	2.2E-07	2.5E-10
n-Butyl acetate	123-86-4	B	5	2.4E+03	1.8E-02	1.3E-05	8.9E-02	3.2E+01	3.1E-02	3.7E-05
Tributyl phosphate	126-73-8	B	0.02	7.3E+00	2.5E+00	2.4E-03	4.9E-02	1.8E+01	1.7E-02	2.0E-05
2,6-Ditert. butyl-p-cresol	128-37-0	B	0.60	3.3E+01	3.5E-02	2.3E-04	2.1E-02	7.6E+00	7.4E-03	8.7E-06
Ethyl acetate	141-78-6	B	5	4.8E+03	5.4E-02	2.0E-05	2.7E-01	9.7E+01	9.5E-02	1.1E-04
Heptane (n-Heptane)	142-82-5	B	5	5.5E+03	3.2E-03	1.0E-06	1.6E-02	5.8E+00	5.7E-03	6.6E-06
Dinitro-o-cresol	534-52-1	B	0.02	6.7E-01	3.9E-04	4.1E-06	7.9E-06	2.8E-03	2.8E-06	3.2E-09
Dichloropropene	542-75-6	B	0.20	2.0E+01	1.1E-07	3.9E-10	2.2E-08	8.0E-06	7.8E-09	9.1E-12
Methyl Isopropyl ketone	563-80-4	B	5	2.3E+03	7.3E-03	5.6E-06	3.6E-02	1.3E+01	1.3E-02	1.5E-05
2-Hexanone (MBK)	591-78-6	B	1.20	6.7E+01	6.4E-03	4.0E-05	7.6E-03	2.7E+00	2.7E-03	3.1E-06
n-Propyl nitrate	627-13-4	B	5	3.6E+02	4.5E-06	2.2E-08	2.3E-05	8.2E-03	8.0E-06	9.3E-09
Ethyl alcohol	64-17-5	B	5	6.3E+03	8.8E-03	2.5E-06	4.4E-02	1.6E+01	1.5E-02	1.8E-05
Acetic acid	64-19-7	B	1.20	8.3E+01	1.9E-02	9.4E-05	2.2E-02	8.0E+00	7.8E-03	9.2E-06
Methyl alcohol	67-56-1	B	5	8.7E+02	2.4E-02	5.0E-05	1.2E-01	4.4E+01	4.3E-02	5.0E-05

Table 1: Estimated Emissions from AN and AW Exhausters

Compound	CAS #	TAP CLASS	SQER (A lbs/yr, B lbs/hr)	ASIL (ug/m3)	Ratio of Emissions to SQER	Ratio of Dispersed Emissions to ASIL	Estimated Emissions		Estimated Dispersed Emissions	
							lbs/hr	lbs/yr	24hr avg (ug/m3)	annual (ug/m3)
Isopropyl alcohol	67-63-0	B	5	3.3E+03	3.9E-03	2.1E-06	2.0E-02	7.0E+00	6.9E-03	8.0E-06
Acetone	67-64-1	B	5	5.9E+03	3.4E-02	1.0E-05	1.7E-01	6.1E+01	5.9E-02	6.9E-05
n-Propyl alcohol	71-23-8	B	5	1.6E+03	1.7E-03	1.9E-06	8.6E-03	3.1E+00	3.0E-03	3.5E-06
n-Butyl alcohol	71-36-3	B	5	5.0E+02	5.1E-02	1.8E-04	2.6E-01	9.2E+01	9.0E-02	1.1E-04
Methyl chloroform (1,1,1-Trichloroethane)	71-55-6	B	5	6.4E+03	2.1E-05	5.7E-09	1.0E-04	3.7E-02	3.6E-05	4.2E-08
Methyl bromide	74-83-9	B	0.02	5.0E+00	2.8E-02	4.0E-05	5.7E-04	2.0E-01	2.0E-04	2.3E-07
Methyl chloride	74-87-3	B	5	3.4E+02	4.7E-05	2.4E-07	2.3E-04	8.4E-02	8.2E-05	9.6E-08
Methylamine	74-89-5	B	0.60	4.3E+01	4.6E-08	2.3E-10	2.8E-08	1.0E-05	9.8E-09	1.1E-11
Ethyl chloride	75-00-3	B	5	1.0E+04	3.6E-04	6.2E-08	1.8E-03	6.4E-01	6.2E-04	7.3E-07
Ethylamine	75-04-7	B	1.20	6.0E+01	1.6E-09	1.1E-11	1.9E-09	6.8E-07	6.6E-10	7.8E-13
Acetonitrile	75-05-8	B	2.60	2.2E+02	2.5E-02	1.0E-04	6.4E-02	2.3E+01	2.3E-02	2.6E-05
Carbon disulfide	75-15-0	B	2.00	1.0E+02	3.7E-03	2.6E-05	7.5E-03	2.7E+00	2.6E-03	3.1E-06
1,1-Dichloroethane	75-34-3	B	5	2.7E+03	1.9E-09	1.2E-12	9.3E-09	3.4E-06	3.3E-09	3.8E-12
Vinylidene chloride	75-35-4	B	1.20	6.7E+01	4.7E-02	3.0E-04	5.6E-02	2.0E+01	2.0E-02	2.3E-05
Trimethylamine	75-50-3	B	1.20	8.0E+01	3.8E-03	2.0E-05	4.6E-03	1.7E+00	1.6E-03	1.9E-06
Nitromethane	75-52-5	B	5	8.3E+02	5.3E-09	1.1E-11	2.6E-08	9.5E-06	9.3E-09	1.1E-11
Propylene imine	75-55-8	B	0.20	1.6E+01	4.9E-04	2.1E-06	9.7E-05	3.5E-02	3.4E-05	4.0E-08
tert-Butyl alcohol	75-65-0	B	5	1.0E+03	1.0E-03	1.8E-06	5.2E-03	1.9E+00	1.8E-03	2.1E-06
Trichlorofluoromethane	75-69-4	B	5	1.9E+04	1.0E-03	9.7E-08	5.2E-03	1.9E+00	1.8E-03	2.2E-06
Dichlorodifluoromethane	75-71-8	B	5	1.6E+04	1.1E-04	1.2E-08	5.4E-04	1.9E-01	1.9E-04	2.2E-07
1,1,2-Trichloro-1,2,2-trifluorethane	76-13-1	B	5	2.7E+04	1.7E-04	1.1E-08	8.3E-04	3.0E-01	2.9E-04	3.4E-07
Dichlorotetrafluoroethane	76-14-2	B	5	2.3E+04	2.8E-06	2.1E-10	1.4E-05	5.0E-03	4.9E-06	5.7E-09
sec-Butyl alcohol	78-92-2	B	5	1.0E+03	2.4E-05	4.3E-08	1.2E-04	4.4E-02	4.3E-05	5.0E-08
Methyl ethyl ketone (MEK)	78-93-3	B	5	1.0E+03	3.1E-02	5.4E-05	1.5E-01	5.5E+01	5.4E-02	6.3E-05
1,1,2-Trichloroethane	79-00-5	B	2.60	1.8E+02	1.3E-04	6.7E-07	3.4E-04	1.2E-01	1.2E-04	1.4E-07
Acrylicacid	79-10-7	B	0.02	3.0E-01	6.1E-01	1.4E-02	1.2E-02	4.4E+00	4.3E-03	5.0E-06
1,1,2,2-Tetrachloroethane	79-34-5	B	0.20	2.3E+01	1.3E-04	3.9E-07	2.5E-05	9.2E-03	9.0E-06	1.0E-08
Diethyl phthalate	84-66-2	B	0.20	1.7E+01	2.4E-04	1.0E-06	4.8E-05	1.7E-02	1.7E-05	2.0E-08
Di-n-butylphthalate	84-74-2	B	0.20	1.7E+01	6.7E-04	2.8E-06	1.3E-04	4.8E-02	4.7E-05	5.5E-08
Hexachlorobutadiene	87-68-3	B	0.02	7.0E-01	2.3E-01	2.3E-03	4.5E-03	1.6E+00	1.6E-03	1.9E-06
Napthalene	91-20-3	B	2.60	1.7E+02	2.7E-06	1.4E-08	7.0E-06	2.5E-03	2.4E-06	2.9E-09

Table 1: Estimated Emissions from AN and AW Exhausters										
Compound	CAS #	TAP CLASS	SQER (A lbs/yr, B lbs/hr)	ASIL (ug/m3)	Ratio of Emissions to SQER	Ratio of Dispersed Emissions to ASIL	Estimated Emissions		Estimated Dispersed Emissions	
							lbs/hr	lbs/yr	24hr avg (ug/m3)	annual (ug/m3)
Biphenyl	92-52-4	B	0.02	4.3E+00	2.1E+00	3.5E-03	4.3E-02	1.5E+01	1.5E-02	1.8E-05
o-Dichlorobenzene (1,2-Dichlorobenzene)	95-50-1	B	5	1.0E+03	1.2E-06	2.2E-09	6.1E-06	2.2E-03	2.2E-06	2.5E-09
a-Methyl styrene	98-83-9	B	5	8.1E+02	1.0E-03	2.3E-06	5.2E-03	1.9E+00	1.8E-03	2.1E-06
acetophenone	98-86-2	B	0.02		5.6E-01		1.1E-02	4.0E+00	3.9E-03	4.6E-06
Nitrobenzene	98-95-3	B	0.02	1.7E+00	7.0E-01	2.9E-03	1.4E-02	5.0E+00	4.9E-03	5.7E-06
p-cresol	106-44-5		NA				5.2E-01	1.9E+02	1.8E-01	2.1E-04
o-cresol	95-48-7		NA				2.6E-01	9.5E+01	9.3E-02	1.1E-04
Nitric oxide	10102-43-9	B	1.8E+04	1.0E+02	9.0E-08	3.6E-06	1.6E-03	5.7E-01	3.6E-04	4.9E-07
Phenyl ether	101-84-8	B	1.8E+03	2.3E+01	7.0E-08	1.2E-06	1.2E-04	4.4E-02	2.8E-05	3.8E-08
1,2-Epoxybutane	106-88-7	B	1.8E+03	2.0E+01	1.0E-07	2.0E-06	1.8E-04	6.5E-02	4.1E-05	5.6E-08
Acrolein	107-02-8	B	1.8E+02	2.0E-02	5.7E-08	1.1E-04	1.0E-05	3.6E-03	2.3E-06	3.1E-09
Allyl alcohol	107-18-6	B	1.8E+03	1.7E+01	3.6E-09	8.4E-08	6.2E-06	2.2E-03	1.4E-06	1.9E-09
Methyl formate	107-31-3	B	4.4E+04	8.2E+02	3.0E-11	3.6E-10	1.3E-06	4.6E-04	3.0E-07	4.0E-10
1-Nitropropane	108-03-2	B	1.8E+03	2.0E+01	5.3E-08	1.1E-06	9.3E-05	3.4E-02	2.1E-05	2.9E-08
Isopropyl ether	108-20-3	B	4.4E+04	3.5E+03	6.6E-09	1.9E-08	2.9E-04	1.0E-01	6.6E-05	8.9E-08
Cyclohexanol	108-93-0	B	4.4E+04	6.9E+02	3.3E-11	4.8E-10	1.4E-06	5.2E-04	3.3E-07	4.4E-10
Methyl isoamyl ketone	110-12-3	B	4.4E+04	7.8E+02	3.0E-09	3.8E-08	1.3E-04	4.6E-02	3.0E-05	4.0E-08
Diphenylamine	122-39-4	B	5.3E+03	3.3E+01	2.9E-08	1.0E-06	1.5E-04	5.4E-02	3.4E-05	4.7E-08
Isoamyl alcohol	123-51-3	B	4.4E+04	1.2E+03	1.6E-09	1.3E-08	7.0E-05	2.5E-02	1.6E-05	2.2E-08
Methylacrylonitrile	126-98-7	B	1.8E+02	9.0E+00	4.1E-07	1.8E-06	7.2E-05	2.6E-02	1.6E-05	2.2E-08
Dimethyl acetamide	127-19-5	B	1.8E+04	1.2E+02	1.9E-09	6.3E-08	3.3E-05	1.2E-02	7.5E-06	1.0E-08
Xylenes (m-,o-,p-isomers)	1330-20-7	B	4.4E+04	1.5E+03	2.3E-08	1.5E-07	1.0E-03	3.6E-01	2.3E-04	3.1E-07
Polychlorinated biphenyls (P	1336-36-3	A	5.0E-01	4.5E-03	5.0E-05	1.3E-03	2.5E-05	9.0E-03	5.7E-06	7.8E-09
Mesityl oxide	141-79-7	B	2.3E+04	2.0E+02	2.5E-09	6.5E-08	5.7E-05	2.0E-02	1.3E-05	1.8E-08
Cyclopentane	287-92-3	B	4.4E+04	5.7E+03	9.8E-09	1.7E-08	4.3E-04	1.5E-01	9.8E-05	1.3E-07
Crotonaldehyde	4170-30-3	B	1.8E+03	2.0E+01	2.7E-08	5.4E-07	4.7E-05	1.7E-02	1.1E-05	1.5E-08
Carbonyl sulfide	463-58-1	B	None	1.9E+01	N/A	5.5E-07	4.6E-05	1.7E-02	1.0E-05	1.4E-08
1,1-Dimethylhydrazine	57-14-7	B	1.8E+02	4.0E+00	3.1E-08	3.1E-07	5.4E-06	1.9E-03	1.2E-06	1.7E-09
Methyl hydrazine	60-34-4	B	1.8E+02	1.2E+00	1.0E-08	3.4E-07	1.8E-06	6.5E-04	4.1E-07	5.6E-10
Methyl isocyanate	624-83-9	B	1.8E+02	1.6E-01	1.7E-07	4.3E-05	3.0E-05	1.1E-02	6.9E-06	9.3E-09
Methyl acetylene	74-99-7	B	4.4E+04	5.5E+03	9.2E-09	1.7E-08	4.0E-04	1.4E-01	9.2E-05	1.2E-07
Formamide	75-12-7	B	1.1E+04	6.0E+01	5.3E-10	2.1E-08	5.5E-06	2.0E-03	1.3E-06	1.7E-09
Ethylene oxide	75-21-8	A	5.0E-01	1.0E-02	6.9E-05	7.9E-04	3.4E-05	1.2E-02	7.9E-06	1.1E-08
Dichlorofluoromethane	75-43-4	B	2.3E+04	1.3E+02	7.2E-09	2.9E-07	1.6E-04	5.9E-02	3.8E-05	5.1E-08

Table 1: Estimated Emissions from AN and AW Exhausters

Compound	CAS #	TAP CLASS	SQER (A lbs/yr, B lbs/hr)	ASIL (ug/m3)	Ratio of Emissions to SQER	Ratio of Dispersed Emissions to ASIL	Estimated Emissions		Estimated Dispersed Emissions	
							lbs/hr	lbs/yr	24hr avg (ug/m3)	annual (ug/m3)
Chlorodifluoromethane	75-45-6	B	4.4E+04	1.2E+04	9.7E-08	8.1E-08	4.2E-03	1.5E+00	9.7E-04	1.3E-06
Isobutyl alcohol	78-83-1	B	4.4E+04	5.1E+02	9.0E-10	1.8E-08	3.9E-05	1.4E-02	9.0E-06	1.2E-08
Propionic acid	79-09-4	B	1.8E+04	1.0E+02	6.6E-10	2.6E-08	1.1E-05	4.1E-03	2.6E-06	3.6E-09
Methyl acetate	79-20-9	B	4.4E+04	2.0E+03	2.1E-09	1.1E-08	9.3E-05	3.4E-02	2.1E-05	2.9E-08
Diethyl ketone	96-22-0	B	4.4E+04	2.3E+03	6.4E-10	2.8E-09	2.8E-05	1.0E-02	6.4E-06	8.7E-09
Cumene	98-82-8	B	4.4E+04	8.2E+02	7.0E-09	8.6E-08	3.1E-04	1.1E-01	7.1E-05	9.6E-08
Formaldehyde	50-00-0	A	2.0E+01	7.7E-02	1.2E-06	7.3E-05	2.5E-05	8.9E-03	5.6E-06	7.6E-09
n-Nitrosodi-n-butylamine	924-16-3	A	None	6.3E-04	N/A	7.9E-04	2.2E-06	7.8E-04	5.0E-07	6.7E-10
n-Nitrosomethylethyl amine	10595-95-6	A	None	2.0E-04	N/A	8.7E-04	7.6E-07	2.7E-04	1.7E-07	2.4E-10
n-Nitrosodi-n-propylamine	621-64-7	A	None	5.0E-04	N/A	8.7E-06	1.91E-08	6.87E-06	4.37E-09	5.92E-12
						Sum of VOCs:	5.32E+00	1.91E+03		
							Tons/yr	9.57E-01		
Ammonia	7664-41-7	B	2	100	1.1E-01	7.8E-04	2.2E-01	1.9E+03	7.8E-02	2.2E-03