



# NATURAL RESOURCES

Eric R. Greitens, Governor

Carol S. Comer, Director

**MAR 20 2018**

Ms. Laura Schubert  
 Regulatory Specialist  
 U.S. Paint Corporation  
 831 South 21st Street  
 St. Louis, MO 63103

RE: New Source Review Permit Amendment - Permit Number: 102016-006B  
 Project Number: 2018-02-031; Installation Number: 510-0097

Dear Ms. Schubert:

On February 20, 2018, the Missouri Department of Natural Resources (MoDNR) received a construction permit application from U.S. Paint Corporation (U.S. Paint) to install a new paint mixer. Since permit amendment 122016-006A was issued for similar equipment which included a new mixer, and because this application was received within two years of the previous permit project, it was reasoned that the new mixer should be aggregated with the equipment in permit amendment 102016-006A. For this application, the new mixer is a Model V-25-25L MorehouseCowles Single Shaft Inverter Variable High Speed Dissolver (784177) which is expected to mix a variety of paints at the installation. Table 1 below lists all emission points at the facility.

Table 1: Facility Wide Emission Points

Emission Points	Description	Pollutants	Project Status
EP-1	Fugitive emissions from clean-up of solvents	VOC, HAPs	Existing
EP-2	Fugitive emissions from paint mixing (includes all paint mixers and mills <sup>2</sup> at the installation)	VOC, HAPs, PM/PM <sub>10</sub> /PM <sub>2.5</sub>	new mixer included
EP-5	Quality Control spray booth #1 with filters	VOC, HAPs	Existing
EP-6	Small batch spray booth with filters	VOC, HAPs	Existing
EP-7	Expansion area spray booth	VOC, HAPs	Existing
EP-8	Laboratory #1 spray booth with filters	VOC, HAPs	Existing
EP-9	Laboratory #2 spray booth with filters	VOC, HAPs	Existing
EP-10	Automotive/Industrial laboratory spray booth (Lab #3 Mill Room)	VOC, HAPs	Existing

Emission Points	Description	Pollutants	Project Status
EP-11	Distillation Process	VOC, HAPs	Existing
EP-15	Tank Washer (E/TW)	VOC, HAPs	Existing
EP-16	Paint Spray Booth in Quality Control Lab #2 with filters	VOC, HAPs	Existing
EP-18	<p>Tank Working and Breathing Losses Includes:</p> <p>tanks EP18A-1 through EP18A-5 rated at 4000, 3000, 6000, 4000, 3000 gallons respectively; tanks EP18B-1 through EP18B-5 rated at 6000, 2000, 4000, 2000, 6000 gallons respectively; tanks EP18C-1 through EP18C-5 rated at 4000, 3000, 6000, 4000, 3000 gallons respectively; (15 tanks total, i.e. 3 larger tank units subdivided into 5 smaller tanks each)</p> <p>20 above ground storage tanks grandfathered from construction permitting including: tanks 1A, 1B, 2A, 2B, 3A, 3B, 4A, 4B rated at 2700 gallons each; tanks 5A, 5B, 6A, 6B, 7A, 7B, 8A, 8B, 9A, 9B, 10A, 10B rated at 2000 gallons each</p>	VOC, HAPs	Existing
EP-19 <sup>1</sup>	Parts Washer and Drum/Container Washing	VOC, HAPs	Existing
EP-20	Natural Gas Heaters (total 5.2 MMBtu/hr natural gas fuel rate)	PM/PM <sub>10</sub> /PM <sub>2.5</sub> , SO <sub>2</sub> , NO <sub>x</sub> , VOC, CO, HAPs	Existing

<sup>1</sup>While the Parts Washer and Drum/Container Washing was included as a potential emission point, U.S. Paint currently does not use the Parts Washer.

<sup>2</sup>Some mixers and mills are not located in the same area of the facility. However, emissions from mixers and mills are calculated with the same emission factor for total paint throughput.

<sup>3</sup>For a more detailed discussion of emission point locations and components, see Operating Permit (OP) 2017-026.

Special Conditions 2, 3, 4, and 5 from previously issued permit amendment 102016-006A are being superseded in order to include the new mixer within the installation wide synthetic minor VOC and HAPs limits. The new Morehouse Cowles mixer (ID-D/D10) is also being combined with the equipment within construction permit CP 122015-006, (CP) 102016-006, and permit amendment 102016-006A as the same permitting project (see Table 2 below for list of project equipment). All of the project equipment are grouped under EP-2 which includes all point source paint mixing equipment at the installation. Important to note is that the project equipment have an additional SMAL limit (Special Condition 2.C) in order to avoid modeling of HAPs.

Table 2: Project Equipment

Emission Point	Equipment Description	ID #	Original Permit
EP-2	Leeson Paddle Mixers (five total)	D/PM21, D/PM22, D/PM23, D/PM24, D/PM25	102016-006
	Horizontal Mill Supermill Plus SMP-15	D/HM13	
	Basket Mill 256 Plus	D/PSM256	
	Morehouse Cowles mixer	E/D8	
	Ideal-Pak filling machine	C/NFM4	122015-006
	SPX Flow/Lightnin air mixer	C/NPM	
	Morehouse Cowles mixer (V-38-75L)	E/D9	122016-006A <sup>2</sup>
	Morehouse Cowles mixer (V-25-25L)	D/D10	New <sup>2</sup>

<sup>1</sup>EP-2 includes other paint mixing equipment, See Operating Permit (OP) 2017-026 for complete list.

<sup>2</sup>The application for this amendment included the installation of a single Morehouse Cowles mixer

U.S. Paint will need to amend their Intermediate Operating Permit within 90 days to include the new mixer. Missouri rule 10 CSR 10-5.390 *Control of Emission From Manufacture of Paints, Varnishes, Lacquers, Enamels and Other Allied Surface Coating Products* may apply to the facility. The facility has a 100 tpy limit on VOC, which averaged over 365 days per year, is 547 lbs/day average (10 CSR 10-5.390 places a limit on rule applicability of 551 lbs/day or more VOC emissions). On average, U.S. Paint produces around 2600 gallons (approximately 1.3 tons) of paint per day, equivalent to around 40 lbs/day of VOC emissions using the 30 lb/ton emission factor from the EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, Section 6.4 Paint and Varnish, May 1983. Should U.S. Paint exceed 547 lbs/day of VOC emissions then U.S. Paint should refer to the designated rules in 10 CSR 10-5.390. Be aware that MACT regulation 40 CFR 63 Subpart CCCCCC *National Emission Standards for Hazardous Air Pollutants for Area Sources: Paints and Allied Products Manufacturing* may apply to the facility if future paint products contain benzene, methylene chloride, cadmium, lead, or nickel.

If you were adversely affected by this permit decision, you may be entitled to pursue an appeal before the administrative hearing commission pursuant to Sections 621.250 and 643.075.6 RSMo. To appeal, you must file a petition with the administrative hearing commission within thirty days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the administrative hearing commission, whose contact information is: Administrative Hearing Commission, United States Post Office

Ms. Laura Schubert  
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Building, 131 West High Street, Third Floor, P.O. Box 1557, Jefferson City, Missouri 65102,  
phone: 573-751-2422, fax: 573-751-5018, website: [www.oe.mo.gov/ahc](http://www.oe.mo.gov/ahc).

If you have any questions regarding this amendment, please do not hesitate to contact Hans  
Robinson, at the department's Air Pollution Control Program, P.O. Box 176, Jefferson City, MO  
65102 or at (573) 751-4817. Thank you for your attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM



Kendall B. Hale  
Permits Section Chief

KBH:hrj

Enclosures

c: St. Louis Regional Office  
PAMS File: 2018-02-031

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**SPECIAL CONDITIONS:**

The permittee is authorized to construct and operate subject to the following special conditions:

*The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (12)(A)10. "Conditions required by permitting authority."*

U.S. Paint Corporation  
St. Louis City County, Land Grant-00363

1. Superseding Condition
  - A. The conditions of this permit supersede the following:
    - 1) Special Conditions 2, 3, 4, and 5 of Permit # 122015-006A previously issued by the Air Pollution Control Program.
2. VOC and HAPs Emission Limitations
  - A. U.S. Paint Corporation shall emit less than 100.0 tons of VOCs in any consecutive 12-month period from the entire installation as defined in Table 1.
  - B. U.S. Paint Corporation shall emit less than 10.0 tons individually of HAPs in any consecutive 12-month period from the entire installation as defined in Table 1.
  - C. U.S. Paint Corporation shall emit less than 25.0 tons combined of HAPs in any consecutive 12-month period from the entire installation as defined in Table 1.
  - D. U.S. Paint Corporation shall emit less than the SMAL given in Appendix A for each individual HAPs in any consecutive 12-month period from all equipment listed in Table 2.
  - E. Forms developed from the procedures outlined in Special Condition 3, such as electronic forms, approved by the Air Pollution Control Program shall be used to demonstrate compliance with Special Conditions 2.A, 2.B, 2.C, and 2.D.
3. Record Keeping and Reporting Requirements
  - A. U.S. Paint shall develop and keep monthly and 12-month rolling total records of VOC emissions to show compliance with Special Condition 2.A.

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**SPECIAL CONDITIONS:**

The permittee is authorized to construct and operate subject to the following special conditions:

These records shall include the SDS for all materials used indicating their density (lb/gal), VOC content (weight percentage or lb/gal) and, at minimum, the following information:

- 1) Installation name
- 2) Installation ID
- 3) Permit number
- 4) Current month
- 5) Current 12-month date range
- 6) To calculate actual emissions from paint mixing (EP-2)
  - a) List all materials containing VOCs and the respective gallons of each material used per month.
  - b) List density of each material (lb per gal) obtained from SDS.
  - c) List the amount of paint filled. The calculation for tons of material filled = gallons of paint filled multiplied by density (lb/gal) x 0.0005 ton/lb
  - d) List the VOC emission factor for 30.0 lbs/ ton of paint produced. (Source: EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, Section 6.4 *Paint and Varnish*, May 1983)
  - e) List the tons of VOC emitted from mixing per month = Tons of material filled x 30.0 lbs/tons x 0.0005 tons/lb.
- 7) To calculate actual emissions from spray guns and spray booths (EP-10, 16, 5, 6, 7, 8, 9)
  - a) List all materials containing VOCs and the respective gallons of each material sprayed per month.
  - b) List density of each material (lb per gal) obtained from SDS.
  - c) List the amount of paint sprayed. The calculation for tons of material sprayed = gallons of paint sprayed multiplied by density (lb/gal) x 0.0005 ton/lb
  - d) List the tons of VOC emitted from spray coating per month = tons of material sprayed x maximum percentage of VOC (weight percentage) within material where percentage VOC is also obtained from SDS.
- 8) To calculate actual emissions for the distillation unit (EP-11)
  - a) Monthly throughput of liquid that feeds the distillation column in tons = gallons of feed x density of feed liquid x 0.0005 tons/lb
  - b) List VOC emissions factor (EF) of 4.424 lbs VOC per ton of liquid feed (emission factor determined through mass

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**SPECIAL CONDITIONS:**

The permittee is authorized to construct and operate subject to the following special conditions:

- balance performed by U.S. Paint) as well as the density of each material (lb per gal) obtained from SDS.
  - c) List the tons of VOC Emission from the distillation column per month = monthly throughput x VOC EF x 0.0005
- 9) To calculate actual emissions for fugitive emissions from clean-up solvent (EP-1 and EP-19)
  - a) Monthly throughput of clean-up solvent in tons = gallons of solvent feed x density of clean-up solvent x 0.0005 tons/lb
  - b) List VOC emission factor (EF) of 0.0622 ton VOC/ton of solvent used (emission factor determined through mass balance performed by U.S. Paint) as well as the density of each material (lb per gal) obtained from SDS.
  - c) List the tons of VOC emitted from the clean-up solvent per month = monthly throughput x VOC EF
- 10) To calculate actual emissions for fugitive emissions from tank washing (EP-15)
  - a) Monthly throughput of material in tons = gallons of throughput x density of material x 0.0005 tons/lb
  - b) List VOC emission factor (EF) of 0.0719 ton VOC per ton of material (emission factor determined through mass balance performed by U.S. Paint) as well as the density of each material (lb per gal) obtained from MSDS.
  - c) List the tons of VOC emitted from the distillation column per month = monthly throughput x VOC EF
- 11) To calculate actual fugitive emissions from storage tanks (EP-18) using the Appendix B tracking sheets:
  - a) List the monthly throughput of liquid to each tank in gallons
  - b) U.S. Paint shall use TANKS4.0.9d or Emission Master<sup>®</sup> 8 to obtain each tank's annual breathing loss (lb/yr) and to obtain a working loss emission factor (lb/1,000 gal). The working loss emission factor and the monthly throughput of each tank shall be used to calculate monthly working losses from the tank. The annual breathing losses shall be divided by 12 to obtain monthly breathing losses for each tank.
  - c) List the tons of VOC emitted from each tank per month = [monthly gallon throughput x working tank emission factor + monthly breathing loss] x 0.0005 tons/lb.
  - d) U.S. Paint shall retain copies of all TANKS4.0.9d and Emission Master<sup>®</sup> 8 reports used to establish each tank's annual breathing losses and working loss emission factor.

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**SPECIAL CONDITIONS:**

The permittee is authorized to construct and operate subject to the following special conditions:

- 12) To calculate actual emissions from natural gas combustion (EP-20):
    - a) Monthly throughput of natural gas from all natural gas combustion sources in standard cubic feet (scf)
    - b) VOC emission factor for natural gas = 5.5 lb VOC per MMscf  
(Source: EPA document AP-42, Compilation of Air Pollutant Emission Factors, Fifth Edition, Section 1.4 Natural Gas Combustion, July, 1998)
    - c) Total monthly natural gas combustion VOC emissions =  
monthly natural gas throughput (scf) x  $[10^6 \text{ scf per MMscf}]$  x  
VOC emission factor for natural gas x  $[0.0005]$
  - 13) Installation wide monthly VOC emissions (tons) shall be the sum of all monthly VOC emissions (tons) of all emission points (units) in Table 1.
  - 14) Installation wide 12-month rolling total VOC emissions (tons) = the sum of the 12 most recent installation wide monthly VOC Emissions (tons) + the sum of all start-up, shutdown, and malfunction VOC emissions as reported to the Air Pollution Control Program's Compliance/Enforcement Section during the same 12-month period in accordance with 10 CSR 10-6.050. Installation wide 12-month rolling total VOC emissions of less than 100.0 tons VOCs indicates compliance with Special Condition 2.A.
- B. U.S. Paint shall develop and keep monthly and 12-month rolling total records of individual and combined HAP emissions to show compliance with Special Condition 2.B, 2.C, and 2.D. These records shall include the SDS for all materials indicating their density, the HAP content (weight percentage or lb/gal) and, at minimum, the following information:**
- 1) Installation name
  - 2) Installation ID
  - 3) Permit number
  - 4) Current month
  - 5) Current 12-month date range
  - 6) To calculate actual HAP emissions from paint mixing (EP-2)
    - a) List all materials containing HAPs and the respective gallons filled per year. List the percentage of individual HAPs as stated on the SDS for that specific material. If there are a range of percentages, use the highest value in the range to demonstrate compliance.
    - b) List density of each material (lb per gal) obtained from SDS
    - c) Tons of paint filled = gallons of material filled through the mixer multiplied by material density (lb/gal) x 0.0005 ton/lb

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**SPECIAL CONDITIONS:**

The permittee is authorized to construct and operate subject to the following special conditions:

- d) Individual HAP emissions are equal to individual HAP percentage of solvents by weight of each paint multiplied by the VOC emissions from mixing each paint (see following equation)

$$\begin{aligned} & \text{Individual HAP emissions} \\ &= \left( \frac{\text{Individual HAP weight Percentage in paint}}{\text{total VOC weight Percentage in paint}} \right) \\ & \times \text{VOC emissions from mixing paint} \end{aligned} \quad (\text{eq 1})$$

- e) Total tons of HAP emitted per 12-month rolling total for an individual HAP equals the sums of the individual HAPs calculated in Special Condition 3.B.6)d)
- 7) To calculate HAPs from natural gas combustion (EP-20):
- a) Monthly throughput of natural gas from all natural gas combustion sources in standard cubic feet (scf)
  - b) Individual HAPs emission factors for natural gas combustion. (These can be found in EPA document AP-42, Compilation of Air Pollutant Emission Factors, Fifth Edition, Section 1.4 *Natural Gas Combustion*, (July, 1998) Tables 1.4-3 and 1.4-4)
  - c) List total HAPs emission factor – the sum of all individual HAPs – for natural gas combustion which is 1.888 lb/MMscf.
  - d) Total monthly natural gas combustion HAPs emissions = monthly natural gas throughput (scf) x [10<sup>6</sup> scf per MMscf] x total HAPs emission factor for natural gas x [0.0005]; for individual HAPs total monthly natural gas combustion emissions = monthly natural gas throughput (scf) x [10<sup>6</sup> scf per MMscf] x individual HAPs emission factor for natural gas x [0.0005]
- 8) To calculate HAPs emissions from spray booths (EP-10, 16, 5, 6, 7, 8, 9)
- a) List all materials containing HAPs and the respective gallons of each material sprayed per month.
  - b) List density of each material (lb per gal) obtained from SDS.
  - c) List the amount of paint sprayed. The calculation for tons of material sprayed = gallons of paint sprayed x density (lb/gal) x 0.0005 ton/lb

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**SPECIAL CONDITIONS:**

The permittee is authorized to construct and operate subject to the following special conditions:

- d) List the tons of volatile HAPs emitted from spray coating per month = tons of material sprayed x maximum weight percentage of volatile HAPs in the material.
- e) List the tons of solid HAPs emitted from spray coating per month = tons of material sprayed x maximum weight percentage of solid HAPs in the material x percent Overspray x booth capture efficiency x (100% - permitted filter control efficiency). Solid HAPs are defined as those with 'Y' entry under the PM column of Appendix A.

*[Note: According to the EPA document entitled, Sources and Control of Volatile Organic Air Pollutants, APTI Course 482, Third Edition (November 2002) the following percent overspray apply for the following spray guns: 25% for airless spray guns; 50% for air atomized; 35% high volume low pressure (HVLP); 25% for electrostatic air-atomized; 20% for electrostatic airless; 5% for electrostatic disk.]*

*[For filter control efficiency, use the percent particulate capture that the spray booth was originally permitted for. If no filter was permitted, permitted filter control efficiency is zero (0);]*

*[Permitted booths that are fully enclosed have 100% booth capture efficiency while three sided booths receive 75% booth capture efficiency. For spray booths with permitted capture efficiencies greater than 0% but less than 100% (such as for three-sided booths), add the fugitive emissions from the following equation to the equation listed above: fugitive booth emissions = (tons material sprayed) x (percentage of solid HAPs in the material) x (percent overspray) x (1- booth capture efficiency)]*

*[EP-16, EP-10, and EP-07 are permitted for fully enclosed booths with filters and electrostatic spray guns; EP-05, EP-06, EP-08, EP-09 spray booths have never received construction permits and therefore have a booth capture efficiency of zero (0) and a filter efficiency of zero (0) and utilize electrostatic spray guns]*

- 9) To calculate actual emissions for all other emission points that emit HAPs at the facility:
  - a) Calculate HAPs as a portion of the VOC emissions equal to their percentage composition in the material as stated in Special Condition 3.B(6) d using the following equation:

$$\begin{aligned}
 & \text{Individual HAP emissions} \\
 &= \left( \frac{\text{Individual HAP weight Percentage in material}}{\text{total VOC weight Percentage in material}} \right) \\
 & \times \text{VOC emissions from material} \qquad \qquad \qquad \text{(eq 2)}
 \end{aligned}$$

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**SPECIAL CONDITIONS:**

The permittee is authorized to construct and operate subject to the following special conditions:

If a range of HAP concentrations exists, use the higher value. (note: spray booths may emit both solid and volatile HAPs which must both be accounted for)

- 10) Installation wide monthly individual HAP emissions (tons) shall be the sum of all HAP emissions (tons) of all emission points in Table 1 for each individual HAP.
  - 11) Installation wide 12-month rolling total HAP emissions (tons) for each individual HAP= The sum of the 12 most recent installation wide monthly individual HAP emissions (tons) + the sum of all start-up, shutdown, and malfunction individual HAP emissions as reported to the Air Pollution Control Program's Compliance/Enforcement Section during the same 12-month period in accordance with 10 CSR 10-6.050. Installation wide 12-month rolling total HAP emissions of each individual HAP less than 10 tpy for all installation wide emission points listed in Table 1 and less than the individual SMAL for the all equipment listed in Table 2 indicates compliance with Special Conditions 2.B and 2.D, respectively. (See Attachment A for a list of all SMAL emission rates)
  - 12) Installation wide 12-month rolling total combined HAP emissions (tons) = The sum of the 12 most recent installation wide monthly HAP emissions (tons) for all individual HAPs + plus the sum of all start-up, shutdown, and malfunction HAP emissions as reported to the Air Pollution Control Program's Compliance/Enforcement Section in accordance with 10 CSR 10-6.050 during the most recent 12-month period. Installation wide 12-month rolling total combined HAP emissions of less 25.0 tons combined of HAPs per year indicates compliance with Special Condition 2.C.
4. Operational Requirement – Solvents/cleaning solutions  
U.S. Paint Corporation shall keep all solvents, paints, and cleaning solutions in sealed containers whenever the materials are not in use. U.S. Paint Corporation shall provide and maintain suitable, easily read, permanent markings on all solvent, paint, and cleaning solution containers used with this equipment.
  5. Record Keeping and Reporting Requirements
    - A. U.S. Paint Corporation shall maintain all records required by this permit for not less than five years and shall make them available immediately to any

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**SPECIAL CONDITIONS:**

The permittee is authorized to construct and operate subject to the following special conditions:

Missouri Department of Natural Resources' personnel upon request.  
These records shall include SDS for all materials used.

- B. U.S. Paint Corporation shall report to the Air Pollution Control Program's Compliance/Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than 10 days after the end of the month during which any record required by this permit show an exceedance of a limitation imposed by this permit

## Appendix A: Table of HAPs and SMAL (continues for two pages)

Chemical	CAS #	SMAL (ton/yr)	Group ID	VOC	PM	Chemical	CAS #	SMAL (ton/yr)	Group ID	VOC	PM	Chemical	CAS #	SMAL (ton/yr)	Group ID	VOC	PM
ACETALDEHYDE	75-07-0	9		Y	N	CARBARYL	63-25-2	10	V	Y	Y	DICHLOROPROPANE, [1,2-]	78-87-5	1		Y	N
ACETAMIDE	60-35-5	1		Y	N	CARBON DISULFIDE	75-15-0	1		Y	N	DICHLOROPROPENE, [1,3-]	542-75-6	1		Y	N
ACETONITRILE	75-05-8	4		Y	N	CARBON TETRACHLORIDE	56-23-5	1		Y	N	DICHLORVOS	62-73-7	0.2		Y	N
ACETOPHENONE	98-86-2	1		Y	N	CARBONYL SULFIDE	483-58-1	5		Y	N	DIETHANOLAMINE	111-42-2	5		Y	N
ACETYLAMINOFLUORINE, [2-]	53-96-3	0.005	V	Y	Y	CATECHOL	120-80-9	5		Y	N	DIETHYL SULFATE	64-67-5	1		Y	N
ACROLEIN	107-02-8	0.04		Y	N	CHLORAMBEN	133-90-4	1		Y	Y	DIETHYLENE GLYCOL MONOBUTYL ETHER	112-34-5	5	P	Y	N
ACRYLAMIDE	79-06-1	0.02		Y	N	CHLORDANE	57-74-9	0.01		Y	Y	DIMETHOXYBENZIDINE, [3,3-]	119-90-4	0.1	V	Y	Y
ACRYLIC ACID	79-10-7	0.6		Y	N	CHLORINE	7782-50-5	0.1	N	N	N	DIMETHYL BENZIDINE, [3,3-]	119-93-7	0.008	V	Y	Y
ACRYLONITRILE	107-13-1	0.3		Y	N	CHLOROACETIC ACID	79-11-8	0.1		Y	N	DIMETHYL CARBAMOYL CHLORIDE	79-44-7	0.02		Y	N
ALLYL CHLORIDE	107-05-1	1		Y	N	CHLOROACETOPHENONE, [2-]	532-27-4	0.06		Y	N	DIMETHYL FORMAMIDE	68-12-2	1		Y	N
AMINOBIHENYL, [4-]	92-67-1	1	V	Y	N	CHLOROBENZENE	108-90-7	10		Y	N	DIMETHYL HYDRAZINE, [1,1-]	57-14-7	0.008		Y	N
ANILINE	62-53-3	1		Y	N	CHLOROBENZILATE	510-15-6	0.4	V	Y	Y	DIMETHYL PHTHALATE	131-11-3	10		Y	N
ANISIDINE, [ORTHO-]	90-04-0	1		Y	N	CHLOROFORM	67-66-3	0.9		Y	N	DIMETHYL SULFATE	77-78-1	0.1		Y	N
ANTHRACENE	120-12-7	0.01	V	Y	N	CHLOROMETHYL METHYL ETHER	107-30-2	0.1		Y	N	DIMETHYLAMINOAZOBENZENE, [4-]	60-11-7	1		Y	N
ANTIMONY COMPOUNDS		5	H	N	Y	CHLOROPRENE	126-99-8	1		Y	N	DIMETHYLANILINE, [N-N]	121-69-7	1		Y	N
ANTIMONY PENTAFLUORIDE	7783-70-2	0.1	H	N	Y	CHROMIUM (VI) COMPOUNDS		0.002	L	N	Y	DINITRO-O-CRESOL, [4,6-] (Note 6)	534-52-1	0.1	E	Y	Y
ANTIMONY POTASSIUM TARTRATE	28300-74-5	1	H	N	Y	CHROMIUM COMPOUNDS		5	L	N	Y	DINITROPHENOL, [2,4-]	51-28-5	1		Y	N
ANTIMONY TRIOXIDE	1309-64-4	1	H	N	Y	CHRYSENE	218-01-9	0.01	V	Y	N	DINITROTOLUENE, [2,4-]	121-14-2	0.02		Y	N
ANTIMONY TRISULFIDE	1345-04-6	0.1	H	N	Y	COBALT COMPOUNDS		0.1	M	N	Y	DIOXANE, [1,4-]	123-91-1	6		Y	N
ARSENIC COMPOUNDS		0.005	I	N	Y	COKE OVEN EMISSIONS	8007-45-2	0.03	N	Y	N	DIPHENYLHYDRAZINE, [1,2-]	122-66-7	0.09	V	Y	Y
ASBESTOS	1332-21-4	0	A	N	Y	CRESOL, [META-]	108-39-4	1	B	Y	N	DIPHENYLMETHANE DIISOCYANATE, [4,4-]	101-68-8	0.1	V	Y	N
BENZ(A)ANTHRACENE	56-55-3	0.01	V	Y	N	CRESOL, [ORTHO-]	95-48-7	1	B	Y	N	EPICHLOROHYDRIN	106-89-8	2		Y	N
BENZENE	71-43-2	2		Y	N	CRESOL, [PARA-]	106-44-5	1	B	Y	N	ETHOXYETHANOL, [2-]	110-80-5	10	P	Y	N
BENZIDINE	92-87-5	0.0003	V	Y	N	CRESOLS (MIXED ISOMERS)	1319-77-3	1	B	Y	N	ETHOXYETHYL ACETATE, [2-]	111-15-9	5	P	Y	N
BENZO(A)PYRENE	50-32-8	0.01	V	Y	N	CUMENE	98-82-8	10		Y	N	ETHYL ACRYLATE	140-88-5	1		Y	N
BENZO(B)FLUORANTHENE	205-99-2	0.01	V	Y	N	CYANIDE COMPOUNDS		0.1	O	Y	N	ETHYL BENZENE	100-41-4	10		Y	N
BENZO(K)FLUORANTHENE	207-08-9	0.01	V	Y	N	DDE	72-55-9	0.01	V	Y	Y	ETHYL CHLORIDE	75-00-3	10		Y	N
BENZOTRICHLORIDE	98-07-7	0.006		Y	N	DI(2-ETHYLHEXYL) PHTHALATE, (DEHP)	117-81-7	5		Y	N	ETHYLENE GLYCOL	107-21-1	10		Y	N
BENZYL CHLORIDE	100-44-7	0.1		Y	N	DIAMINOTOLUENE, [2,4-]	95-80-7	0.02		Y	N	ETHYLENE GLYCOL MONOBUTYL ETHER (Delisted)	111-76-2				
BERYLLIUM COMPOUNDS		0.008	J	N	Y	DIAZOMETHANE	334-88-3	1		Y	N	ETHYLENE GLYCOL MONOHEXYL ETHER	112-25-4	5	P	Y	N
BERYLLIUM SALTS		2E-05	J	N	Y	DIBENZ(A,H)ANTHRACENE	53-70-3	0.01	V	Y	N	ETHYLENE IMINE [AZRIDINE]	151-56-4	0.003		Y	N
BIPHENYL, [1,1-]	92-52-4	10	V	Y	N	DIOXINS/FURANS		6E-07	D,V	Y	N	ETHYLENE OXIDE	75-21-8	0.1		Y	N
BIS(CHLOROETHYL)ETHER	111-44-4	0.06		Y	N	DIBENZOFURAN	132-64-9	5	V	Y	N	ETHYLENE THIOUREA	96-45-7	0.6		Y	Y
BIS(CHLOROMETHYL)ETHER	542-88-1	0.0003		Y	N	DIBROMO-3-CHLOROPROPANE, [1,2-]	96-12-8	0.01		Y	N	FORMALDEHYDE	50-00-0	2		Y	N
BROMOFORM	75-25-2	10		Y	N	DIBROMOETHANE, [1,2-]	106-93-4	0.1		Y	N	GLYCOL ETHER (ETHYLENE GLYCOL ETHERS)		5	P	Y	N
BROMOMETHANE	74-83-9	10		Y	N	DIBUTYL PHTHALATE	84-74-2	10		Y	Y	GLYCOL ETHER (DIETHYLENE GLYCOL ETHERS)		5	P	Y	N
BUTADIENE, [1,3-]	106-99-0	0.07		Y	N	DICHLOROBENZENE, [1,4-]	106-48-7	3		Y	N	HEPTACHLOR	76-44-8	0.02		Y	N
BUTOXYETHANOL ACETATE, [2-]	112-07-2	5	P	Y	N	DICHLOROBENZIDENE, [3,3-]	91-94-1	0.2	V	Y	Y	HEXACHLOROBENZENE	118-74-1	0.01		Y	N
BUTYLENE OXIDE, [1,2-]	106-88-7	1		Y	N	DICHLOROETHANE, [1,1-]	75-34-3	1		Y	N	HEXACHLOROBUTADIENE	87-68-3	0.9		Y	N
CADMIUM COMPOUNDS		0.01	K	N	Y	DICHLOROETHANE, [1,2-]	107-06-2	0.8		Y	N	HEXACHLOROCYCLOHEXANE, [ALPHA-]	319-84-6	0.01	F	Y	N
CALCIUM CYANAMIDE	156-62-7	10		Y	Y	DICHLOROETHYLENE, [1,1-]	75-35-4	0.4		Y	N	HEXACHLOROCYCLOHEXANE, [BETA-]	319-85-7	0.01	F	Y	N
CAPROLACTAM (Delisted)	105-60-2					DICHLOROMETHANE	75-09-2	10		N	N	HEXACHLOROCYCLOHEXANE, [DELTA-]	319-86-8	0.01	F	Y	N
CAPTAN	133-06-2	10		Y	Y	DICHLOROPHENOXY ACETIC ACID, [2,4-]	94-75-7	10	C	Y	Y	HEXACHLOROCYCLOHEXANE, [TECHNICAL]	608-73-1	0.01	F	Y	N

## Appendix A: Table of HAPs and SMAL (continues for two pages)

Chemical	CAS #	SMAL (mg/y)	Chronic	Acute	PF	Chemical	CAS #	SMAL (mg/y)	Group ID	Chronic	Acute	PF	Chemical	CAS #	SMAL (mg/y)	Chronic	Acute	PF	
HEXACHLOROCYCLOPENTADIENE	77-47-4	0.1		Y	N	NITROSODIMETHYLAMINE, [N-]	62-75-9	0.001		Y	N		TRIMETHYLPENTANE, [2,2,4-]	540-84-1	5			Y	N
HEXACHLOROETHANE	87-72-1	5		Y	N	NITROSOMORPHOLINE, [N-]	59-89-2	1		Y	N		URETHANE [ETHYL CARBAMATE]	51-79-8	0.8			Y	N
HEXAMETHYLENE,-1,6-DIISOCYANATE	822-06-0	0.02		Y	N	NITROSO-N-METHYLUREA, [N-]	684-93-5	0.0002		Y	N		VINYL ACETATE	108-05-4	1			Y	N
HEXAMETHYLPHOSPHORAMIDE	680-31-9	0.01		Y	N	OCTACHLORONAPHTHALENE	2234-13-1	0.01	V	Y	N		VINYL BROMIDE	593-60-2	0.6			Y	N
HEXANE, [N-]	110-54-3	10		Y	N	PARATHION	56-38-2	0.1		Y	Y		VINYL CHLORIDE	75-01-4	0.2			Y	N
HYDRAZINE	302-01-2	0.004		N	N	PCB [POLYCHLORINATED BIPHENYLS]	1336-38-3	0.009	X	Y	Y		XYLENE, [META-]	108-38-3	10	G		Y	N
HYDROGEN CHLORIDE	7647-01-0	10		N	N	PENTACHLORONITROBENZENE	82-68-8	0.3		Y	N		XYLENE, [ORTHO-]	95-47-6	10	G		Y	N
HYDROGEN FLUORIDE	7664-39-3	0.1		N	N	PENTACHLOROPHENOL	67-86-5	0.7		Y	N		XYLENE, [PARA-]	106-42-3	10	G		Y	N
HYDROQUINONE	123-31-9	1		Y	N	PHENOL	108-85-2	0.1		Y	N		XYLENES (MIXED ISOMERS)	1330-20-7	10	G		Y	N
INDENO(1,2,3CD)PYRENE	183-39-5	0.01	V	Y	N	PHENYLENEDIAMINE, [PARA-]	108-50-3	10		Y	N								
ISOPHORONE	78-59-1	10		Y	N	PHOSGENE	75-44-5	0.1		Y	N								
LEAD COMPOUNDS		0.01	Q	N	Y	PHOSPHINE	7803-51-2	5		N	N								
LINDANE [GAMMA-HEXACHLOROCYCLOHEXANE]	56-89-9	0.01	F	Y	N	PHOSPHOROUS (YELLOW OR WHITE)	7723-14-0	0.1		N	N		Legend						
MALEIC ANHYDRIDE	108-31-6	1		Y	N	PHTHALIC ANHYDRIDE	85-44-9	5		Y	N		Group ID	Aggregate Group Name					
MANGANESE COMPOUNDS		0.8	R	N	Y	POLYCYLIC ORGANIC MATTER		0.01	V	Y	N		A	Asbestos					
MERCURY COMPOUNDS		0.01	S	N	N	PROPANE SULTONE, [1,3-]	1120-71-4	0.03		Y	Y		B	Cresols/Cresylic Acid (isomers and mixtures)					
METHANOL	67-58-1	10		Y	N	PROPIOLACTONE, [BETA-]	57-57-8	0.1		Y	N		C	2,4 - D, Salts and Esters					
METHOXYCHLOR	72-43-5	10	V	Y	Y	PROPIONALDEHYDE	123-38-6	5		Y	N		D	Dibenzofurans, Dibenzodioxins					
METHOXYETHANOL, [2-]	109-86-4	10	P	Y	N	PROPOXUR [BAYGON]	114-28-1	10		Y	Y		E	4, 6 Dinitro-o-cresol, and Salts					
METHYL CHLORIDE	74-87-3	10		Y	N	PROPYLENE OXIDE	75-58-9	5		Y	N		F	Lindane (all isomers)					
METHYL ETHYL KETONE (Delisted)	78-93-3					PROPYLENEIMINE, [1,2-]	75-55-8	0.003		Y	N		G	Xylenes (all isomers and mixtures)					
METHYL HYDRAZINE	80-34-4	0.06		Y	N	QUINOLINE	91-22-5	0.006		Y	N		H	Antimony Compounds					
METHYL IODIDE	74-88-4	1		Y	N	QUINONE	108-51-4	5		Y	N		I	Arsenic Compounds					
METHYL ISOBUTYL KETONE	108-10-1	10		Y	N	RADIONUCLIDES		Note 1	Y	N	Y		J	Beryllium Compounds					
METHYL ISOCYANATE	624-83-9	0.1		Y	N	SELENIUM COMPOUNDS		0.1	W	N	Y		K	Cadmium Compounds					
METHYL METHACRYLATE	80-82-6	10		Y	N	STYRENE	100-42-5	1		Y	N		L	Chromium Compounds					
METHYL TERT-BUTYL ETHER	1634-04-4	10		Y	N	STYRENE OXIDE	96-09-3	1		Y	N		M	Cobalt Compounds					
METHYLCYCLOPENTADIENYL MANGANESE	12106-13-3	0.1	R	N	Y	TETRACHLORODIBENZO-P-DIOXIN,[2,3,7,8]	1748-01-6	6E-07	D,V	Y	Y		N	Coke Oven Emissions					
METHYLENE BIS(2-CHLOROANILINE), [4,4-]	101-14-4	0.2	V	Y	Y	TETRACHLOROETHANE, [1,1,2,2-]	79-34-5	0.3		Y	N		O	Cyanide Compounds					
METHYLENEDIANILINE, [4,4-]	101-77-9	1	V	Y	N	TETRACHLOROETHYLENE	127-18-4	10		N	N		P	Glycol Ethers					
METHYLNAPHTHALENE, [2-]	91-57-6	0.01	V	Y	N	TITANIUM TETRACHLORIDE	7550-45-0	0.1		N	N		Q	Lead Compounds (except elemental Lead)					
MINERAL FIBERS		0	T	N	Y	TOLUENE	108-88-3	10		Y	N		R	Manganese Compounds					
NAPHTHALENE	91-20-3	10	V	Y	N	TOLUENE DIISOCYANATE, [2,4-]	584-84-9	0.1		Y	N		S	Mercury Compounds					
NAPHTHYLAMINE, [ALPHA-]	134-32-7	0.01	V	Y	N	TOLUIDINE, [ORTHO-]	95-53-4	4		Y	N		T	Fine Mineral Fibers					
NAPHTHYLAMINE, [BETA-]	91-59-8	0.01	V	Y	N	TOXAPHENE	8001-35-2	0.01		Y	N		U	Nickel Compounds					
NICKEL CARBONYL	13463-39-3	0.1	U	N	Y	TRICHLOROENZENE, [1,2,4-]	120-82-1	10		Y	N		V	Polycyclic Organic Matter					
NICKEL COMPOUNDS		1	U	N	Y	TRICHLOROETHANE, [1,1,1-]	71-55-6	10		N	N		W	Selenium Compounds					
NICKEL REFINERY DUST		0.08	U	N	Y	TRICHLOROETHANE, [1,1,2-]	79-00-5	1		Y	N		X	Polychlorinated Biphenyls (Aroclors)					
NICKEL SUBSULFIDE	12035-72-2	0.04	U	N	Y	TRICHLOROETHYLENE	79-01-6	10		Y	N		Y	Radionuclides					
NITROBENZENE	98-95-3	1		Y	N	TRICHLOROPHENOL, [2,4,6-]	85-95-4	1		Y	N								
NITROBIPHENYL, [4-]	92-93-3	1	V	Y	N	TRICHLOROPHENOL, [2,4,6-]	88-08-2	6		Y	N								
NITROPHENOL, [4-]	100-02-7	5		Y	N	TRITHYLAMINE	121-44-8	10		Y	N								
NITROPROPANE, [2-]	79-48-9	1		Y	N	TRIFLURALIN	1582-09-8	9		Y	Y		Note 1	The SMAL for radionuclides is defined as the effective dose equivalent to 0.3 millirems per year for 7 years exposure associated with a cancer risk of 1 in 1 million					

## Appendix B: Storage Tank Tracking Sheets (continues for two pages)

Tank Working Losses					
Emission Unit	Description	Chemical Stored/Used (Name and CAS No.)	Monthly Usage (1000 gallons)	Emission Factor (lbs/1000 gallons)	VOC Emissions (lbs/month)
EP18A-1	Chemical Bulk Storage Tanks				
EP18A-2					
EP18A-3					
EP18A-4					
EP18A-5					
EP18B-1					
EP18B-2					
EP18B-3					
EP18B-4					
EP18B-5					
EP18C-1					
EP18C-2					
EP18C-3					
EP18C-4					
EP18C-5					
EP18-1A	Above Ground Storage Tanks (grand-fathered)				
EP18-1B					
EP18-2A					
EP18-2B					
EP18-3A					
EP18-3B					
EP18-4A					
EP18-4B					
EP18-5A					
EP18-5B					
EP18-6A					
EP18-6B					
EP18-7A					
EP18-7B					
EP18-8A					
EP18-8B					
EP18-9A					
EP18-9B					
EP18-10A					
EP18-10B					
<b>VOC Emissions (lbs/month):</b>					

<sup>1</sup>The permittee shall document the chemical stored/used during the reporting period. When multiple chemicals were stored/used, the permittee shall list the chemical stored/used which has the highest volatility for VOCs.

<sup>2</sup>Tank emission factors shall be obtained from EPA's TANKS 4.09d or Emission Master® 8 for the chemical stored/used.

**Appendix B: Storage Tank Tracking Sheets (continues for two pages)**

Tank Standing/Breathing Losses					
Emission Unit	Description	Chemical Stored/Used (Name and CAS No.) <sup>1</sup>	Tank Capacity (1000 gallons)	Emission Factor (lbs/1000 gallons-years) <sup>2</sup>	VOC Emissions (tons/year)
EP18A-1	Chemical Bulk Storage Tanks				
EP18A-2					
EP18A-3					
EP18A-4					
EP18A-5					
EP18B-1					
EP18B-2					
EP18B-3					
EP18B-4					
EP18B-5					
EP18C-1					
EP18C-2					
EP18C-3					
EP18C-4					
EP18C-5					
EP18-1A	Above Ground Storage Tanks (grand-fathered)				
EP18-1B					
EP18-2A					
EP18-2B					
EP18-3A					
EP18-3B					
EP18-4A					
EP18-4B					
EP18-5A					
EP18-5B					
EP18-6A					
EP18-6B					
EP18-7A					
EP18-7B					
EP18-8A					
EP18-8B					
EP18-9A					
EP18-9B					
EP18-10A					
EP18-10B					
<b>VOC Emissions (lbs/month):</b>					

<sup>1</sup>The permittee shall document the chemical stored/used during the reporting period. When multiple chemicals were stored/used, the permittee shall list the chemical stored/used which has the highest volatility for VOCs.

<sup>2</sup>Tank emission factors shall be obtained from EPA's TANKS 4.09d or Emission Master® 8 for the chemical stored/used.