

## STATEMENT OF BASIS

For the issuance of Draft Air Permit # 2209-AR-2 AFIN: 60-01529

1. PERMITTING AUTHORITY:

Arkansas Department of Environmental Quality  
5301 Northshore Drive  
North Little Rock, Arkansas 72118-5317

2. APPLICANT:

Caterpillar Inc.  
9201 Faulkner Lake Road  
North Little Rock, Arkansas 72117

3. PERMIT WRITER:

Andrea Sandage

4. PROCESS DESCRIPTION AND NAICS CODE:

NAICS Description: Construction Machinery Manufacturing  
NAICS Code: 333120

5. SUBMITTALS:

6/7/2011 8/16/11 9/19/11 10/3/11 12/16/11 1/3/12 1/19/12 2/24/12 3/27/12 5/10/12  
5/21/12 7/20/12

6. REVIEWER'S NOTES:

Caterpillar Inc. (AFIN: 60-01529) operates a motor grader manufacturing facility located at 9201 Faulkner Lake Road, North Little Rock, Arkansas 72117. This permit modification is being issued to include the applicable provisions of 40 CFR Part 63 Subpart XXXXXX, National Emission Standards for Hazardous Air Pollutants Area Source Standards for Nine Metal Fabrication and Finishing Source Categories and update the provisions of 40 CFR Part 60 Subpart IIII and 40 CFR Part 63, Subpart ZZZZ. The following sources have been modified, added, or removed to reflect the current facility operating process and actual installed equipment:

- Modified – SN-01 Painting Operation – New TLV table and HAP requirements
- Modified – previously permitted updated to current installation - SN-02 Natural Gas Combustion and SN-03 Diesel Storage Tank
- New – previously installed/ not permitted - SN-06, SN07, SN-08, SN-09, SN-10, SN-11 Emergency Equipment

- New – SN-12 Wire Welding and SN-13 Miscellaneous Facility-wide Emissions which includes touch-up paint
- Removed – previously permitted/never installed – SN-04 and SN-05 Emergency Generators
- Insignificant Activities – Removed Arc Welding and Tanks 4-10, Added Tank T101-T103, T105, T107-T111, T113-T114, Dispensed Product Loading, Torch Cutting
- New – SN-14 – Dry Abrasive Blaster

Permitted emissions increases are 5.8 tpy PM/PM10, 0.6 tpy SO<sub>2</sub>, 5.4 tpy VOC, 0.4 tpy NO<sub>x</sub>, 0.04 tpy Chromium, 0.02 tpy Cobalt, 0.35 tpy Manganese, 0.02 tpy Nickel, and 2.0 tpy Acetone. Permitted emissions decreases are 0.4 tpy CO..

7. COMPLIANCE STATUS:

The following summarizes the current compliance of the facility including active/pending enforcement actions and recent compliance activities and issues.

The facility was inspected on May 25 & 26, 2011 and found out of compliance. The facility exceeded the VOC threshold for paints and solvents and the HAP content limit for paint. There were existing storage tanks that were not permitted. This modification addresses those issues.

8. PSD APPLICABILITY:

- a. Did the facility undergo PSD review in this permit (i.e., BACT, Modeling, etc.)? N
- b. Is the facility categorized as a major source for PSD? N  
*Single pollutant ≥ 100 tpy and on the list of 28 or single pollutant ≥ 250 tpy and not on list?*

9. SOURCE AND POLLUTANT SPECIFIC REGULATORY APPLICABILITY:

Source	Pollutant	Regulation (NSPS, NESHAP or PSD)
08, 09	PM, VOC, CO, NO <sub>x</sub>	40 CFR Part 60 Subpart IIII
06, 07, 10 ,11	HAPS	40 CFR Part 63, Subpart ZZZZ
01, 12	MFHAP	40 CFR 63 Subpart XXXXXX

10. EMISSION CHANGES AND FEE CALCULATION:

See emission change and fee calculation spreadsheet in Appendix A.

11. MODELING:

Criteria Pollutants

Examination of the source type, location, plot plan, land use, emission parameters, and other available information indicate that modeling is not warranted at this time.

Non-Criteria Pollutants:

This permit contains a TLV table for non-criteria pollutants. Modeling was used to determine the permitted emission rates for ranges of non-criteria pollutants (grouped by TLV) that pass the PAER or PAIL. Since this permit contains MFHAPS, modeling of paint specific non-criteria pollutants (Chromium and Cobalt) was performed and excluded from the TLV table.

As requested by the facility, based on Max paint usage 14.04 gal/hr x highest HAP content 3.5 lb/gal = 49.14 lb/hr divided between 16 stacks, Misc SN-13 HAPs 1.0 lb/hr area source; Modeling file 7.5 terrain data/cat2a; USGS DEM 7.5 min; 50m receptor grid; 05-09 MET data; results 385.42  $\mu\text{g}/\text{m}^3$

TLV greater than or equal to $\text{mg}/\text{m}^3$	Maximum Allowable Individual HAP Content as applied - lb/gal	
	Paint	Miscellaneous Material excluding touch-up paint
38.6	3.50	5.76
34.7	3.15	5.19
30.9	2.80	4.61
27.0	2.45	4.04
23.2	2.10	3.46
19.3	1.75	2.88
15.5	1.40	2.31
11.6	1.05	1.73
7.7	0.70	1.16
3.9	0.35	0.58
2.0	0.035	0.29

MFHAPs (SN-01 Painting, SN-12 Welding, and SN-14 Shot Blasting):

1<sup>st</sup> Tier Screening (PAER)

Estimated hourly emissions from the following sources were compared to the Presumptively Acceptable Emission Rate (PAER) for each compound. The Department has deemed the PAER to be the product, in lb/hr, of 0.11 and the Threshold Limit Value ( $\text{mg}/\text{m}^3$ ), as listed by the American Conference of Governmental Industrial Hygienists (ACGIH).

Chromium and Nickel are below DeMinimis levels but were included in the permit due to being subject to 40 CFR 63 Subpart XXXXXX.

Note: The addition of SN-14 PTE (7/24/12 DeMinimis Application) did not impact the results of the plant wide PTE, PAER, or PAIL

Pollutant	TLV (mg/m <sup>3</sup> )	PAER (lb/hr) = 0.11 × TLV	Proposed lb/hr	Pass?
Chromium	0.50	0.055	0.0102	Pass
Cobalt	0.02	0.002	0.0042	Fail
Manganese	0.20	0.022	0.2033	Fail
Nickel	1.5	0.165	0.0015	Pass

2<sup>nd</sup> Tier Screening (PAIL)

AERMOD air dispersion modeling was performed on the estimated hourly emissions from the following sources, in order to predict ambient concentrations beyond the property boundary. The Presumptively Acceptable Impact Level (PAIL) for each compound has been deemed by the Department to be one one-hundredth of the Threshold Limit Value as listed by the ACGIH.

Pollutant	PAIL (µg/m <sup>3</sup> ) = 1/100 of Threshold Limit Value	Modeled Concentration (µg/m <sup>3</sup> )	Pass?
Cobalt	0.20	0.0236*	Pass
Manganese	2.00	0.86	Pass

\* Used 65% transfer eff rate (SATA paint guns); 90% fall out factor per TCEQ doc page 18; 98% filter eff; Modeling File CO65; 5yr MET data, 2<sup>nd</sup> high 24hr

12. CALCULATIONS:

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
01	Mass Balance MSDS	0.1 lb PM/PM <sub>10</sub> /hr 3.5 lb VOC/gal 3.5 lb HAP/gal 2.3 lb VOC/gal solvent 4.9 lb Acetone/ gal solvent Chromium – 19% lb PM Cobalt – 9.5% PM	Fabric Filter	For PM <sub>10</sub> 65% Transfer 98% (liquid) 99.9% (powder) Removal	Maximum liquid coating usage, 14.04 gal/hr. includes 3.2 gal/hr solvent usage MFHAP – 90% fall out factor
02	AP-42	Natural Gas Combustion Sec. AP-42, Section 1.4	None	N/A	Maximum total heat input is 32.52 MMBTU/hr.

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
03	TANKS	0.1 lb VOC/hr	None	N/A	Consist of one 10,500 gallon tank which stores No. 2 diesel.
06	Manufacturer's Specifications	In lb/hp-hr 0.0011 PM 0.0012 SO <sub>2</sub> 0.0011 VOC 0.0022 CO 0.0505 NO <sub>x</sub>	None	N/A	Onan 380HP (2.34 MMBtu/hr) Annual limits are based on 500 hr/yr operation.
07	Manufacturer's Specifications	In lb/hp-hr 0.00051 PM 0.00132 SO <sub>2</sub> 0.00075 VOC 0.0054 CO 0.0188 NO <sub>x</sub>	None	N/A	Onan 605 HP (3.99 MMBtu/hr) Annual limits are based on 500 hr/yr operation.
08, 09	AP42 Table 3.3-1 Subpart III	In lb/hp-hr 0.0005 PM 0.0021 SO <sub>2</sub> 0.0025 VOC 0.0049 CO 0.0310 NO <sub>x</sub>	None	N/A	Kubota 10.9 HP (0.09 MMBtu/hr) Annual limits are based on 500 hr/yr operation
10	Manufacturer's Specifications & AP42 Table 3.3-1	In lb/hp-hr 0.0022 PM 0.0015 SO <sub>2</sub> 0.0012 VOC 0.0013 CO 0.0275 NO <sub>x</sub>	None	N/A	165 HP (1.26 MMBtu/hr) Annual limits are based on 100 hr/yr operation
11	Manufacturer's Specifications & AP42 Table 3.3-1	In lb/hp-hr 0.0004 PM 0.0017 SO <sub>2</sub> 0.0007 VOC 0.0101 CO 0.0213 NO <sub>x</sub>	None	N/A	348 HP (2.19 MMBtu/hr) Annual limits are based on 100 hr/yr operation
12	AP-42, 12.19	lb/1000 lb electrode	none		Electrode usage rates from facility 560 lbs/hr 950 tpy
	GMAW – E70S	PM/PM <sub>10</sub> 5.2 Cr 0.001 Co 0.001 Mn 0.318 Ni 0.001			532.94 lb/hr 1,790,664 lb/year

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
	FCAW, E70T	PM/PM <sub>10</sub> 15.10 Cr 0.004 Co 0.000 Mn 0.891 Ni 0.005			Usage rate 32.54 lb/hr 109,335 lb/year
13	Mass Balance MSDS	Touch-up paint 5.1 lb VOC/gal 3.5 lb VOC/gal Xylene – 26.5% Ethylbenzene – 6.2%	none		Includes 5% safety factor Density – 8.515 lb/gal – includes 26% safety factor 100 gal/yr limit
		Misc. Materials Max 5.76 VOC/HAP lb/gal			Excludes touch-up paint
14	AP-42 13.2.6-1	PM/PM <sub>10</sub> 0.69 lb/1000 lb abrasive	Dust Collector 98%		Max usage of 1000 lb/yr and 8760 hr of operation
	Shot MSDS	HAPs lb/lb PM Mn 1.3% Cr 0.25% Ni 0.20%			

13. TESTING REQUIREMENTS:

The permit does not require testing.

14. MONITORING OR CEMS

The permit does not require CEMS or other monitoring devices.

15. RECORDKEEPING REQUIREMENTS:

The following are items (such as throughput, fuel usage, VOC content, etc.) that must be tracked and recorded.

SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
01	Coating Usage	38,238 gal/yr	Monthly	N
01	Solvent Usage	18,576 gal/yr	Monthly	N
01	Powder Coating Usage	94,899	Monthly	N

SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
01	Coating and Solvent Content	Coating: 3.5 lb VOC/gal 3.5 lb HAP/gal Solvent: 2.3 lb VOC/gal 4.84 lb Acetone/gal	One time per product, unless formula changes	N
03	No. 2 Diesel	349,000 gal/yr	Monthly	N
06, 07, 08, 09	Hours of Operation	500 hr/yr/source	Monthly	N
10, 11	Hours of Operation	100 hr/yr/source	Monthly	N
13	Touch-up Paint Usage	100 gal/yr	Monthly	N
	Paint Content	5.1 lb VOC/gal 3.5 lb HAP/gal	One time per product, unless formula changes	
	Misc Material Content	5.76 lb VOC/gal 5.76 lb HAP/gal		

16. OPACITY:

SN	Opacity	Justification for limit	Compliance Mechanism
Diesel Fired Sources	20%	Department Guidance	Method 9 or Method 22
All Other Sources	5%	Department Guidance	Method 9 or Method 22
SN-12	20%	NESHAP XXXXXX	Method 9 or Method 22

17. DELETED CONDITIONS:

Specific Conditions # 9, #10, #23, #24, #25.

18. GROUP A INSIGNIFICANT ACTIVITIES

Source Name	Group A Category	Emissions (tpy)						
		PM/PM <sub>10</sub>	SO <sub>2</sub>	VOC	CO	NO <sub>x</sub>	HAPs	
							Single	Total
T101 - 10,500 gal Hydraulic Fluid Tank	A-13			0.002				
T102 - 10,500 gal Hydraulic Fluid Tank	A-13			0.002				
T103 - 10,500 gal Manual	A-13			0.002				

Source Name	Group A Category	Emissions (tpy)						
		PM/PM <sub>10</sub>	SO <sub>2</sub>	VOC	CO	NO <sub>x</sub>	HAPs	
							Single	Total
Transmission Fluid Tank								
T105 - 10,500 gal Antifreeze Tank	A-13			0.0003				
T107 - 10,500 gal Transmission Fluid Tank	A-13			0.002				
Dispensed Product Loading – Fill, Fire, & Test	A-13			0.0277				
T109 - 200 gal Diesel Fuel Tank	A-2			0.00005				
T108 - 1,000 gal Used Oil Tank	A-3			0.00023				
T110 - 500 gal Diesel Fuel Tank	A-3			0.0001				
T111 - 500 gal Diesel Fuel Tank	A-3			0.0001				
T113 - 700 gal Diesel Fuel Tank	A-3			0.0002				
T114 - 350 gal Diesel Fuel Tank	A-3			0.0001				
Torch Cutting	A-7	1.70					0.023	0.037

19. VOIDED, SUPERSEDED, OR SUBSUMED PERMITS:

List all active permits voided/superseded/subsumed by the issuance of this permit.

Permit #
2209-AR-1

20. CONCURRENCE BY:

The following supervisor concurs with the permitting decision.

\_\_\_\_\_  
 Paula Parker, P.E.  
 Engineering Supervisor, Air Division

**APPENDIX A – EMISSION CHANGES AND FEE CALCULATION**

## Fee Calculation for Minor Source

Revised 08-30-11

Facility Name: Caterpillar  
 Permit Number: 2209-AR-2  
 AFIN: 60-01529

			<b>Old Permit</b>	<b>New Permit</b>
\$/ton factor	22.65	Permit Predominant Air Contaminant	89.5	94.9
Minimum Fee \$	400	Net Predominant Air Contaminant Increase	5.4	
Minimum Initial Fee \$	500			
Check if Administrative Amendment	<input type="checkbox"/>	Permit Fee \$	<u>400</u>	
		Annual Chargeable Emissions (tpy)	<u>94.9</u>	

Pollutant (tpy)	Old Permit	New Permit	Change
PM	1.6	7.4	5.8
PM <sub>10</sub>	1.6	7.4	5.8
SO <sub>2</sub>	0.3	0.9	0.6
VOC	89.5	94.9	5.4
CO	13.7	13.3	-0.4
NO <sub>x</sub>	19.3	19.7	0.4
Single Organic HAP	9.5	9.5	0
Combined HAP	24.5	24.5	0
Acetone	43	45	2
Chromium*	0	0.04	0.04
Cobalt*	0	0.02	0.02
Manganese*	0	0.35	0.35
Nickel*	0	0.02	0.02
*Included in Combined HAP	0	0	0