

STATEMENT OF BASIS

For the issuance of Draft Air Permit # 2209-AR-5 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. NAICS DESCRIPTION AND CODE:

NAICS Description: Construction Machinery Manufacturing
NAICS Code: 333120

5. ALL SUBMITTALS:

The following is a list of ALL permit applications included in this permit revision.

Date of Application	Type of Application (New, Renewal, Modification, Deminimis/Minor Mod, or Administrative Amendment)	Short Description of Any Changes That Would Be Considered New or Modified Emissions
4/20/2018	De Minimis	Added second spray gun to the Military Booth (SN-01)

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. The facility submitted a de minimis application to install a second spray gun in the Military Booth (SN-01). This change resulted in an update to the facility-wide TLV table. The modification increased the hourly VOC and HAP emission rate for SN-01. The facility did not request an increase in the annual VOC or HAP limit.

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 last inspected on June 28, 2016 and was found to be in compliance. There is no pending enforcement against this facility.

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*

If yes, explain why this permit modification is not PSD.

N/A

9. SOURCE AND POLLUTANT SPECIFIC REGULATORY APPLICABILITY:

Source	Pollutant	Regulation (NSPS, NESHAP or PSD)
06R, 07R, 08, 09	PM, VOC, CO, NO _x	40 CFR Part 60 Subpart IIII
, 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. AMBIENT AIR EVALUATIONS:

a) NAAQS

A NAAQS evaluation is not required under the Arkansas State Implementation Plan, National Ambient Air Quality Standards, Infrastructure SIPs and NAAQS SIP per Ark. Code Ann. § 8-4-318, dated March 2017 and the ADEQ Air Permit Screening Modeling Instructions.

b) Non-Criteria Pollutants:

This permit revision (R5) did include an increase in the maximum hourly paint usage and therefore ambient air evaluations did change.

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 15.0 gal/hr x highest HAP content 3.5 lb/gal = 52.5 lb/hr divided between 16 stacks*, Misc SN-13 HAPs 1.0 lb/hr area source; Modeling file - R5/TLV Table; NED 1 (USA~30m); 50m receptor grid; 12-16 MET data; 24hr-2nd high - results 402.09 µg/m³

*Since the added spray gun was for the military spray booth, the increase was only added to those 4 stacks. 3.36 lb/hr / 4 = 0.84 lb/hr added to stk 9, 10, 11, 12.

TLV greater than or equal to mg/m ³	Maximum Allowable Individual HAP Content as applied – lb/gal	
	Paint	Miscellaneous Material excluding touch-up paint
40.2	3.50	5.76
36.2	3.15	5.19
32.2	2.80	4.61
28.2	2.45	4.04
24.2	2.10	3.46
20.1	1.75	2.88
16.1	1.40	2.31
12.1	1.05	1.73
8.1	0.70	1.16
4.1	0.35	0.58
2.1	0.035	0.29

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

1st 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 (mg/m³), 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.

Pollutant	TLV (mg/m ³)	PAER (lb/hr) = 0.11 × TLV	Proposed lb/hr	Pass?
Chromium	0.50	0.055	0.0111	Pass
Cobalt	0.02	0.002	0.0047	Fail
Manganese	0.20	0.022	0.2033	Fail
Nickel	1.5	0.165	0.0015	Pass

2nd 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 ³) = 1/100 of Threshold Limit Value	Modeled Concentration (µg/m ³)	Pass?
Cobalt	0.20	0.0289*	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 - R5/HAP/CO65; 5yr MET data, 2nd high 24hr

** Result from R2 modeling – no impact from R5 changes

c) H₂S Modeling:

This facility has not reported hydrogen sulfide emissions. No modeling has been performed.

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	0.76 lb PM/PM ₁₀ /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	Fabric Filter	For PM ₁₀ 65% Transfer 98% (liquid) 99.9% (powder) Removal	Maximum liquid coating usage, 15.0 gal/hr. includes 3.2 gal/hr solvent usage MFHAP – 90% fall out factor

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
		Cobalt – 9.5% PM			
02	AP-42	Natural Gas Combustion Sec. AP-42, Section 1.4	None	N/A	Maximum total heat input is 32.52 MMBTU/hr.
03	TANKS	0.1 lb VOC/hr	None	N/A	Consist of one 10,500 gallon tank which stores No. 2 diesel.
06R	Manufacturer's Specifications	In lb/hp-hr 0.0003 PM 0.0021 SO ₂ 0.0025 VOC 0.0019 CO 0.0310 NO _x	None	N/A	Caterpillar C4.4 (134 hp) Emergency Generator #1 Annual limits are based on 500 hr/yr operation.
07R	Manufacturer's Specifications	In lb/hp-hr 0.0001 PM 0.0021 SO ₂ 0.0001 VOC 0.0005 CO 0.0088 NO _x	None	N/A	Caterpillar C9 (402 hp) Emergency Generator #1 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 ₂ 0.0025 VOC 0.0049 CO 0.0310 NO _x	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 ₂ 0.0012 VOC 0.0013 CO 0.0275 NO _x	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 ₂ 0.0007 VOC 0.0101 CO 0.0213 NO _x	None	N/A	348 HP (2.19 MMBtu/hr) Annual limits are based on 100 hr/yr operation

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
12	AP-42, 12.19	lb/1000 lb electrode	none		Electrode usage rates from facility 560 lbs/hr 950 tpy
	GMAW – E70S	PM/PM ₁₀ 5.2 Cr 0.001 Co 0.001 Mn 0.318 Ni 0.001			532.94 lb/hr 1,790,664 lb/year
	FCAW, E70T	PM/PM ₁₀ 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 ₁₀ 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
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
06R, 07R, 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:

None

18. GROUP A INSIGNIFICANT ACTIVITIES:

The following is a list of Insignificant Activities including revisions by this permit.

Source Name	Group A Category	Emissions (tpy)						
		PM/PM ₁₀	SO ₂	VOC	CO	NO _x	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				
T103A – 10,500 gal Cat Transmission & Drive Train Oil TDTO	A-13			0.002				
T103B - 10,500 gallon CAT Special Application Oil SATO tank	A-13			0.002				
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:

The following is a list of all active permits voided/superseded/subsumed by the issuance of this permit.

Permit #
2209-AR-4

APPENDIX A – EMISSION CHANGES AND FEE CALCULATION

Fee Calculation for Minor Source

Revised 03-11-16

Facility Name: Caterpillar Inc.

Permit Number: 2209-AR-5

AFIN: 60-1529

			Old Permit	New Permit
\$/ton factor	23.93	Permit Predominant Air Contaminant	94.8	94.8
Minimum Fee \$	400	Net Predominant Air Contaminant Increase	0	
Minimum Initial Fee \$	500			
Check if Administrative Amendment <input type="checkbox"/>		Permit Fee \$	400	
		Annual Chargeable Emissions (tpy)	94.8	

Pollutant (tpy)	Old Permit	New Permit	Change
PM	7.4	7.4	0
PM ₁₀	7.4	7.4	0
PM _{2.5}	0	0	0
SO ₂	0.9	0.9	0
VOC	94.8	94.8	0
CO	12.3	12.3	0
NO _x	16.8	16.8	0
Acrolein	0.0000969	0.0000969	0
Chromium	0.04	0.04	0
Cobalt	0.02	0.02	0
Manganese	0.35	0.35	0
Nickel	0.02	0.02	0
Acetone	45	45	0
Single HAP	9.5	9.5	0
Combined HAP	24.5	24.5	0