ENGINEERING ANALYSIS
CITY OF FORT PAYNE
AIR CURTAIN INCINERATOR
FACILITY NO. 703-0051-X001

Applications for an Air Permit were received from the City of Fort Payne for installation of an Air Curtain Incinerator (ACI) located at 1004 Dewyer Avenue SW in Fort Payne. A permit fee of $7,185.00 has been assessed. A Greenfield site inspection was conducted on July 14, 2026, and no problem areas were noted. A 15-day public comment period was required.

This facility will be subject to 40 CFR Part 60 Subpart EEEE – Standards of Performance for Other Solid Waste Incineration Units. This facility which incinerates 100% wood waste, 100% clean lumber, or 100% mixture of wood waste, clean lumber, and/or yard waste, will be required to meet the New Source Performance Standards (NSPS) visible emission limit of 10% opacity and an opacity limitation of 35% during the start-up period that is within the first 30 minutes of operation. In order to determine initial compliance with the NSPS for new facilities, a Method 9 Visible Emission Observation will be required within 180 days of startup. After the initial test for opacity, an annual test must be conducted no more than 12 months following the date of the previous test.

This facility may operate five days per week. See provisos eight (8) and nine (9) regarding the hours of operation. However, the application and data are based on operating 1 day every other week.

The ACI will be 24’11” long, 8’3” deep and 7’2” wide. The ACI will be equipped with overfire air blowers and will have refractory panel walls. The unit will have a Hatz 4H50 4-cylinder diesel turbo engine, subject to Standards of Performance for Stationary Compression Ignition Internal Combustion Engines 40 CFR 60 Subpart IIII and will demonstrate compliance with National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines 40 CFR Part 63 Subpart ZZZZ by complying with Subpart IIII. The unit conforms to the specifications required by the Department.

General Calculations

- Proposed actual daily burn rate = 4 tons/hr, 40 ton/day (per applicant)
- Proposed actual annual burn rate = 1,040 ton/year (per applicant)
- Proposed operating schedule:10 hr/day, 26 days/year (per applicant) = 260 hours/year
- The mass reduction of the untreated wood waste from the burn is 97-98% (Air Burners Inc.). If 3% of the original mass of material remains as residual ash after the burn, the percentage can be used to calculate ash emissions.
    - Ash generated daily = 40 ton/day x 0.03 lb-ash/lb-waste burned = 1.2 ton/day
    - Ash generated annually = 1,040 x 0.03 lb-ash/lb-waste burned = 31.2 ton/year

Air Curtain Incinerator Emissions and Calculations

Emission Factors

Emission Factors for Air Curtain Incinerator		
Pollutant	Emission Factor (lb/ton)	Source
PM_{10}	2.0*	*Air Burners LLC letter to EPA dated February 2, 2005. Air Curtain Incinerator Factors from San Joaquin Valley, California, established thresholds used as an accepted baseline.
$PM_{2.5}$	1.1	
NO_x	1.00	
SO_2	0.10	
CO	2.60	
VOC	0.90	

Calculations

Restricted Potential to Emit- PE
Emission Factor- EF

Daily PE = Throughput (ton/day) x Emission Factor (lb-pollutant/ton)
Annual PE = Throughput (ton/year) x $\frac{\text{EF (lb-pollutant/ton)}}{2{,}000}$

Potential Emissions for Air Curtain Incinerator				
Pollutant	Throughput (tons/day)	Emission Factor (lb/ton)	Daily PE (lb/day)	TPY 1,040 TPY throughput
PM_{10}	40	2.0	80	1.04
$PM_{2.5}$		1.1	44	0.57
NO_x		1.0	40	0.52
SO_2		0.1	4	0.05
CO		2.6	104	1.35
VOC		0.9	36	0.47

Ash Handling Emissions and Calculations

Emission Factor for Ash Handling Operation		
Pollutant	Emission Factor (lb/ton)	Source
$PM_{2.5}$	1.1	Air Curtain Incinerator Factors from San Joaquin Valley, California, established thresholds used as an accepted baseline.

Ash Handling Calculations

Ash handling involves $PM_{2.5}$ emissions only, calculated as follows:

Daily PE = Amount of Ash Handled (ton/day) x Emission Factor (lb-$PM_{2.5}$/ton)
= 1.2 ton/day x 1.1 lb-$PM_{2.5}$/ton
= 1.32 lb-$PM_{2.5}$/day x 26 days/yr = 34 lbs/yr or **0.017 TPY**

Engine Emissions and Calculations

Engine Calculations

Equipment: One 75 Hp Hatz 4H50TIC (Diesel Engine)
Hours of Operation: 260 hr/yr
Pollution Control: Manufacturer Certification

Allowable Emission Rate: 40 CFR 60, Subpart IIII

Emission factors taken from AP-42 Table 3.3-1 Emission Factors for Uncontrolled Gasoline and Diesel Engines

NO_x Emissions

NO_x Emission Factor 0.031 lb/Hp-hr, AP-42 Table 3.3-1.

75 Hp	0.031 lb	260 hrs	1 T	= 0.30 T
	Hp-hr	Yr	2000 lbs	Yr

Total NO_x**:** 0.30 TPY

CO Emissions

CO Emission Factor 6.68 E-03 lb/Hp-hr, AP-42, Table 3.3-1.

75 Hp	0.00668 lb	260 hrs	1 T	= 0.07 T
	Hp-hr	Yr	2000 lbs	Yr

Total CO: 0.07 TPY

SO_2 Emissions

SO_2 Emissions Factor 5.39 E-06 lb/HP-hr, Emissions Calculation Worksheet attachment.

75 Hp	0.00000539 lb	260 hrs	1 T	= 0.00005 T
	Hp-hr	Yr	2000 lbs	Yr

Total SO_2**:** 0.00005 TPY

VOC Emissions

VOC Emission 2.47 E-03 lb/Hp-hr, AP-42 Table 3.3-1

75 Hp	0.00247 lb	260 hrs	1 T	= 0.02 T
	Hp-hr	Yr	2000 lbs	Yr

Total VOC**:** 0.02 TPY

PM_{10} Emissions

PM Emission Factor 2.20 E-03 lb/Hp-hr, AP-42, Table 3.3-1.

75 Hp	0.00220 lb	260 hrs	1 T	= 0.02 T
	Hp-hr	Yr	2000 lbs	Yr

Total PM_{10}: 0.02 TPY

Total Facility Emissions Summary Table
(ACI, ash handling, & engine)

Pollutant	Expected/Limited	
	lbs/hr	**TPY**
PM_{10}	8.17	1.06
SO_2	0.40	0.05
NOx	6.33	0.82
CO	10.90	1.42
VOC	3.79	0.49
$PM_{2.5}$	4.53	0.59

I recommend that Air Permit No. 703-0051-X001 for the Air Curtain Incinerator be issued with the attached provisos.

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Catrice Lamar
Energy Branch
Air Division

November 18, 2026