

STATEMENT OF BASIS

for the issuance of Draft Air Permit # 39-AOP-R1

1. PERMITTING AUTHORITY:

Arkansas Department of Environmental Quality
8001 National Drive
Post Office Box 8913
Little Rock, Arkansas 72219-8913

2. APPLICANT:

3-M Industrial Mineral Products Division
65th and Arch Street, and Highway 365 and Walters Drive
Little Rock, Arkansas 72216

3. PERMIT WRITER:

Bryan Leamons

4. PROCESS DESCRIPTION AND SIC CODE:

SIC Description: Roofing Granules Mining and Manufacturing
SIC Code: 3295

5. SUBMITTAL: **11/12/02**

6. REVIEWER'S NOTES: This permitting action incorporates changes resulting from a minor modification application which was approved on November 27, 2002. The approved minor-mod allowed the permittee the use of alternate pigmenting materials at the College Station Plant which contain compounds of cobalt. Cobalt compounds are emitted from various emission sources located at and downstream from the coloring operations. Total cobalt compound emissions resulting from this change total 0.26 tons per year.

7. COMPLIANCE STATUS: No issues pending

8. APPLICABLE REGULATIONS:

A. Applicability

Did the facility undergo PSD review in this permit (Y/N) N
Has this facility undergone PSD review in the past (Y/N) _N_ Permit #

Is this facility categorized as a major source for PSD? (Y/N) Y
\$ 100 tpy and on the list of 28 (100 tpy)? (Y/N) _N_

\$ 250 tpy all other (Y/N) Y

The facility is “grandfathered” from PSD review until it makes physical modifications at or above a significance level.

B. PSD Netting

Was netting performed to avoid PSD review in this permit? (Y/N) N

C. Source and Pollutant Specific Regulatory Applicability: NA

9. Emission Changes

Plantwide Permitted Emissions (ton/yr)			
Pollutant	Air Permit 39-AOP-R0	Air Permit 39-AOP-R1	Change
PM	992.86	992.86	0
PM ₁₀	719.89	719.89	0
NO _x	171.61	171.61	0
SO ₂	56.15	56.15	0
VOC	3.91	3.91	0
CO	88.50	88.50	0
lead	0.0108	0.0108	0
chromium	1.5009	1.5009	0
arsenic	0.2840	0.2840	0
beryllium	0.0018	0.0018	0
cadmium	0.0947	0.0947	0
manganese	2.5584	2.5584	0
cobalt	0	0.2612	0.2612

10. MODELING:

A. Criteria Pollutants

Pollutant	Emission Rate (lb/hr)	NAAQS Standard ($\mu\text{g}/\text{m}^3$)	Averaging Time	Highest Concentration ($\mu\text{g}/\text{m}^3$)	% of NAAQS
NO _x	265.1	100	Annual	2.065	2%
lead	0.0028	2	calendar quarter	0.04156*	0.6%

*lead requires calendar quarter averaging, the more conservative 24-hr average was used here

11. Non-Criteria Pollutants

Antimony compounds are determined to be permitted at *deMinimis* levels:

$$0.00009 \text{ lbs per hour} * 4.38 = 0.0004 < 0.5 \text{ the RT therefore } deMinimis$$

1st Tier Screening (PAER)

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

Pollutant (Compounds of)	TLV (mg/m^3)	PAER (lb/hr) = 0.11*TLV	Proposed lb/hr	Pass?
Chromium	0.5	0.0055	0.3427	N
Arsenic	0.01	0.0011	0.0004	Y
Beryllium	0.01	0.0011	0.0005	Y
Cadmium	0.01	0.0011	0.0001	Y
Manganese	0.2	0.022	0.1847	N
Cobalt	0.02	0.0022	0.2612	N

2nd Tier Screening (PAIL)

SCREEN3 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 was deemed by the Department to be one one-hundredth of the Threshold Limit Value, as listed by the ACGIH.

Pollutant	(PAIL, $\mu\text{g}/\text{m}^3$) = 1/100 of Threshold Limit Value	Modeled Concentration ($\mu\text{g}/\text{m}^3$)	Pass?
Manganese	2	1.8	Y
Chromium	5	2.4	Y
Cobalt	0.2	0.09	Y

12. CALCULATIONS:

Operational flexibility is maintained at the Arch Street quarry by overestimating some emissions from the stone processing operations. Emission rates from all equipment are calculated at maximum equipment capacities assuming that they are only controlled with wet suppression. Emissions for the baghouse control device, which is frequently used, were also estimated. This allows for numerous possibilities of equipment configuration that may or may not include the Tertiary Crusher Baghouse (SN-01). Emissions at Arch Street are dependent on a limited annual throughput.

College Station emissions are based on continuous annual operation at equipment rated maximum capacity except emissions that result from fuel oil combustion at the dryers and kilns. These sources may use natural gas year-round but only a limited annual amount of fuel oil is permitted. The tons per year values listed for these sources in this permit are the sum of the potential natural gas emissions and the limited fuel oil emissions. The lb/hr emissions listed are the worst case of either oil or gas.

Another variable operating scenario at the College Station plant involves the transport of material from the pugmills in the crushing and screening area to various stockpiles. The two alternatives are truck transport and a conveyerized transport system. Emissions have been estimated both ways and are double counted in this permit to provide maximum flexibility.

See calculations attachment to this document. Note that some emission rates are higher than the attached calculation sheet. 3-M requested to be permitted at rates listed in previous permits which are based on older factors. SN-01 rates were requested to be lowered to levels from previous permits. A test condition was installed at this source for verification.

All HAPs are calculated as a weight fraction of particulate matter. Weight fractions for the “naturally occurring” HAPs were determined from independent testing done on dust collected from various points at the 3M facility. See application information for specific test results. HAP weight fractions from the pigment usage are determined by calculating the pigment HAP fractions resulting in the finished product. This is done by applying the amount of HAPs that are in a specific amount of pigment to the amount of product that the amount of pigment will color. It is assumed that the dust resulting at and down stream from the coloring area will contain the same HAP weight fraction as the colored product. Compliance mechanisms are in place to verify the factors used for pigment HAP emission rates.

13. TESTING REQUIREMENTS:

This permit requires stack testing of the following sources.

SN(s)	Pollutant	Test Method	Test Interval	Justification For Test Requirement
scrubbers & SN-01	PM	5/17	initial	3-M supplied factors

14. RECORD KEEPING REQUIREMENTS

The following are items (such as throughput, fuel usage, VOC content of coating, etc) that must be tracked and recorded, frequency of recording and whether records are needed to be included in any annual, semiannual or other reports.

SN	Recorded Item	Limit	Frequency	Report	
01-58	Arch Street throughput	3 MM tons/yr	monthly	Y	
01,101-108,110-119,124,125,128,129,150-153	baghouse opacity	5%	weekly	Y	
108,111-113,116	diesel fuel	2.5 MM gal/yr	monthly	Y	
108,111-113,116	diesel S content	0.3% by weight	per delivery	Y	
pigment application and subsequent sources	record of product labels, MSDS sheets, analysis of heavy metal content in product, or calculated content based on composition of pigments used by the facility	lead compounds	0.024 lb/ton (.0012% by weight)	per pigment material change	Y
		chromium compounds	6.5 lb/ton (0.325% by weight)		

SN	Recorded Item	Limit	Frequency	Report
		manganese compounds	0.3 lb/ton (0.015% by weight)	
		cobalt compounds	4 lb/ton (0.2% by weight)	

15. OPACITY

SN	Opacity	Justification	Compliance Mechanism
all sources (excluding baghouses)	20/40%	dept. guidance for post/pre 1972 sources	wet suppression
baghouses	5%/20% for baghouses that smoke	dept. guidance	daily recordkeeping, observation schedule

16. DELETED CONDITIONS:

None

17. VOIDED, SUPERSEDED OR SUBSUMED PERMITS

List all active permits for this facility which are voided/superseded/subsumed by issuance of this permit.

Permit Numbers
542-A & AR 1
39-A & AR 1 thru 5
39-AOP-R0

18. CONCURRENCE BY:

The following supervisor concurs with the permitting decision:

Permit #: 39-AOP-R1

AFIN #: 60-00003

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Phil Murphy, P.E.