STATEMENT OF BASIS

for the issuance of Draft Air Permit # 0039-AOP-R4

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. NAICS:

Description: Ground or Treated Mineral and Earth Manufacturing
Code: 327992

5. SUBMITTALS: 4/21/05

6. REVIEWER'S NOTES:

This permit action incorporates changes allowed by a minor modification approved on April 29, 2005. The minor-mod approval allows the permittee to install and operate an Automated Mixing System associated with Building 8 pigment operations. Emissions from this operation will be controlled and vented through the new 10,000 cfm Automated Mixing System Baghouse (SN-311).

7. COMPLIANCE STATUS: No issues pending

8. APPLICABLE REGULATIONS:

A. Applicability

Did the facility undergo PSD review in this permit	N
Has this facility undergone PSD review in the past	N
Is this facility categorized as a major source for PSD?	Y
≥ 100 tpy and on the list of 28 (100 tpy)?	N

≥ 250 tpy all other Y

B. PSD Netting

Was netting performed to avoid PSD review in this permit? N

Source and Pollutant Specific Regulatory Applicability: NA

9. Emission Changes

Plantwide Permitted Emissions (ton/yr)			
Pollutant	**Air Permit 39-AOP-R3**	**Air Permit 39-AOP-R4**	**Change**
PM	947.76	955.65	7.9
PM10	676.32	684.20	7.9
NOx	171.61	171.61	0
SO2	56.15	56.15	0
VOC	3.91	3.91	0
CO	88.5	88.50	0
lead	0.0103	0.0104	0.0001
chromium	1.4090	1.4343	0.0253
arsenic	0.2725	0.2748	0.0023
beryllium	0.0017	0.0017	<0.0001
cadmium	0.0908	0.0916	0.0008
manganese	2.4504	2.4721	0.0217
cobalt	0.2452	0.2496	0.0044

10. MODELING:

A. Criteria Pollutants

Particulate modeling for the facility as a whole has not been successfully performed. 3M has installed ambient air monitors throughout model predicted high concentration areas along the facility property line. Reports are submitted quarterly to the enforcement section. No issues are pending concerning excesses in monitor data at this time. The monitors have been in place since Title V permit issuance and will remain a requirement at least until the time of permit renewal.

Pollutant	Emission Rate (lb/hr)	NAAQS Standard (µg/m3)	Averaging Time	Highest Concentration (µg/m3)	% of NAAQS
NOX	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

Emissions listed in the previous table for both pollutants have decreased in recent past modifications. The slight increases of these pollutants from this modification do not overcome those decreases; therefore, it is not necessary to update modeling results for these pollutants at this time. Past modeling results are displayed in the table.

B. Non-Criteria Pollutants

Antimony compounds are determined to be permitted at deMinimis levels:

0.00009 lbs per hour * 4.38 = 0.0004 < 0.5 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/m3), as listed by the American Conference of Governmental Industrial Hygienists (ACGIH).

Pollutant (Compounds of)	TLV (mg/m3)	PAER (lb/hr) = 0.11*TLV	Proposed lb/hr	Pass?

Pollutant (Compounds of)	TLV (mg/m3)	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, µg/m3) = 1/100 of Threshold Limit Value	Modeled Concentration (µg/m3)	Pass?
Manganese	2	1.8	Y
Chromium	5	2.4	Y
Cobalt	0.2	0.09	Y

Emissions listed in the previous tables for all pollutants have decreased in recent past modifications. The slight increases of these pollutants from this modification do not overcome those decreases; therefore, it is not necessary to update modeling results for these pollutants at this time. Past modeling results are displayed in the tables.

11. 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 permit 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.

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. The calculation attachment includes the HAP weight fractions used to determine naturally occurring HAP emissions. Those weight fractions were determined from independent testing.

12. TESTING REQUIREMENTS:

This permit requires stack testing of the following sources.

SN(s)	Pollutant	Test Method	Test Interval	Justification For Test Requirement
NA				

13. RECORD KEEPING REQUIREMENTS

The following are items 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
01,101-108,110-119124,125,128,129, 150-153, 311	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

SN	Recorded Item	Limit		Frequency	Report
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)		
		manganese compounds	0.3 lb/ton (0.015% by weight)		
		cobalt compounds	4 lb/ton (0.2% by weight)		
115, 154, 155	scrubber liquid flow	70 GPM each		daily	N

14. 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

15. DELETED CONDITIONS:

No conditions were deleted.

16. 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, R1, R2, R3

17. CONCURRENCE BY:

The following supervisor concurs with the permitting decision:

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Phil Murphy, P.E.