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**west virginia** department of environmental protection

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Earl Ray Tomblin, Governor  
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## **ENGINEERING EVALUATION / FACT SHEET**

### BACKGROUND INFORMATION

Application No.: R13-2882  
Plant ID No.: 039-00616  
Applicant: Mining Motors, Inc.  
Facility Name: Montgomery Facility  
Location: Montgomery, Kanawha County  
SIC Code: 811310  
Application Type: Construction  
Received Date: April 20, 2011  
Engineer Assigned: Roy F. Kees  
Fee Amount: \$1000.00  
Date Received: April 21, 2011  
Complete Date: April 27, 2011  
Due Date: July 27, 2011  
Applicant Ad Date: April 27, 2011  
Newspaper: *The Montgomery Herald*  
UTM's: Easting: 470.860 km Northing: 4225.374 km Zone: 17  
Description: Application for the construction of an electric motor service and repair shop.

### DESCRIPTION OF PROCESS

#### From the application:

Mining Motors, Inc. repairs, rewinds and will construct electric motors.

The rewind process is as follows: Motors are disassembled and electrical windings are processed through the burn-off oven (3S). The old windings are removed and the core is abrasive blasted (4S). The core is then rewound and insulated (2S). The unit is assembled, tested then painted (1S).

The repair / recondition process is as follows: Motor is disassembled, electrical analysis of unit is performed. Unit is then assembled, tested then painted (1S).

The construction process is as follows: Motors are assembled, tested then painted (1S).

## SITE INSPECTION

A site inspection was performed by Gene Cocarri in early April, 2011 and there was no cause for concern at the site at that time.

## ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

### *Burn-Out Oven*

The burn out oven measures 4'x4'x4', and was manufactured by Pollution Control Products, Company, and the emissions for the oven as outlined below are supplied by the manufacturer. The annual amounts are derived by multiplying the hourly amounts by 8760 hours per year.

Table 1.0: Burn-Out Oven Emissions

Pollutant	Emissions	
	lb/hr	tpy
PM10	<0.01	0.03
PM30	0.01	0.06
NO <sub>x</sub>	0.03	0.12
CO	0.05	0.22
VOC	0.02	0.08

### *Coating Emissions*

These annual emissions derived from the amount of coatings and solvents being used in a full year at the facility are calculated as actual emissions taking into account the fact that coating is an ancillary operation and that other activities take place at the facility. Due to the small amount of coatings that are projected to be used, potential emissions were not quantified. The actual emission estimates are based on the 260 hours that coating was actually was conducted in the last calendar year. The actual emissions taken from the spreadsheet labeled "Actual Emissions Estimate" as per Gene Coccarri, are as follows for the coating operations at the facility:

Table 2.0: Coating Emissions

Pollutant	
	tpy
Total VOCs	3.24
PM10	0.42
PM30	0.88
Total HAPs	0.74
Xylene	0.37
Ethylbenzene	0.05
Toluene	0.33

*Abrasive Blasting*

Currently the facility uses 1000 lb of glass beads for abrasive blasting annually. Emissions factors used to estimate emissions for this process are obtained from AP-42, Compilation of Air Pollutant Emission Factors, 5<sup>th</sup> edition, Chapter 13.2.6, Abrasive Blasting, Table 13.2.6-11. The emission factor used from this chapter was for sand blasting of unspecified metal parts, controlled with a fabric filter, which equals 0.69 lbs of total PM for every 1,000 lbs of abrasive used.

$$1 \times 0.69 \text{ lbs} = 0.69 \text{ lbs PM (controlled)}$$

$$0.69 / 2.1 = 0.33 \text{ lbs PM10 (controlled)}$$

Uncontrolled emissions by taking into account the control efficiency of the filter which in this case is 99%, therefore:

$$99 \times 0.69 \text{ lbs} = 69 \text{ PPY PM} = 0.035 \text{ TPY PM}$$

$$69 / 2.1 = 32.86 \text{ PPY PM10} = 0.016 \text{ TPY PM10}$$

*VPI Tank Emissions*

VOC emissions from the VPI dip tank are calculated as actual emissions. The same spreadsheet used for the coating emissions was used in this case also, with the only difference being the lack of PM with the dip tank. Emissions yielded from the spreadsheet follow below:

Pollutant	
	tpy
Total VOCs	0.75
Total HAPs	0.00

## REGULATORY APPLICABILITY

### *45CSR6 - Control of Air Pollution From Combustion of Refuse*

The purpose of this rule is to prevent and control air pollution from combustion of refuse. The facility utilizes a burn-off oven. Since the burn-off oven has a secondary chamber that is considered an incinerator, the facility is subject to the requirements of this rule. The burn-off oven is subject to Section 4 - Emission Standards for Incinerators and Incineration. This section states the facility shall not emit particulate matter in excess of the quantity determined by using the following formula:

$$\text{Emissions (lb/hr)} = F \times \text{Incinerator Capacity (tons/hr)}$$

Where, the factor, F, is as indicated in Table I of this rule and is shown below.

**Table I:** Factor, F, for Determining Maximum Allowable Particulate Emissions

Incinerator Capacity	Factor F
A. Less than 15,000 lbs/hr	5.43
B. 15,000 lbs/hr or greater	2.72

Using the formula above, the allowable emissions from the burn-off oven along with the request potential emissions are given in the following table.

Source	Allowable PM Emissions (lb/hr)	Potential PM Emissions (lb/hr)
Burn-Out Oven	21.72	0.01

The facility is also subject to the requirements of visible particulate matter emissions, which states opacity shall not exceed twenty (20%) percent or greater.

The facility shall demonstrate compliance with this rule by monitoring the natural gas consumed and opacity.

*45CSR7 - To Prevent and Control Particulate Matter Air Pollution From Manufacturing Processes and Associated Operations*

The purpose of this rule is to prevent and control particulate matter air pollution from manufacturing processes and associated operations.

The facility utilizes a blast booth and a spray booth that are considered manufacturing processes as defined by this rule. The facility will be subject to Section 3 - Emission of Smoke and/or Particulate Matter Prohibited and Standards of Measurement, Section 4 - Control and Prohibition of Particulate Emissions by Weight from Manufacturing Process Source Operations, and Section 5 - Control of Fugitive Particulate Matter.

Section 3 - Emission of Smoke and/or Particulate Matter Prohibited and Standards of Measurement, states that manufacturing sources operations shall not exceed an opacity limit of greater than twenty (20) percent. The sources described in this application are considered Type 'a' source operations type as defined in Section 2.39.a of this rule.

Section 4 - Control and Prohibition of Particulate Emissions by Weight from Manufacturing Process Source Operations, states that any type of source operation shall not exceed particulate matter emissions in excess of the quantity specified under the appropriate source operation in Table 45-7A found at the end of this rule. The sources described in this application are considered Type 'a' source operation type as defined in Section 2.39.a of this rule. The following table list the process weight rate, allowable emission rates, and potential emission rates for the proposed manufacturing operations. An approximate weight rate used for the paint booth, abrasive blasting, and bake-ovens was 8,000 lbs/hr. This is the approximate weight of the motors that are processed at the facility. The allowable emission rate using this process weight rate is 8.0 lb/hr PM. Proposed PM emissions from the paint booth, bake-oven, and abrasive blast are less than the allowable emission rate.

Section 5 - Control of Fugitive Particulate Matter, states that any manufacturing process or storage structure generating fugitive particulate matter to operate in a manner to minimize fugitive particulate matter.

The facility will demonstrate compliance with this rule by maintaining the MSDS for all paint products, hours of operation, air filter replacement logs.

*45CSR13 - Permits For Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, Permission to Commence Construction, and Procedures for Evaluation*

Quality Electric's Bake Off Oven process is subject to 45CSR6, a substantive rule, therefore meeting the definition of a Stationary Source in Section 2.24.a of 45CSR13.

*45CSR22 - Air Quality Management Fee Program*

This rule establishes a program to collect fees for certificates to operate and for permits to construct, modify or relocate sources of air pollution. Funds collected from these fees will be used to supplement the Director's budget for the purpose of maintaining an effective air quality management program. The facility will demonstrate compliance with this rule by obtaining a Certificate to Operate (CTO) and paying annual fees in order to maintain a current CTO.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

The information was obtained from EPA's Air Toxics Website.

Toluene

Toluene is added to gasoline, used to produce benzene, and used as a solvent. Exposed to toluene may occur from breathing ambient or indoor air. The central nervous system (CNS) is the primary target organ for toluene toxicity in both humans and animals for acute (short-term) and chronic (long-term) exposures. CNS dysfunction and narcosis have been frequently observed in humans acutely exposed to toluene by inhalation; symptoms include fatigue, sleepiness, headaches, and nausea. CNS depression has been reported to occur in chronic abusers exposed to high levels of toluene. Chronic inhalation exposure of humans to toluene also causes irritation of the upper respiratory tract and eyes, sore throat, dizziness, and headache. Human studies have reported developmental effects, such as CNS dysfunction, attention deficits, and minor craniofacial and limb anomalies, in the children of pregnant women exposed to toluene or mixed solvents by inhalation. Reproductive effects, including an association between exposure to toluene and an increased incidence of spontaneous abortions, have also been noted. However, these studies are not conclusive due to many confounding variables. EPA has classified toluene as a Group D, not classifiable as to human carcinogenicity.

Xylene

Commercial or mixed xylene usually contains about 40-65% *m*-xylene and up to 20% each of *o*-xylene and *p*-xylene and ethylbenzene. Xylenes are released into the atmosphere as fugitive emissions from industrial sources, from auto exhaust, and through volatilization from their use as solvents. Acute (short-term) inhalation exposure to mixed xylenes in humans results in irritation of the eyes, nose, and throat, gastrointestinal effects, eye irritation, and neurological effects. Chronic (long-term) inhalation exposure of humans to mixed xylenes results primarily in central nervous system (CNS) effects, such as headache, dizziness, fatigue, tremors, and incoordination; respiratory, cardiovascular, and

kidney effects have also been reported. EPA has classified mixed xylenes as a Group D, not classifiable as to human carcinogenicity.

#### Ethylbenzene

Ethylbenzene is mainly used in the manufacture of styrene. Acute (short-term) exposure to ethylbenzene in humans results in respiratory effects, such as throat irritation and chest constriction, irritation of the eyes, and neurological effects such as dizziness. Chronic (long-term) exposure to ethylbenzene by inhalation in humans has shown conflicting results regarding its effects on the blood. Animal studies have reported effects on the blood, liver, and kidneys from chronic inhalation exposure to ethylbenzene. Limited information is available on the carcinogenic effects of ethylbenzene in humans. In a study by the National Toxicology Program (NTP), exposure to ethylbenzene by inhalation resulted in an increased incidence of kidney and testicular tumors in rats, and lung and liver tumors in mice. EPA has classified ethylbenzene as a Group D, not classifiable as to human carcinogenicity.

### AIR QUALITY IMPACT ANALYSIS

An air quality impact analysis is deemed unnecessary because the facility is not subject to Prevention of Significant Deterioration (PSD) requirements and as a result of the type and quantities of pollutants to be emitted from the proposed flare.

### MONITORING OF OPERATIONS

- Monthly visual emission checks of the spray booth, abrasive blasting booth, and burn-out ovens.
- Daily coating usage and type of coating used
- Daily usage of abrasive blasting material and type of material used
- Hours of operation of the spray booth, abrasive blasting booth, and bake oven/burn out oven
- Checks of minimum temperature of burn out oven during operation
- Weekly checks of filter integrity of the spray booth and abrasive blasting booth
- Monthly and yearly monitoring of solvent used in the dip tanks

## RECOMMENDATION TO DIRECTOR

Permit application, R13-2882, submitted by Mining Motors, Inc. for a construction permit at the permittee's Montgomery, Kanawha County, WV facility has been reviewed and determined to meet all applicable requirements. It is therefore, recommended for approval.

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Roy F. Kees, P.E.  
Engineer - NSR Permitting

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Date