

STATE OF MISSOURI



**DEPARTMENT OF NATURAL RESOURCES**

MISSOURI AIR CONSERVATION COMMISSION

**PERMIT TO CONSTRUCT**

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: **06 2015 - 016**

Project Number: 2014-05-035  
Installation Number: 510-2752

Parent Company: Shelter Works

Parent Company Address: 2616 South Third Street, St. Louis, MO 63118

Installation Name: Shelter Works

Installation Address: 2616 South Third Street, St. Louis, MO 63118

Location Information: City of St. Louis

Application for Authority to Construct was made for:

Increase in production rate over previously permitted levels. This review was conducted in accordance with Section (6), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

Standard Conditions (on reverse) are applicable to this permit.

Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

**JUN 29 2015**

EFFECTIVE DATE

DIRECTOR OR DESIGNEE  
DEPARTMENT OF NATURAL RESOURCES

## STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. Permittee should notify the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the Department's Air Pollution Control Program of the anticipated date of start up of these air contaminant sources. The information must be made available within 30 days of actual startup. Also, you must notify the Department of Natural Resources' regional office responsible for the area within which you are located within 15 days after the actual start up of these air contaminant sources.

A copy of this permit and permit review shall be kept at the installation address and shall be made available to Department of Natural Resources' personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant sources(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit at (573) 751-4817. If you prefer to write, please address your correspondence to the Missouri Department of Natural Resources, Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102-0176, attention: Construction Permit Unit.

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## SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

*The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (12)(A)10. "Conditions required by permitting authority."*

### Shelter Works City of St. Louis

1. **Superseding Condition**  
The conditions of this permit supersede all of the special conditions found in the previously issued construction permits 01-01-053 and 01-01-053PM issued by the City of St. Louis, Department of Health.
2. **HAPs and VOC Emission Limitations**
  - A. Shelter Works shall emit less than 10.0 tons of methyl methacrylate (MMA) in any consecutive 12-month period from the fiberglass spray system (EP01).
  - B. Shelter Works shall emit less than 100.0 tons of VOCs in any consecutive 12-month period from the entire installation, which includes the fiberglass spray system (EP01A, EP01B, and EP01C) and the natural-gas fired heaters (EP03 and EP04).
  - C. Shelter Works shall emit styrene emissions no more than the following:
    - 1) 117.1 lb/day from the interior gelcoat application (EP01A)
    - 2) 239.7 lb/day from the exterior gelcoat application (EP01B)
    - 3) 308.3 lb/day from the resin application (EP01C)
  - D. Attachment A, B, and C, or equivalent forms, such as electronic forms, approved by the Air Pollution Control Program shall be used to demonstrate compliance with Special Conditions 2.A., 2.B. and 2.C.
3. **Operational Requirements**
  - A. The exhaust fans shall be on at all times when the fiberglass spray system (EP01A, EP01B, and EP01C) is in operation.
  - B. Shelter Works shall keep all chemicals (e.g. solvents, coatings, gelcoats, resins, etc.) in sealed containers whenever the materials are not in use. Shelter Works shall provide and maintain suitable, easily read, permanent

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#### SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

markings on all solvent and coatings containers use at the installation.

- C. All doors and windows at the building shall remain closed during normal operations except for personnel and equipment entry and exit (i.e. there should no propping open of the door and windows, etc.)
4. Use of Alternative Gelcoats, Resins, and Catalysts
- A. When considering the use of alternative gelcoats, resins, and catalysts at the installation that is different than a material listed in the Application for Authority to Construct, Shelter Works shall calculate the potential emissions of all individual HAP in the alternative material, except for styrene and MMA, on an annual basis. For styrene, the potential emissions shall be calculated on a 24-hour basis. For MMA, no calculation is needed.
  - B. Shelter Works shall seek approval from the Air Pollution Control Program before the use of the alternative material if the following occurs.
    - 1) The styrene emissions, on a 24-hour basis, exceed the values in Special Condition 2.C.
    - 2) Individual HAP emissions, except for styrene and MMA, are equal to or greater than their respective SMAL. A list of current SMAL can be found in Appendix C.
  - C. Attachment D and E or equivalent forms, such as electronic forms, approved by the Air Pollution Control Program shall be used to maintain compliance with Special Condition 4.A.
  - D. Once Shelter Works begin using the alternative gelcoats, resins, and catalysts, it shall include the MMA and VOC emissions from the alternative material in the emissions limit and tracking in Special Condition 2.
5. Record Keeping and Reporting Requirements
- A. Shelter Works shall maintain all records required by this permit for not less than five years and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request. These records shall include SDS for all materials used.
  - B. Shelter Works shall report to the Air Pollution Control Program's Compliance/Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than 10 days after the end of the month during which any

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Permit No.	
Project No.	2014-05-035

**SPECIAL CONDITIONS:**

The permittee is authorized to construct and operate subject to the following special conditions:

record required by this permit show an exceedance of a limitation imposed by this permit.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE  
SECTION (6) REVIEW

Project Number: 2014-05-035  
Installation ID Number: 510-2752  
Permit Number:

Shelter Works  
2616 South Third Street  
St. Louis, MO 63118

Complete: July 2, 2014

Parent Company:  
Shelter Works  
2616 South Third Street  
St. Louis, MO 63118

City of St. Louis

REVIEW SUMMARY

- Shelter Works has applied for authority to increase production by eliminating a 10.0 tpy styrene emissions limit.
- HAP emissions are expected from the equipment. HAPs of concern from this process are styrene, MMA, and dimethyl phthalate (DMP).
- None of the New Source Performance Standards (NSPS) apply to the installation.
- None of the NESHAPs apply to this installation.
- Subpart WWWW, *National Emission Standard for Hazardous Air Pollutants: Reinforced Plastic Composites Production*, of the MACT applies to the installation. Subpart MMMM, *National Emission Standards for Hazardous Air Pollutants for Surface Coating of Miscellaneous Metal Parts and Products*, and Subpart PPPP, *National Emission Standard for Hazardous Air Pollutants for Surface Coating of Plastic Parts and Products*, of the MACT do not apply to the installation because fiberglass spraying is not considered a surface coating operation.
- A dust collector is being used to control particulate emissions from the trimming equipment. However, there is no special condition in this permit requiring its use.
- This review was conducted in accordance with Section (6) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of styrene, which is a HAP, are above major levels. However, a MACT applies to the installation and a Section (9) permit is not required.
- This installation is located in the City of St. Louis, a nonattainment area for ozone, 1997 PM<sub>2.5</sub>, and 2010 SO<sub>2</sub> standards.

- This installation is not on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2. Due to its nonattainment area status, the major source level for PM<sub>2.5</sub>, SO<sub>x</sub>, NO<sub>x</sub>, and VOC is 100 tpy and the major source levels for all other criteria pollutants are 250 tpy.
- Ambient air quality modeling was performed to determine the ambient impact of Styrene. Ambient air quality modeling was not performed for VOC because no model is currently available which can accurately predict ambient ozone concentrations caused by this installation's VOC emissions.
- Emissions testing is not required for the equipment as a condition of this permit.
- A Part 70 Operating Permit application is required for this installation within 1 year of equipment startup.
- Approval of this permit is recommended with special conditions.

### INSTALLATION DESCRIPTION

Shelter Works owns and operates a fiberglass shelter manufacturing plant in St. Louis. Equipment at the installation consists of two natural gas-fired makeup air heaters and a fiberglass gelcoat/resin spraying operation. The two heaters (RAU-1 and RAU-2) have maximum design rates of 2.475 and 2.073 MMBtu/hr, respectively. Various trimming equipment, such as diamond cutting tools, random orbital sanders, and grinders, are also used at the facility. The trimming equipment is done inside an enclosed trim booth with a dust collection system. The exhaust from the trim booth is returned to the production building.

Before this project, the facility is considered a minor source for construction permits and was not required to apply for an operating permit. After the issuance of this permit, the facility will be a major source of HAP for construction permits and a Part 70 operating permit will be required.

The following New Source Review permits have been issued to Shelter Works from the St. Louis Department of Health.

**Table 1: Permit History**

Permit Number	Description
01-01-053	Fiberglass spray operation and paint spray booth. <sup>1</sup>
01-01-053PM	Correcting modeling results.

Note 1: Permit includes a paint spray booth, but company has indicated that no paint booth was built.

### PROJECT DESCRIPTION

In Permit No. 01-01-053PM issued to the facility by the St. Louis Department of Health,

the individual HAP emissions were limited to 10 tpy, the total HAPs emissions were limited to 25 tpy, and the total VOC emissions were limited to 40 tpy. The facility proposes to eliminate the 10 tpy limit for styrene and the 25 tpy limit for combined HAP so that it can increase production. No additional equipment are being added. The increase in production is being accomplished through longer operating hours and greater utilization of the present equipment and plant space. As part of this project, the VOC emissions limit was also increased to 100 tpy because there is currently no modeling which can accurately predict ambient ozone concentrations caused by this installation's VOC emissions so VOC emissions do not need to be limited to 40 tpy.

No control devices are used to control emissions from the gel coat/resin spraying operation. A dust collector is used to control emissions from the trimming equipment. The installation can laminate a maximum of 3,000 ft<sup>2</sup> per day.

Even though the HAP emissions are expected to be major for this project, a permit under Missouri State Rules 10 CSR 10-6.060(9) is not required because the facility is subject to MACT Subpart WWWW, Instead, this permit is issued under Missouri State Rules 10 CSR 10-6.060(6).

## EMISSIONS/CONTROLS EVALUATION

Styrene and MMA emissions from the gelcoats and resins were calculated using the Unified Emission Factors for Open Molding of Composites jointly developed by the National Marine Manufacturer's Association (NMMA) and the American Composites Manufacturers Association (ACMA, previously known as Composites Fabricators Association). It was assumed that the gelcoats and resins with the highest styrene and MMA emissions were used 100% of the time so that the emissions calculation would be conservative. MMA emissions were calculated to be greater than the major source level of 10 tons per year and the installation accepted a limit of 10 tpy of MMA emissions to avoid modeling requirements. Styrene emissions were modeled to ensure that the RAL is not exceeded.

DMP emissions from the catalysts were calculated assuming a 0.04% evaporation rate, as indicated in the paper "Emission Factors for Liquid Organic Peroxide Catalysts used in the Open Molding of Composites," (3/99) PM emissions were calculated using mass balances assuming a 94% transfer efficiency, a number that was accepted for use in the permit 01-01-053PM. PM<sub>2.5</sub> and PM<sub>10</sub> emissions were calculated assuming that 30% of the PM is PM<sub>2.5</sub> and 70% of PM is PM<sub>10</sub>. These numbers were obtained from the article "Size Distribution of Chromate Paint Aerosol Generated in a Bench-Scale Spray Booth," December 30, 2003. Although the tests were performed on paint, instead of gelcoats, it was assumed that the numbers are conservative because the spraying of gelcoats should generate larger particles than spraying of paint.

PM emissions from the manual trimming equipment were estimated using emission factor for hardboard sanding in AP-42, *Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources*, fifth edition, Chapter 10.6.4, *Hardboard and Fiberboard*, (10/02), and Chapter 11.16, *Gypsum Manufacturing*, (7/1993). The

emission factors in AP-42 are controlled emission factors using fabric filters and they were back-calculated into uncontrolled emission factors, assuming 99% control for the filters. The facility is using a dust collector to control emissions from the trimming equipment. However, using the uncontrolled emission factor does not affect the type of permit that should be issued. Therefore, the uncontrolled emission factor was used in the calculations and the facility is not required, by a permit special condition, to operate the dust collector. Emissions from the combustion of natural gas were calculated using AP-42, Chapter 1.4, *Natural Gas Combustion*, (7/1998).

The following table provides an emissions summary for this project. Existing potential emissions were taken from previous permits. Emissions from the natural-gas fired heaters were not included in the previous permits but is included in the emissions of this project. Existing actual emissions were taken from the installation's 2014 EIQ. VOC emissions are limited to less than 100 tpy to avoid major source review. MMA emissions are limited to less than 10 tpy to avoid modeling requirements. Combined HAPs and Styrene do not have actual emissions limits in this permit. However, by limiting the VOC to less than 100 tpy, the combined HAP and Styrene emissions will be indirectly limited to less than 100 tpy as there are no particulate HAP emissions. Potential emissions of the application represent the potential of the project, assuming continuous operation (8760 hours per year).

**Table 2: Emissions Summary (tons per year)**

Pollutant	Regulatory De Minimis/SMAL Levels	Existing Potential Emissions	Existing Actual Emissions (2014 EIQ)	Potential Emissions of the Application	New Installation Conditioned Potential
PM	25.0	N/D	N/D	17.75	N/A
PM <sub>10</sub>	15.0	N/D	0.10	13.43	N/A
PM <sub>2.5</sub>	10.0	N/D	0.03	7.81	N/A
SO <sub>x</sub>	40.0	N/D	N/D	0.0005	N/A
NO <sub>x</sub>	40.0	N/D	N/D	0.09	N/A
VOC	40.0	<40.0	7.09	151.8	<100.0
CO	100.0	N/D	N/D	0.07	N/A
GHG (CO <sub>2</sub> e)	75,000	N/D	N/D	103.7	N/A
GHG (mass)	250.0	N/D	N/D	103.1	N/A
HAPs	10.0/25.0	<10.0/25.0	N/D	140.13	<100.0
Styrene	2.0	<10.0	N/D	121.41	<100.0
MMA	10.0	<10.0	N/D	18.72	<10.0
DMP	10.0	<10.0	N/D	0.004	N/A

N/A = Not Applicable; N/D = Not Determined

### PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (6) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of HAPs are

above de minimis/major levels.

## APPLICABLE REQUIREMENTS

Shelter Works shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved. For a complete list of applicable requirements for your installation, please consult your operating permit.

### GENERAL REQUIREMENTS

- *Submission of Emission Data, Emission Fees and Process Information*, 10 CSR 10-6.110
- *Operating Permits*, 10 CSR 10-6.065
- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*, 10 CSR 10-6.170
- *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.220
- *Restriction of Emission of Odors*, 10 CSR 10-6.165
- *Restriction of Emission of Particulate Matter from Industrial Processes*, 10 CSR 10-6.400
- *Control of Emissions from Industrial Surface Coating Operations*, 10 CSR 10-5.330
  - This rule does not apply to the installation because the spraying of gelcoat and resins for fiberglass manufacturing is not considered a surface coating operation.

### SPECIFIC REQUIREMENT

- *MACT Regulations*, 10 CSR 10-6.075
  - *National Emission Standards for Hazardous Air Pollutants: Reinforced Plastic Composite Production*, 40 CFR Part 63, Subpart WWWW

## AMBIENT AIR QUALITY IMPACT ANALYSIS

Ambient air quality impact analysis (AAQIA) was performed for styrene because emissions from the project are greater than the SMAL of 1.0 tpy. Modeling was conducted using AERMOD program. Emissions will be vented from five stacks on top of the building. While the facility believes that it can maintain 100% capture efficiency

from the building, it cannot currently prove 100% capture. Therefore, it was assumed that 10% of the styrene will be emitted as fugitive emissions through the doors. The 10% emission rate is based on the company's estimation that the doors would be open for no more than 45 minutes during a typical 8 hour shift. The facility will be required as a condition in this permit to keep the doors closed except during material and personnel entry and exit. Results of the AAQIA show that the facility will be in compliance with the RAL for styrene. More information on the AAQIA can be found in the memo "Ambient Air Quality Impact Analysis (AAQIA) for Shelter Works" issued on April 23, 2015.

**Table 3: Stack Parameters**

Stack No.	Stack Diameter (in)	Stack Height (ft)	Stack Velocity (fph)
1	24	40	4456
2	20	40	4584

**Table 4: AERMOD Modeling Results**

Max 24-Hour Impact ( $\mu\text{g}/\text{m}^3$ )	24-Hour RAL ( $\mu\text{g}/\text{m}^3$ )	Max Annual Impact ( $\mu\text{g}/\text{m}^3$ )	Annual RAL ( $\mu\text{g}/\text{m}^3$ )
1471.71	2240.0	276.04	333.0

### STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (6), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, I recommend this permit be granted with special conditions.

\_\_\_\_\_  
 Chia-Wei Young  
 New Source Review Unit

\_\_\_\_\_  
 Date

### PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated June 30, 2014, received July 2, 2014, designating Shelter Works as the owner and operator of the installation.
- Haberlein, Robert A., *Emission Factors for Liquid Organic Peroxide Catalysts used in the Open Molding of Composites*, March 24, 1999.



## Attachment B – VOC Emissions Compliance Worksheet

Shelter Works  
 City of St. Louis  
 Project Number: 2014-05-035  
 Installation ID Number: 510-2752  
 Permit Number: \_\_\_\_\_

This sheet covers the period from \_\_\_\_\_ to \_\_\_\_\_.  
(month, year) (month, year)

From Fiberglass Production						
Material	Monthly Usage (lb)	(a) MMA Emissions (tons/month)	(b) Styrene Emissions (tons/month)	(c) DMP Emissions (tons/month)	(d) Other VOC Emissions (tons/month)	(e) Total VOC Emissions from Material
From Natural Gas (NG) Combustion						
				NG Usage (mmscf)	EF (lb/mmscf)	(f) Total VOC Emissions from Combustion
					5.5	
(g) Total VOC Emissions This Month (tons) =						
(h) Last Month's Total 12-Month VOC Emissions (tons) =						
(i) Previous Year's Monthly Individual VOC Emissions (tons) =						
(j) Current 12-month Total VOC Emissions (tons) =						

- (a) MMA Emissions (tons/month) for the month shall be taken from Attachment A of this month
- (b) Styrene emissions (tons/month) shall be calculated using  $[\text{Monthly Usage (lb)} \div 2,000 \text{ lb/ton}] \times [\text{EF (lb/ton)} \div 2,000 \text{ lb/ton}]$ . The EF (lb/ton) shall be taken from the table of "Unified Emission Factor for Open Molding of Composites" based on the styrene content. If a range is given in the SDS, the highest value shall be used to determine the EF. The most recent and approved version of the table shall be used. The table given in Appendix B is current as of the date of permit issuance. If the table is modified in the future, the new version shall be used.
- (c) DMP emissions (tons/month) shall be calculated using  $[\text{Monthly Usage (lb)} \times (\% \text{ DMP}) \times 0.0004] \div 2,000 \text{ lb/ton}$ . % DMP shall be taken from the material's SDS. If a range is given, the highest value shall be used.
- (d) Other VOC emissions (tons/month) shall be calculated using  $[\text{Monthly Usage (lb)} \times (\% \text{ VOC})] \div 2,000 \text{ lb/ton}$ . % VOC shall be taken from the material's SDS. If a range is given, the highest value shall be used
- (e) Total VOC Emissions from Material (tons/month) calculated using (a)+(b)+(c)+(d)
- (f) Total VOC Emissions from Combustion (tons/month) calculated using  $[\text{NG Usage (mmscf)} \times \text{EF (lb/mmscf)}] \div 2,000 \text{ lb/ton}$ .
- (g) Total VOC Emissions This Month (tons) calculated using (e) + (f)
- (h) 12-month Total VOC Emissions (tons) from last month's Attachment B.
- (i) Monthly VOC Emissions (tons) from the previous year's Attachment B.
- (j) Current 12-Month Total MMA Emissions (tons) calculated using [(g)+(h)-(i)]. A 12-Month VOC Emission of less than **100.0 tons** for the entire installation indicates compliance.

## Attachment C – Daily Styrene Emissions Compliance Worksheet

Shelter Works  
 City of St. Louis  
 Project Number: 2014-05-035  
 Installation ID Number: 510-2752  
 Permit Number: \_\_\_\_\_

This sheet covers the period from \_\_\_\_\_ to \_\_\_\_\_.  
 (month, year) (month, year)

<b>Date:</b>			
<b>Process</b>	<b><sup>1</sup>Daily Material Usage (lb)</b>	<b>EF (lb/lb coating)</b>	<b>Emissions (lb/day)</b>
Interior Gelcoat		0.1323	
Exterior Gelcoat		0.2195	
Resin Application		0.05975	
<b>Date:</b>			
<b>Process</b>	<b><sup>1</sup>Daily Material Usage (lb)</b>	<b>EF (lb/lb coating)</b>	<b>Emissions (lb/day)</b>
Interior Gelcoat		0.1323	
Exterior Gelcoat		0.2195	
Resin Application		0.05975	
<b>Date:</b>			
<b>Process</b>	<b><sup>1</sup>Daily Material Usage (lb)</b>	<b>EF (lb/lb coating)</b>	<b>Emissions (lb/day)</b>
Interior Gelcoat		0.1323	
Exterior Gelcoat		0.2195	
Resin Application		0.05975	
<b>Date:</b>			
<b>Process</b>	<b><sup>1</sup>Daily Material Usage (lb)</b>	<b>EF (lb/lb coating)</b>	<b>Emissions (lb/day)</b>
Interior Gelcoat		0.1323	
Exterior Gelcoat		0.2195	
Resin Application		0.05975	
<b>Date:</b>			
<b>Process</b>	<b><sup>1</sup>Daily Material Usage (lb)</b>	<b>EF (lb/lb coating)</b>	<b>Emissions (lb/day)</b>
Interior Gelcoat		0.1323	
Exterior Gelcoat		0.2195	
Resin Application		0.05975	

Note 1: Input the amount of gelcoat or resins used for this day.

Note 2: EF is for use with gelcoats and coatings with the following styrene emissions: Interior Gelcoat – 29.73%, Exterior Gelcoat – 40%, and Resin – 48.50%. If using coatings with different styrene contents, the facility should calculate a new EF using the table for “Unified Emission Factors for Open Molding of Composites” in Appendix B. The most recent and approved version of the table shall be used. The table given in Appendix B is current as of the date of permit issuance. If the table is modified in the future, the new version shall be used.

Note 3: Emissions (lb/day) calculated by multiplying daily material usage (lb) with EF (lb/lb coating). A total equal to or less than the following indicates compliance: 117.1 lb/day from interior gelcoat, 239.7 lb/day from exterior gelcoat, and 308.31 lb/day from resin application.

## Attachment D – Individual HAP Emissions Calculations from Alternative Material (Except Styrene and MMA)

Shelter Works  
 City of St. Louis  
 Project Number: 2014-05-035  
 Installation ID Number: 510-2752  
 Permit Number: \_\_\_\_\_

### Individual HAP

Column 1 Material	Column 2 MHDR (gal/hr)	Column 3 Density (lb/gal)	Column 4 HAP Name, CAS #	Column 5 Individual HAP Content (Wt. %)	Column 6 (a) Individual HAP PTE (tpy)	Column 7 (b) SMAL (tpy)
<i>Example</i>	<i>1.67</i>	<i>8.75</i>	<i>Toluene</i>	<i>3.0%</i>	<i>1.92</i>	<i>10.0</i>

- (a) Individual HAP PTE (tpy) calculated using (Column 2) x (Column 3) x [(Column 5)÷100] x 8760 hours/yr ÷ 2,000 lb/ton. A 0.04% evaporation rate can be used for dimethyl phthalate emissions from catalysts.
- (b) The current SMAL can be found in Appendix C. The table in Appendix C is current as of the date of permit issuance. If a SMAL is modified in the future, the new number shall be used. The facility shall contact the Air Pollution Control Program for the new SMAL.

## Attachment E – Alternative Material Styrene Calculations

Shelter Works  
 City of St. Louis  
 Project Number: 2014-05-035  
 Installation ID Number: 510-2752  
 Permit Number: \_\_\_\_\_

Copy this sheet as needed.

Column 1	Column 2	Column 3	Column 4
Type of Process	Maximum Usage (lb/hr)	<sup>1</sup> Emission Factors (lb/ton)	<sup>2</sup> Emissions (lb/day)
Interior Gelcoat (EP01A)			
Exterior Gelcoat (EP01B)			
Resin (EP01C)			

Note 1: Emission factors, in lb/ton, for the gel coat gun and resin application should be taken from the Table “Unified Emission Factors for Open Molding of Composites.” The most recent and approved version of the table shall be used. The table given in Appendix B is current as of the date of permit issuance. If the table is modified in the future, the new version shall be used.

Note 2: Emissions (lb/day) for the gel coat gun and resin application calculated from  $[\text{Column 2} \div 2,000 \text{ lb/ton}] \times \text{Column 3} \times 24 \text{ hours/day}$ .

**For styrene, Shelter Works may use the alternative material if emissions are less than the limits in Special Condition 2.C. – 117.1 lb/day from the interior gelcoat application (EP01A), 239.7 lb/day from the exterior gelcoat application (EP01B), and 308.3 lb/day from the resin application (EP01C).**

## APPENDIX A

### Abbreviations and Acronyms

<b>%</b> .....	percent	<b>m/s</b> .....	meters per second
<b>°F</b> .....	degrees Fahrenheit	<b>Mgal</b> .....	1,000 gallons
<b>acfm</b> .....	actual cubic feet per minute	<b>MW</b> .....	megawatt
<b>BACT</b> .....	Best Available Control Technology	<b>MHDR</b> .....	maximum hourly design rate
<b>BMPs</b> .....	Best Management Practices	<b>MMBtu</b> ....	Million British thermal units
<b>Btu</b> .....	British thermal unit	<b>MMCF</b> .....	million cubic feet
<b>CAM</b> .....	Compliance Assurance Monitoring	<b>MSDS</b> .....	Material Safety Data Sheet
<b>CAS</b> .....	Chemical Abstracts Service	<b>NAAQS</b> ...	National Ambient Air Quality Standards
<b>CEMS</b> .....	Continuous Emission Monitor System	<b>NESHAPs</b>	National Emissions Standards for Hazardous Air Pollutants
<b>CFR</b> .....	Code of Federal Regulations	<b>NO<sub>x</sub></b> .....	nitrogen oxides
<b>CO</b> .....	carbon monoxide	<b>NSPS</b> .....	New Source Performance Standards
<b>CO<sub>2</sub></b> .....	carbon dioxide	<b>NSR</b> .....	New Source Review
<b>CO<sub>2e</sub></b> .....	carbon dioxide equivalent	<b>PM</b> .....	particulate matter
<b>COMS</b> .....	Continuous Opacity Monitoring System	<b>PM<sub>2.5</sub></b> .....	particulate matter less than 2.5 microns in aerodynamic diameter
<b>CSR</b> .....	Code of State Regulations	<b>PM<sub>10</sub></b> .....	particulate matter less than 10 microns in aerodynamic diameter
<b>dscf</b> .....	dry standard cubic feet	<b>ppm</b> .....	parts per million
<b>EQ</b> .....	Emission Inventory Questionnaire	<b>PSD</b> .....	Prevention of Significant Deterioration
<b>EP</b> .....	Emission Point	<b>PTE</b> .....	potential to emit
<b>EPA</b> .....	Environmental Protection Agency	<b>RACT</b> .....	Reasonable Available Control Technology
<b>EU</b> .....	Emission Unit	<b>RAL</b> .....	Risk Assessment Level
<b>fps</b> .....	feet per second	<b>SCC</b> .....	Source Classification Code
<b>ft</b> .....	feet	<b>scfm</b> .....	standard cubic feet per minute
<b>GACT</b> .....	Generally Available Control Technology	<b>SDS</b> .....	Safety Data Sheet
<b>GHG</b> .....	Greenhouse Gas	<b>SIC</b> .....	Standard Industrial Classification
<b>gpm</b> .....	gallons per minute	<b>SIP</b> .....	State Implementation Plan
<b>gr</b> .....	grains	<b>SMAL</b> .....	Screening Model Action Levels
<b>GWP</b> .....	Global Warming Potential	<b>SO<sub>x</sub></b> .....	sulfur oxides
<b>HAP</b> .....	Hazardous Air Pollutant	<b>SO<sub>2</sub></b> .....	sulfur dioxide
<b>hr</b> .....	hour	<b>tph</b> .....	tons per hour
<b>hp</b> .....	horsepower	<b>tpy</b> .....	tons per year
<b>lb</b> .....	pound	<b>VMT</b> .....	vehicle miles traveled
<b>lbs/hr</b> .....	pounds per hour	<b>VOC</b> .....	Volatile Organic Compound
<b>MACT</b> .....	Maximum Achievable Control Technology		
<b>µg/m<sup>3</sup></b> .....	micrograms per cubic meter		

## Appendix B

### Unified Emission Factors for Open Molding of Composites

July 23, 2001

Emission Rate in Pounds of Styrene Emitted per Ton of Resin or Gelcoat Processed

Styrene content in resin/gelcoat, % <sup>(1)</sup>	<33 <sup>(2)</sup>	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	>50 <sup>(2)</sup>
Manual	$0.126 \times \% \text{styrene} \times 2000$	83	89	94	100	106	112	117	123	129	134	140	146	152	157	163	169	174	180	$((0.286 \times \% \text{styrene}) - 0.0529) \times 2000$
Manual w/ Vapor Suppressed Resin VSR <sup>(3)</sup>	Manual emission factor [listed above] $\times (1 - (0.50 \times \text{specific VSR reduction factor for each resin/suppressant formulation}))$																			
Mechanical Atomized	$0.169 \times \% \text{styrene} \times 2000$	111	126	140	154	168	183	197	211	225	240	254	268	283	297	311	325	340	354	$((0.714 \times \% \text{styrene}) - 0.18) \times 2000$
Mechanical Atomized with VSR <sup>(3)</sup>	Mechanical Atomized emission factor [listed above] $\times (1 - (0.45 \times \text{specific VSR reduction factor for each resin/suppressant formulation}))$																			
Mechanical Atomized Controlled Spray <sup>(4)</sup>	$0.130 \times \% \text{styrene} \times 2000$	86	97	108	119	130	141	152	163	174	185	196	207	218	229	240	251	262	273	$0.77 \times ((0.714 \times \% \text{styrene}) - 0.18) \times 2000$
Mechanical Controlled Spray with VSR	Mechanical Atomized Controlled Spray emission factor [listed above] $\times (1 - (0.45 \times \text{specific VSR reduction factor for each resin/suppressant formulation}))$																			
Mechanical Non-Atomized	$0.107 \times \% \text{styrene} \times 2000$	71	74	77	80	83	86	89	93	96	99	102	105	108	111	115	118	121	124	$((0.157 \times \% \text{styrene}) - 0.0165) \times 2000$
Mechanical Non-Atomized with VSR <sup>(3)</sup>	Mechanical Non-Atomized emission factor [listed above] $\times (1 - (0.45 \times \text{specific VSR reduction factor for each resin/suppressant formulation}))$																			
Filament application	$0.184 \times \% \text{styrene} \times 2000$	122	127	133	138	144	149	155	160	166	171	177	182	188	193	199	204	210	215	$((0.2746 \times \% \text{styrene}) - 0.0298) \times 2000$
Filament application with VSR <sup>(3)</sup>	$0.120 \times \% \text{styrene} \times 2000$	79	83	86	90	93	97	100	104	108	111	115	118	122	125	129	133	136	140	$0.65 \times ((0.2746 \times \% \text{styrene}) - 0.0298) \times 2000$
Gelcoat Application	$0.445 \times \% \text{styrene} \times 2000$	294	315	336	356	377	398	418	439	460	481	501	522	543	564	584	605	626	646	$((1.03646 \times \% \text{styrene}) - 0.195) \times 2000$
Gelcoat Controlled Spray Application <sup>(4)</sup>	$0.325 \times \% \text{styrene} \times 2000$	215	230	245	260	275	290	305	321	336	351	366	381	396	411	427	442	457	472	$0.73 \times ((1.03646 \times \% \text{styrene}) - 0.195) \times 2000$
Gelcoat Non-Atomized Application <sup>(5)</sup>	SEE Note 9 below	196	205	214	223	232	241	250	259	268	278	287	296	305	314	323	332	341	350	$((0.4506 \times \% \text{styrene}) - 0.0505) \times 2000$
Covered-Cure after Roll-Out	Non-VSR process emission factor [listed above] $\times (0.80 \text{ for Manual } < \text{or} > 0.85 \text{ for Mechanical})$																			
Covered-Cure without Roll-Out	Non-VSR process emission factor [listed above] $\times (0.50 \text{ for Manual } < \text{or} > 0.55 \text{ for Mechanical})$																			

Emission Rate in Pounds of Methyl Methacrylate Emitted per Ton of Gelcoat Processed

MMA content in gelcoat, % <sup>(6)</sup>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	$\geq 20$
Gel coat application <sup>(7)</sup>	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	$0.75 \times \% \text{MMA} \times 2000$

#### Notes

<sup>1</sup> Including styrene monomer content as supplied, plus any extra styrene monomer added by the molder, but before addition of other additives such as powders, fillers, glass, etc.

<sup>2</sup>

Formulas for materials with styrene content < 33% are based on the emission rate at 33% (constant emission factor expressed as percent of available styrene), and for styrene content > 50% on the emission rate based on the extrapolated factor equations; these are not based on test data but are believed to be conservative estimates. The value for "% styrene" in the formulas should be input as a fraction. For example, use the input value 0.30 for a resin with 30% styrene content by wt.

<sup>3</sup> The VSR reduction factor is determined by testing each resin/suppressant formulation according to the procedures detailed in the *CFA Vapor Suppressant Effectiveness Test*.

<sup>4</sup> SEE the *CFA Controlled Spray Handbook* for a detailed description of the controlled spray procedures.

<sup>5</sup> The effect of vapor suppressants on emissions from filament winding operations is based on the *Dow Filament Winding Emissions Study*.

<sup>6</sup> Including MMA monomer content as supplied, plus any extra MMA monomer added by the molder, but before addition of other additives such as powders, fillers, glass, etc.

<sup>7</sup> Based on gelcoat data from *NMMA Emission Study*.

<sup>8</sup> SEE the July 17, 2001 EECS report *Emission Factors for Non-Atomized Application of Gel Coats used in the Open Molding of Composites* for a detailed description of the non-atomized gelcoat testing.

<sup>9</sup> Use the equation  $((0.4506 \times \% \text{styrene}) - 0.0505) \times 2000$  for gelcoats with styrene contents between 19% and 32% by wt.; use the equation  $0.185 \times \% \text{styrene} \times 2000$  for gelcoats with less than 19% styrene content by wt.

## Appendix C - Table of Hazardous Air Pollutants and Screening Model Action Levels

Chemical	CAS #	SMAL (tons/yr)	Group ID	VOC	PM	Chemical	CAS #	SMAL (tons/yr)	Group ID	VOC	PM	Chemical	CAS #	SMAL (tons/yr)	Group ID	VOC	PM
ACETALDEHYDE	75-07-0	9		Y	N	CARBARYL	63-25-2	10	V	Y	Y	DICHLOROPROPANE, [1,2-]	78-87-5	1		Y	N
ACETAMIDE	60-35-5	1		Y	N	CARBON DISULFIDE	75-15-0	1		Y	N	DICHLOROPROPENE, [1,3-]	542-75-6	1		Y	N
ACETONITRILE	75-05-8	4		Y	N	CARBON TETRACHLORIDE	56-23-5	1		Y	N	DICHLORVOS	62-73-7	0.2		Y	N
ACETOPHENONE	98-86-2	1		Y	N	CARBONYL SULFIDE	463-58-1	5		Y	N	DIETHANOLAMINE	111-42-2	5		Y	N
ACETYLAMINOFLUORINE, [2-]	53-96-3	0.005	V	Y	Y	CATECHOL	120-80-9	5		Y	N	DIETHYL SULFATE	64-67-5	1		Y	N
ACROLEIN	107-02-8	0.04		Y	N	CHLORAMBEN	133-90-4	1		Y	Y	DIETHYLENE GLYCOL MONOBUTYL ETHER	112-34-5	5	P	Y	N
ACRYLAMIDE	79-06-1	0.02		Y	N	CHLORDANE	57-74-9	0.01		Y	Y	DIMETHOXYBENZIDINE, [3,3-]	119-90-4	0.1	V	Y	Y
ACRYLIC ACID	79-10-7	0.6		Y	N	CHLORINE	7782-50-5	0.1		N	N	DIMETHYL BENZIDINE, [3,3-]	119-93-7	0.008	V	Y	Y
ACRYLONITRILE	107-13-1	0.3		Y	N	CHLOROACETIC ACID	79-11-8	0.1		Y	N	DIMETHYL CARBAMOYL CHLORIDE	79-44-7	0.02		Y	N
ALLYL CHLORIDE	107-05-1	1		Y	N	CHLOROACETOPHENONE, [2-]	532-27-4	0.06		Y	N	DIMETHYL FORMAMIDE	68-12-2	1		Y	N
AMINOBIIPHENYL, [4-]	92-67-1	1	V	Y	N	CHLOROBENZENE	108-90-7	10		Y	N	DIMETHYL HYDRAZINE, [1,1-]	57-14-7	0.008		Y	N
ANILINE	62-53-3	1		Y	N	CHLOROBENZILATE	510-15-6	0.4	V	Y	Y	DIMETHYL PHTHALATE	131-11-3	10		Y	N
ANISIDINE, [ORTHO-]	90-04-0	1		Y	N	CHLOROFORM	67-66-3	0.9		Y	N	DIMETHYL SULFATE	77-78-1	0.1		Y	N
ANTHRACENE	120-12-7	0.01	V	Y	N	CHLOROMETHYL METHYL ETHER	107-30-2	0.1		Y	N	DIMETHYLANINOAZOBENZENE, [4-]	60-11-7	1		Y	N
ANTIMONY COMPOUNDS		5	H	N	Y	CHLOROPRENE	126-99-8	1		Y	N	DIMETHYLANILINE, [N-N-]	121-69-7	1		Y	N
ANTIMONY PENTAFLUORIDE	7783-70-2	0.1	H	N	Y	CHROMIUM (VI) COMPOUNDS		0.002	L	N	Y	DINITRO-O-CRESOL, [4,6-] (Note 6)	534-52-1	0.1	E	Y	Y
ANTIMONY POTASSIUM TARTRATE	28300-74-5	1	H	N	Y	CHROMIUM COMPOUNDS		5	L	N	Y	DINITROPHENOL, [2,4-]	51-28-5	1		Y	N
ANTIMONY TRIOXIDE	1309-64-4	1	H	N	Y	CHRYSENE	218-01-9	0.01	V	Y	N	DINITROTOLUENE, [2,4-]	121-14-2	0.02		Y	N
ANTIMONY TRISULFIDE	1345-04-6	0.1	H	N	Y	COBALT COMPOUNDS		0.1	M	N	Y	DIOXANE, [1,4-]	123-91-1	6		Y	N
ARSENIC COMPOUNDS		0.005	I	N	Y	COKE OVEN EMISSIONS	8007-45-2	0.03	N	Y	N	DIPHENYLHYDRAZINE, [1,2-]	122-66-7	0.09	V	Y	Y
ASBESTOS	1332-21-4	0	A	N	Y	CRESOL, [META-]	108-39-4	1	B	Y	N	DIPHENYLMETHANE DIISOCYANATE, [4,4-]	101-68-8	0.1	V	Y	N
BENZ(A)ANTHRACENE	56-55-3	0.01	V	Y	N	CRESOL, [ORTHO-]	95-48-7	1	B	Y	N	EPICHLOROHYDRIN	106-89-8	2		Y	N
BENZENE	71-43-2	2		Y	N	CRESOL, [PARA-]	106-44-5	1	B	Y	N	ETHOXYETHANOL, [2-]	110-80-5	10	P	Y	N
BENZIDINE	92-87-5	0.0003	V	Y	N	CRESOLS (MIXED ISOMERS)	1319-77-3	1	B	Y	N	ETHOXYETHYL ACETATE, [2-]	111-15-9	5	P	Y	N
BENZO(A)PYRENE	50-32-8	0.01	V	Y	N	CUMENE	98-82-8	10		Y	N	ETHYL ACRYLATE	140-88-5	1		Y	N
BENZO(B)FLUORANTHENE	205-99-2	0.01	V	Y	N	CYANIDE COMPOUNDS		0.1	O	Y	N	ETHYL BENZENE	100-41-4	10		Y	N
BENZO(K)FLUORANTHENE	207-08-9	0.01	V	Y	N	DDE	72-55-9	0.01	V	Y	Y	ETHYL CHLORIDE	75-00-3	10		Y	N
BENZOTRICHLORIDE	98-07-7	0.006		Y	N	DI(2-ETHYLHEXYL) PHTHALATE, (DEHP)	117-81-7	5		Y	N	ETHYLENE GLYCOL	107-21-1	10		Y	N
BENZYL CHLORIDE	100-44-7	0.1		Y	N	DIAMINOTOLUENE, [2,4-]	95-80-7	0.02		Y	N	ETHYLENE GLYCOL MONOBUTYL ETHER (Delisted)	111-76-2				
BERYLLIUM COMPOUNDS		0.008	J	N	Y	DIAZOMETHANE	334-88-3	1		Y	N	ETHYLENE GLYCOL MONOHEXYL ETHER	112-25-4	5	P	Y	N
BERYLLIUM SALTS		2E-05	J	N	Y	DIBENZ(A,H)ANTHRACENE	53-70-3	0.01	V	Y	N	ETHYLENE IMINE [AZIRIDINE]	151-56-4	0.003		Y	N
BIPHENYL, [1,1-]	92-52-4	10	V	Y	N	DIOXINS/FURANS		6E-07	D,V	Y	N	ETHYLENE OXIDE	75-21-8	0.1		Y	N
BIS(CHLOROETHYL)ETHER	111-44-4	0.06		Y	N	DIBENZOFURAN	132-64-9	5	V	Y	N	ETHYLENE THIOUREA	96-45-7	0.6		Y	Y
BIS(CHLOROMETHYL)ETHER	542-88-1	0.0003		Y	N	DIBROMO-3-CHLOROPROPANE, [1,2-]	96-12-8	0.01		Y	N	FORMALDEHYDE	50-00-0	2		Y	N
BROMOFORM	75-25-2	10		Y	N	DIBROMOETHANE, [1,2-]	106-93-4	0.1		Y	N	GLYCOL ETHER (ETHYLENE GLYCOL ETHERS)		5	P	Y	N
BROMOMETHANE	74-83-9	10		Y	N	DIBUTYL PHTHALATE	84-74-2	10		Y	Y	GLYCOL ETHER (DIETHYLENE GLYCOL ETHERS)		5	P	Y	N
BUTADIENE, [1,3-]	106-99-0	0.07		Y	N	DICHLOROBENZENE, [1,4-]	106-46-7	3		Y	N	HEPTACHLOR	76-44-8	0.02		Y	N
BUTOXYETHANOL ACETATE, [2-]	112-07-2	5	P	Y	N	DICHLOROBENZENE, [3,3-]	91-94-1	0.2	V	Y	Y	HEXACHLOROBENZENE	118-74-1	0.01		Y	N
BUTYLENE OXIDE, [1,2-]	106-88-7	1		Y	N	DICHLOROETHANE, [1,1-]	75-34-3	1		Y	N	HEXACHLOROBUTADIENE	87-68-3	0.9		Y	N
CADMIUM COMPOUNDS		0.01	K	N	Y	DICHLOROETHANE, [1,2-]	107-06-2	0.8		Y	N	HEXACHLOROCYCLOHEXANE, [ALPHA-]	319-84-6	0.01	F	Y	N
CALCIUM CYANAMIDE	156-62-7	10		Y	Y	DICHLOROETHYLENE, [1,1-]	75-35-4	0.4		Y	N	HEXACHLOROCYCLOHEXANE, [BETA-]	319-85-7	0.01	F	Y	N
CAPROLACTAM (Delisted)	105-60-2					DICHLOROMETHANE	75-09-2	10		N	N	HEXACHLOROCYCLOHEXANE, [DELTA-]	319-86-8	0.01	F	Y	N
CAPTAN	133-06-2	10		Y	Y	DICHLOROPHENOXY ACETIC ACID, [2,4-]	94-75-7	10	C	Y	Y	HEXACHLOROCYCLOHEXANE, [TECHNICAL]	608-73-1	0.01	F	Y	N

Mr. John Miller  
Director of Sales and Operations  
Shelter Works  
2616 South Third Street  
St. Louis, MO 63118

RE: New Source Review Permit - Project Number: 2014-05-035

Dear Mr. Miller:

Enclosed with this letter is your permit to construct. Please study it carefully and refer to Appendix A for a list of common abbreviations and acronyms used in the permit. Also, note the special conditions, if any, on the accompanying pages. The document entitled, "Review of Application for Authority to Construct," is part of the permit and should be kept with this permit in your files. Operation in accordance with these conditions, your new source review permit application and with your operating permit is necessary for continued compliance. The reverse side of your permit certificate has important information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

If you were adversely affected by this permit decision, you may be entitled to pursue an appeal before the administrative hearing commission pursuant to Sections 621.250 and 643.075.6 RSMo. To appeal, you must file a petition with the administrative hearing commission within thirty days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the administrative hearing commission, whose contact information is: Administrative Hearing Commission, Truman State Office Building, Room 640, 301 W. High Street, P.O. Box 1557, Jefferson City, Missouri 65102, phone: 573-751-2422, fax: 573-751-5018, website: [www.oa.mo.gov/ahc](http://www.oa.mo.gov/ahc).

If you have any questions regarding this permit, please do not hesitate to contact Chia-Wei Young, at the Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or at (573) 751-4817. Thank you for your attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Susan Heckenkamp  
New Source Review Unit Chief

SH:cyl

Enclosures

c: St. Louis Regional Office  
PAMS File: 2014-05-035

Permit Number:

Celebrating 40 years of taking care of Missouri's natural resources.  
To learn more about the Missouri Department of Natural Resources visit [dnr.mo.gov](http://dnr.mo.gov).