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: 012016-010

Project Number: 2015-10-068
Installation Number: 077-0052

Parent Company:	Paul Mueller Company
Parent Company Address:	1600 West Phelps Street, Springfield, MO 65801
Installation Name:	Paul Mueller Company
Installation Address:	1600 West Phelps Street, Springfield, MO 65801
Location Information:	Greene County (S15, T29N, R22W)

Application for Authority to Construct was made for:
The installation of a new Accu-Therm paint booth. This review was conducted in accordance with Section (5), 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.

Prepared by
Ryan Schott
New Source Review Unit

Director or Designee
Department of Natural Resources

JAN 25 2016

Effective Date

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 startup 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 startup 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.

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."

Paul Mueller Company
Greene County (S15, T29N, R22W)

1. Paint Gun Usage Restriction
   A. Paul Mueller Company shall only use one (1) paint gun at a time in the Accu-Therm paint booth (EP-16A).

2. Capture Device Requirement – Paint Booth and Exhaust System
   A. Paul Mueller Company shall capture emissions from the Accu-Therm spray coating operations (EP-16A) using a paint booth and exhaust system.

   B. Negative pressure shall be demonstrated and recorded at all booth openings at least once every 24 hours using a visual indicator, such as air streamers, powder puff, smoke, or other method preapproved by the Air Pollution Control Program. 24-hour periods when Accu-Therm spray coating is not operational shall be recorded.

   C. Paul Mueller Company shall operate the Accu-Therm paint booth's exhaust fan(s) at all times when surface coating spray is applied.

   D. Paul Mueller Company shall maintain an operating and maintenance log for the paint booth and exhaust system which shall include the following:
      1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
      2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.

3. Control Device Requirement – Dry Filter Exhaust System
   A. Paul Mueller Company shall control particulate emissions from the Accu-Therm paint booth (EP-16A) using a dry filter exhaust system, as specified in the permit application.

   B. The filter exhaust system shall be operated and maintained in accordance with the manufacturer's specifications. The system shall be equipped with a gauge or meter, which indicates the pressure drop across the control device. This gauge or meter shall be located such that Department of Natural Resources' employees may easily observe it.

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

C. Replacement filters shall be kept on hand at all times. The filters shall be made of fibers appropriate for operating conditions expected to occur (i.e. temperature limits, acidic and alkali resistance, and abrasion resistance).

D. Paul Mueller Company shall monitor and record the operating pressure drop across the filter at least once every 24 hours while the paint booth is operating. The operating pressure drop shall be maintained within the design conditions specified by the manufacturer's performance warranty.

E. Paul Mueller Company shall maintain a copy of the filter exhaust system manufacturer's performance warranty on site.

F. Paul Mueller Company shall maintain an operating and maintenance log for the dry filter exhaust system which shall include the following:
   1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
   2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.

4. Use of Alternative Coatings

A. When considering using an alternative coating that is different than the compounds listed in the Application for Authority to Construct (Wilkothane HS Mueller Blue/ Wilkothane HS Activator), Paul Mueller Company shall calculate the potential emissions of all individual HAPs in the alternative material.

B. Paul Mueller Company shall seek approval from the Air Pollution Control Program before use of the alternative material if the potential individual HAP emissions of the alternative material are equal to or greater than the SMAL for any HAP listed in Appendix B.

C. Attachment A or an equivalent form, such as an electronic form approved by the Air Pollution Control Program, shall be used to show compliance with Special Condition 4.A.

5. Record Keeping and Reporting Requirements

A. Paul Mueller Company 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.

SPECIAL CONDITIONS:

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

B. Paul Mueller Company 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 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 (5) REVIEW
Project Number: 2015-10-068
Installation ID Number: 077-0052
Permit Number:

Installation Address:
Paul Mueller Company
1600 West Phelps Street
Springfield, MO 65801
Greene County (S15, T29N, R22W)

Parent Company:
Paul Mueller Company
1600 West Phelps Street
Springfield, MO 65801

REVIEW SUMMARY

- Paul Mueller Company has applied for authority to install a new Accu-Therm paint booth.

- The application was deemed complete on October 28, 2015.

- HAP emissions are expected from the proposed equipment. HAPs of concern from this process include hexamethylene diisocyanate (HDI) and xylene.

- None of the New Source Performance Standards apply to the proposed equipment.

- 40 CFR Part 63, Subpart XXXXXX, *National Emission Standards for Hazardous Air Pollutants Area Source Standards for Nine Metal Fabrication and Finishing Source Categories*, applies to the facility.

- A dry filter exhaust system is being used to control particulate matter emissions from the equipment in this permit.

- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of all pollutants are conditioned below de minimis levels and their respective SMALs.

- This installation is located in Greene County, an attainment area for all criteria pollutants.

- This installation is not on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2. The installation's major source level is 250 tons per year and fugitive emissions are not counted toward major source applicability.

- Emissions testing is not required for the equipment.

- Submittal of an amendment to your Basic Operating Permit is required within 30 days of equipment startup.

- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Paul Mueller Company manufactures stainless steel tanks and processing equipment in Springfield, Missouri. Operations include machining, welding, blasting, spray coating, and assembly of metal parts. This facility is a de minimis source for construction permitting, and it currently has a Basic Operating Permit renewal under review, classified as project 2015-07-053. The following New Source Review permits have been issued to Paul Mueller Company from the Air Pollution Control Program:

Table 1: Permit History

Permit Number	Description
112015-006	Permitting an existing paint booth

PROJECT DESCRIPTION

Paul Mueller Company plans to install a new Accu-Therm paint booth (EP-16A). The booth will be used to paint large carbon steel frames for Accu-Therm heat exchangers. It will be equipped with a Wagner Aircoat Electrostatic Gun, with a second gun available for backup purposes. Only one spray gun will be used at a time, and the maximum design rate will be 3.75 gallons of coating sprayed per hour. The booth will be used for both painting and curing of painted parts, using a natural gas fired make-up air unit (EP-16B) to assist in curing the paint. Taking into account the part loading/ unloading time and the curing time, the maximum actual spraying time for this booth will be 14 hours per day or 5,110 hours per year.

EMISSIONS/CONTROLS EVALUATION

VOC and HAP emissions from spray coating were calculated using a mass balance approach. The highest theoretical volatile percentage and HAP percentage of each of the spray components were multiplied by their respective densities and the maximum design rate of the process to obtain a maximum VOC/ HAP usage rate. It was assumed that the spray components which resulted in the highest overall emissions were exclusively used to coat the units. It was also assumed that 100% of VOCs and volatile HAPs are emitted.

The active ingredient in the spray coating activator, hexamethylene diisocyanate homopolymer (HDI prepolymer), is not a HAP itself; however, it can contain a small residual amount of hexamethylene diisocyanate monomer (HDI), which is classified as a HAP. It was conservatively assumed that the HDI prepolymer contains 2% HDI, as described in the EPA document, *Automotive Refinishing Industry Isocyanate Profile* (May 1997). Potential HDI emissions were calculated using an emission factor obtained from the Ontario Ministry of the Environment document, *Determination of 1,6-Hexamethylene Diisocyanate (HDI) Emissions from Spray Booth Operations* (April 2006).

PM_{10} and $PM_{2.5}$ emissions from spray coating were calculated using a mass balance approach. The highest theoretical solids content of each spray component was multiplied by its respective density, a solids transfer efficiency of 65% for the spray gun,

and the maximum design rate of the process. It was assumed that all particulate matter is $PM_{2.5}$. The paint booth will be equipped with a dry filter exhaust system, which is rated as having a capture efficiency of 98.67% and a control efficiency of 80%, yielding an overall control efficiency of 78.94%.

Because the make-up air unit has such a low heat input and restricted operating time due to the spray coating schedule, potential combustion emissions are negligible and were, therefore, not included in this evaluation.

The following table provides an emissions summary for this project. Previous project potential emissions were taken from the previous construction permit 112015-006. Existing actual emissions were taken from the installation's 2014 EIQ. Potential emissions of the application represent the potential of the new equipment, assuming maximum spray time (5,110 hours per year).

Table 2: Emissions Summary (tons per year)

Pollutant	Regulatory *De Minimis* Levels / SMAL	Previous Project Potential Emissions	Existing Actual Emissions (2014 EIQ)	Potential Emissions of the Application	New Project Conditioned Potential Emissions
PM_{10}	15.0	0.79	2.92	24.38	4.91
$PM_{2.5}$	10.0	0.79	1.57	24.38	4.91
SO_x	40.0	N/A	N/A	N/A	N/A
NO_x	40.0	N/A	1.26	N/A	N/A
VOC	40.0	4.89	1.79	34.02	34.02
CO	100.0	N/A	0.39	N/A	N/A
Xylene	10.0 / 10	N/A	N/D	0.840	0.840
HDI	10.0 / 0.02	0.0197	N/D	0.016	0.016
Total HAPs	25.0	0.88	N/D	0.856	0.856

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

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of all pollutants are conditioned below de minimis levels and their respective SMALs.

APPLICABLE REQUIREMENTS

Paul Mueller Company 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
    - Per 10 CSR 10-6.110(4)(B)2.B(II) and (4)(B)2.C(II) a full EIQ is required for the first full calendar year the equipment (or modifications) approved by this permit are in operation.

- *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

SPECIFIC REQUIREMENTS

- *MACT Regulations*, 10 CSR 10-6.075
    - *National Emission Standards for Nine Metal Fabrication and Finishing Source Categories,* 40 CFR Part 63, Subpart XXXXXX

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, it is recommended that this permit be granted with special conditions.

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated October 19, 2015, received October 26, 2015, designating Paul Mueller Company as the owner and operator of the installation.

Attachment A – Evaluation of Alternative Materials

Paul Mueller Company
Greene County (S15, T29N, R22W)
Project Number: 2015-10-068
Installation ID Number: 077-0052
Permit Number: _____

A	B	C	D	E	F	G
[1]Material Name	**[2]Individual HAP Name and CAS No.**	**[3]Individual HAP Content (weight %)**	**[3]Product Density (lb/gal)**	**[4]Maximum Usage Rate (gal/year)**	**[5]Individual HAP PTE (ton/year)**	**[6]Individual HAP SMAL (ton/year)**
Example New Coating	*Xylene 1330-20-7*	*15.0*	*6.17*	*19,162.5*	*8.87*	*10.0*
Example New Coating	*Cobalt 2-Ethylhexanoate 136-52-7*	*0.15*	*6.17*	*19.162.5*	*0.089*	*0.1*
				19,162.5		
				19,162.5		
				19,162.5		
				19,162.5		
				19,162.5		
				19,162.5		
				19,162.5		
				19,162.5		

[1] Record the names of all alternative coatings planned to be sprayed through EP-16A
[2] Compare each ingredient on the MSDS against the chemical names listed in Appendix B for verification as a HAP
[3] Chemical properties as reported on the MSDS; if a range is given, use the highest value listed
[4] The maximum usage rate is equal to the maximum spray rate (3.75 gal/hr) multiplied by the maximum annual spray time (5,110 hr/year)
[5] Individual HAP PTE is calculated as follows: [F] = [C] / (100) x [D] x [E] / (2,000 lb/ton)
[6] Individual HAP SMAL as reported in Appendix B

The PTE calculation methods used in this attachment are to be used for volatile HAPs only, not solid HAPs. If any value in [F] exceeds its respective value in [G], you shall contact the Air Pollution Control Program to determine if a new permit is required for the new material.

APPENDIX A

Abbreviations and Acronyms

% ..... percent
ºF ..... degrees Fahrenheit
acfm ..... actual cubic feet per minute
BACT ..... Best Available Control Technology
BMPs ..... Best Management Practices
Btu..... British thermal unit
CAM ..... Compliance Assurance Monitoring
CAS..... Chemical Abstracts Service
CEMS ..... Continuous Emission Monitor System
CFR ..... Code of Federal Regulations
CO ..... carbon monoxide
CO_2..... carbon dioxide
CO_2e..... carbon dioxide equivalent
COMS..... Continuous Opacity Monitoring System
CSR..... Code of State Regulations
dscf ..... dry standard cubic feet
EIQ ..... Emission Inventory Questionnaire
EP..... Emission Point
EPA ..... Environmental Protection Agency
EU..... Emission Unit
fps ..... feet per second
ft ..... feet
GACT ..... Generally Available Control Technology
GHG ..... Greenhouse Gas
gpm..... gallons per minute
gr..... grains
GWP..... Global Warming Potential
HAP..... Hazardous Air Pollutant
hr..... hour
hp ..... horsepower
lb ..... pound
lbs/hr..... pounds per hour
MACT ..... Maximum Achievable Control Technology
$\mu g/m^3$..... micrograms per cubic meter
m/s ..... meters per second
Mgal ..... 1,000 gallons
MW ..... megawatt
MHDR..... maximum hourly design rate
MMBtu.... Million British thermal units
MMCF..... million cubic feet
MSDS ..... Material Safety Data Sheet
NAAQS... National Ambient Air Quality Standards
NESHAPs National Emissions Standards for Hazardous Air Pollutants
NO_x..... nitrogen oxides
NSPS..... New Source Performance Standards
NSR..... New Source Review
PM ..... particulate matter
$PM_{2.5}$..... particulate matter less than 2.5 microns in aerodynamic diameter
PM_{10}..... particulate matter less than 10 microns in aerodynamic diameter
ppm..... parts per million
PSD ..... Prevention of Significant Deterioration
PTE..... potential to emit
RACT..... Reasonable Available Control Technology
RAL ..... Risk Assessment Level
SCC..... Source Classification Code
scfm ..... standard cubic feet per minute
SDS ..... Safety Data Sheet
SIC..... Standard Industrial Classification
SIP..... State Implementation Plan
SMAL ..... Screening Model Action Levels
SO_x..... sulfur oxides
SO_2..... sulfur dioxide
tph..... tons per hour
tpy ..... tons per year
VMT..... vehicle miles traveled
VOC..... Volatile Organic Compound

Mr. Travis Tyler
Accu-Therm Superintendent
Paul Mueller Company
P.O. Box 828
Springfield, MO 65801

RE: New Source Review Permit - Project Number: 2015-10-068

Dear Mr. Tyler:

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 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 amended 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. If you have questions regarding this permit, contact Ryan Schott, Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or at (573) 751-4817.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Susan Heckenkamp
New Source Review Unit Chief

SH:rsl

Enclosures

c: Southwest Regional Office
PAMS File: 2015-10-068
Permit Number: