

STATE OF MISSOURI



PERMIT BOOK

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: 122015 - 008

Project Number: 2015-10-023
Installation Number: 510-2842

Parent Company: N/A

Parent Company Address: N/A, N/A

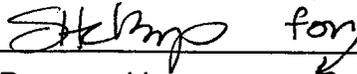
Installation Name: Chemline Incorporated

Installation Address: 5151 Natural Bridge Road, St. Louis, MO 63115

Location Information: St. Louis City, Land Grant

Application for Authority to Construct was made for:
Additional equipment to expand the facility in order to spread out production and improve process flow in the facility. 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
Randy Raymond
New Source Review Unit


Director or Designee
Department of Natural Resources

DEC 15 2015

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.

Permit No.

Project No. 2015-10-023

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."

Chemline Incorporated
St. Louis City, Land Grant

1. Superseding Condition

The conditions of this permit supersede all the special conditions found in the previously issued construction permit 082015-003A issued by the Air Pollution Control Program. Even though the special conditions are being superseded, Chemline Inc. is still required to operate according to the previous applications that resulted in previous construction permits.

2. Operational Requirement

Chemline Incorporated shall keep all chemicals in sealed containers whenever the materials are not in use. Chemline Incorporated shall provide and maintain suitable, easily read, permanent markings on all chemical containers used with this equipment.

3. Emissions Limits

A. Chemline, Inc. shall emit less than 40.0 tons of volatile organic compounds (VOCs) in any consecutive 12-month period from the entire installation. The equipment at the installation is listed in Table 1 of the "Review for Application for Authority to Construct and Operate" section of this permit.

B. Chemline, Inc. shall emit less than 25.0 tons combined hazardous air pollutants (HAPs) and 10.0 tons of individual HAP in any consecutive 12-month period from the entire installation. If an individual HAP has a Screening Model Action Level (SMAL) less than 10.0 tons per year, individual HAP emissions at the installation shall be limited to less than the SMAL. A current listing of the SMAL values can be found in Appendix A or online at <http://dnr.mo.gov/env/apcp/docs/cp-hapraltbl6.pdf>.

C. Attachments A, B and C, or equivalent forms (Attachment D is approved as an equivalent form), such as electronic forms, approved by the Air Pollution Control Program shall be used to demonstrate compliance with Special Conditions 3.A. and 3.B.

SPECIAL CONDITIONS:

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

4. Control Device Requirement for the Spray Guns and Steel Shot Blasting Gun
 - A. Chemline, Inc. shall control particulate emissions from the coatings spray gun (SB) using a booth equipped with filters as specified in the permit application.
 - B. Chemline, Inc. shall control particulate emissions from the steel shot blasting gun (BC1) using a cabinet equipped with a filter as specified in the permit application.
 - C. The coatings booths, the blasting cabinet and the filters shall be operated and maintained in accordance with the manufacturer's specifications.
 - D. 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).
 - E. Chemline, Inc. shall maintain an operating and maintenance log for the filters which shall include the following:
 - 1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions.
 - 2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
5. Control Device Requirement – Dust Collectors
 - A. Chemline, Inc. shall control emissions from the following equipment using dust collectors as specified in the permit application.
 - 1) 60 Horsepower (hp) Mixer (M6)
 - 2) Sweep Blade Mixer (M7)
 - 3) 100 hp Mixer (M12)
 - 4) 150 hp B mixer (M15)
 - 5) 5 hp mixer 1000 gallon foam blending tank (M16)
 - B. The dust collectors shall be operated and maintained in accordance with the manufacturer's specifications. The dust collectors shall be equipped with a gauge or meter, which indicates the pressure drop across the control device. These gauges or meters shall be located such that the Department of Natural Resources' employees may easily observe them.
 - C. Replacement filters for the dust collectors shall be kept on hand at all times. The bags shall be made of fibers appropriate for operating conditions expected to occur (i.e. temperature limits, acidic and alkali resistance, and abrasion resistance).
 - D. Chemline, Inc. shall monitor and record the operating pressure drop across the dust collector at least once per week of operations. The

SPECIAL CONDITIONS:

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

operating pressure drop shall be maintained within the design conditions specified by the manufacturer's performance warranty.

- E. Chemline, Inc. shall maintain an operating and maintenance log for the dust collector 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.

- 6. **Use of Alternative Chemicals**
When using an alternative HAP-containing material that is different than a material listed in the Application for Authority to Construct, Chemline, Inc. shall keep records of all new materials used and include the VOC and HAP emissions from these materials in the limitations (i.e. 100 tpy VOC limit, 25.0/10.0/SMAL tpy HAP limit) and associated record keeping in Special Conditions 2.A., 2.B., and 2.C.

- 7. **Operational Restrictions**
The spray booth (SB) and the blasting cabinet (BC1) shall only be used for research and quality control.

- 8. **Record Keeping Requirements**
Chemline Incorporated shall maintain all records required by this permit for not less than five years and shall make them available to any Missouri Department of Natural Resources' personnel upon request. These records shall include Material Safety Data Sheets (MSDS) for all materials used.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (5) REVIEW

Project Number: 2015-10-023

Installation ID Number: 510-2842

Permit Number:

Installation Address:
Chemline Incorporated
5151 Natural Bridge Road
St. Louis, MO 63115

Parent Company:
N/A
N/A
N/A

St. Louis City, Land Grant

REVIEW SUMMARY

- Chemline Incorporated has applied to permit an existing polyurethane coatings research and manufacturing facility.
- Hazardous Air Pollutant (HAP) emissions are expected from the proposed equipment. HAPs of concern from this process are 4,4-methylenediphenyl diisocyanate (MDI) [The MDI Monomer is never present in quantities above the SMAL (see Appendix B for MDI estimate)], toluene diisocyanate (TDI), chromium III, and xylene.
- None of the New Source Performance Standards (NSPS) apply to the installation.
- Subpart CCCCCC, *National Emission Standards for Hazardous Air Pollutants for Area Sources: Paint and Allied Products Manufacturing*, of the Maximum Achievable Control Technology (MACT) regulations applies to the installation.
- Subpart HHHHH, *National Emission Standards for Hazardous Air Pollutants: Miscellaneous Coating Manufacturing*, of the MACT regulations does not apply to this installation because it is not major for HAPs.
- Subpart III, *National Emission Standards for Hazardous Air Pollutants for Flexible Polyurethane Foam Production*, and Subpart MMMMM, *National Emission Standards for Hazardous Air Pollutants: Flexible Polyurethane Foam Fabrication Operations*, of the MACT regulations do not apply to this installation because this installation does not produce or fabricate flexible polyurethane foam.
- Subpart HHHHHH, *National Emissions Standards for Hazardous Air Pollutants: Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources*, of the MACT regulations does not apply to this installation because the spray application of coatings performed at this facility is only for research and quality control, which are specifically exempted from this subpart.

- Subpart OOOOOO, *National Emission Standards for Hazardous Air Pollutants for Flexible Polyurethane Foam Production and Fabrication Area Sources*, of the MACT regulations does not apply to this installation because it does not produce or fabricate flexible polyurethane foam.
- None of the National Emission Standards for Hazardous Air Pollutants (NESHAPs) apply to this installation.
- A spray booth with fabric filters is being used to control particulate emissions from the spray gun. A cabinet with fabric filters is being used to control particulate emissions from the shot blasting gun. Dust collectors are used to control particulate emissions from the 60 horsepower (hp) mixer (M6), the sweep blade mixer (M7), the 100 hp mixer (M12) and 150 hp B mixer (M15).
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Conditioned potential emissions of all pollutants are below their respective *de minimis* level.
- This installation is located in St. Louis City, a nonattainment area for particulate matter less than two-and-a-half microns in diameter (PM_{2.5}) and ozone and an attainment area for all other criteria pollutants. This installation is also on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2, Category 20, *Chemical Process Plants*. Therefore, the installation's major source level is 100 tons per year and fugitive emissions are counted toward major source applicability.
- Ambient air quality modeling was not performed for this review since all pollutants are below their respective *de minimis* or SMAL levels.
- Emissions testing is not required for the equipment.
- The installation is not required to obtain an operating permit for this installation. All pollutants are below *de minimis* levels.
- The installation will need to file an annual emission report for 10 CSR 10-6.110, but may avail itself to any reduced reporting for which it may qualify.
- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Chemline, Inc. is a research and manufacturing facility for two (2) part polyurethane and polyurea coatings. The installation purchases raw material of MDI, polyols and other ingredients as specified by the customers, blends the material and packages them for shipping. The MDI Monomer is never present in quantities above the SMAL (see Appendix B for MDI estimate). All products are sold as two (2) part coatings. The facility produces four main lines of products: piping/tank coatings, hard coatings, roof

coatings and flooring products. The maximum production rate of the plant is 18,000 gallons per day.

The original equipment listed in permit 042013-009A was installed in either 2004 or 2010 as stated in the original 2014 permit. The SDS for the material in the tanks does not indicate the presence of VOCs or HAPS. The bulk tanks are: R12-732, R12-143, R12- 094 and R12-066.

All vessels remain closed unless adding raw materials. They are not vented to the atmosphere or production area.

Material from the bulk tanks will be dispensed directly into the reactors through a system of pipes. The addition of raw materials will also be done through a single piping system, directly into the reactor vessels. This system minimizes fugitive vapors. The blending tanks are not vented to the atmosphere. The only emissions are from the addition of raw materials. The dry material and filters will be collected for proper disposal.

Chemline switched to Dimethyl Carbonate as a cleaning solvent. The SDS indicates this material has no VOCs. Dimethyl Carbonate does not meet the definition of VOC - it is exempt per 10 CSR 10-6.020 definitions section (V) 13.A. Dimethyl Carbonate is not considered a VOC because of its known lack of participation in the atmospheric reactions to produce ozone. Therefore, Chemline's reported levels of VOCs are expected to be even lower than any point in the past.

Chemline is using this construction permit to insure that its facility remains below the de minimis levels (DemPAL permit type in the annual emissions reporting system). The purpose of this permit is to insure that the air equipment list for the installation is complete. The complete list of equipment will be subject to the previously established limits and requirements. All of the air regulated equipment at the site are included in this permit and are listed below.

Table 1 Equipment List

Emission Unit Numbers	Description
BC1	Blast Cabinet with Dust Collector (DC1)
M1	30 hp mixer (Small batch)
M2	30 hp mixer (Small batch)
M3	15 hp Tilt Back (Small batch)
M4	2 hp mixer (Pails)
M5	5 hp mixer (Pails)
M6	60 hp mixer (20 drum tubs)
M7	Sweep Blade Mixer (Sprayroq)

Emission Unit Numbers	Description
M8	75 hp mixer (16 drum tubs)
M10	7.5 hp mixer (Small batch)
M11	5 hp lab mixer (Small batch)
M12	100 hp mixer (Square Tank)
M13	T-1, 10 hp mixer (foam tank)
M14	T-2, 10 hp mixer (mix tank)
M15	150 hp B mixer
M16	5 hp mixer 1000 gallon foam blending tank
PA	4.5 hp thixotropic mixer/press ⁺
PB	5 hp thixotropic mixer/press
R1	10 hp mixer (40 drum A tank)
R2	5 hp mixer (20 drum A tank)
R3	500 gallon reactor vessel, 5 hp (Gatorhyde)
R4	10 hp mixer (40 drum A tank)
R5	10 hp mixer (40 drum A tank)
R6	5 hp mixer (20 drum A tank)
R7	110 gallon reactor vessel
R8	550 gallon reactor vessel
SS	40 hp sand mill
SN	30 hp sand mill
SB	Coatings Spray Booth

Legend:

	<i>Proposed new equipment</i>
	<i>Disposed</i>

The following New Source Review permits have been issued to Chemline Incorporated from the Air Pollution Control Program.

¹ Disposed June 2014.

Table 2 Project History

PAMS_ID	Permit Number	Start Date	End Date	Description
AP201109050	042013-009	September 3, 2009	April 22, 2013	existing polyurethane coatings research and manufacturing facility
AP201311026	042013-009A	November 15, 2013	December 22, 2014	amendment to the construction permit 042013-009
AP201505002	082015-003	May 1, 2015	August 10, 2015	Two 2,000 gallon reactors (R5, R6), one 1,000 gallon reactor (R7), to the new building known as mixing room EU-004 and two mixers (M15, M16) to existing mixing room EU-001.
AP201509051	082015-003A	September 23, 2015	September 30, 2015	amendment to the construction permit 082015-003

PROJECT DESCRIPTION

Chemline Inc. is expanding its facility with two (2) additional pieces of equipment. There will be no changes to the original permit conditions nor will Chemline exceed the allowed emissions in permit 082015-003A being superseded.

Chemline is expanding its facility in order to spread out production and improve process flow in the facility. Chemline has not changed its process of manufacturing two (2) part polyurethane and polyurea coatings. Even doubling emissions, Chemline's actual emissions would be well below what is allowed, the *deminimis* levels. The maximum production rate of the plant is now at 11,000 gallons per day and may increase to 18,000 gallons per day once full operation is achieved under the new expansion.

The original equipment listed in permit 082015-003A was installed in either 2004 or 2010 as stated in the permit application (refer to Table 1 Equipment List). Some of the original items will be relocated and then new bulk tanks and new mixers will be brought into the facility, which will be referred to as EU-004. The bulk tanks containing modified MDI will be relocated to the new A-Side E0004 are as follows:

- RI2-732
- RI2-143
- RI2-094
- RI2-066

The SDS for the material in the tanks indicates they are not VOCs or HAPs.

The reactor vessels moving to the A-Side are as follows:

- R1
- R2
- R3

- R4 - This vessel was idle and was only brought into production briefly and is being taken out of production again and is being removed. In its place Chemline is bringing in a 40 drum tank with a 10 h.p. mixer.
- R7(new) - 110 gallon reactor for MDI
- R8(new) - 550 gallon reactor for MDI

The vessels remain closed unless adding raw materials. They are not vented to the atmosphere or production area. They are also covered under the previous permit.

Chemline is bringing in an additional 2,000 gallon reactor (R5), 1,000 gallon reactor (R6) and 2,000 gallon B-Side blending tank for the current building referred to as EU-001.

All of the new reactors will operate in a self-contained manner. Material from the bulk tanks will be dispersed directly into the reactors through a system of pipes. The addition of raw materials will also be done through a single piping system directly into the reactor vessel, minimizing any fugitive vapors. The blending tanks are not vented to the atmosphere and the only emissions are from the addition of raw materials. No dust will be emitted to the atmosphere. The work area containing the new reactors (EU-004) is serviced by a high efficiency dust collector cartridge fabric filter.

EMISSIONS/CONTROLS EVALUATION

For this particular project, even with a very conservative emission estimate, Chemline Inc. will double their actual VOC emissions (to approximately 16 tpy), which is well below the permit limitations.

VOC and HAP emissions are expected from the chemical mixing process and the coatings spray booth. Particulate emissions, which include particulate matter less than two-and-a-half microns in diameter ($PM_{2.5}$), particulate matter less than ten microns in diameter (PM_{10}) and particulate matter (PM), are not expected from this project. Particulate matter emissions come from powder mixing, the coatings spray booth, and the shot blasting cabinet.

The facility produces many formulations and it is difficult to determine accurately the potential VOC and HAP emissions. Various methods of calculating the potential to emit have yielded results less than the *de minimis* thresholds, but with significant margin for error. Instead, to ensure that the facility is a small source, Chemline Inc. is limited in this permit to less than 40.0 tons of VOC, less than 25.0 tons combined HAPs, and less than 10 tons of individual HAP in any consecutive 12-month period. The only HAP on their list with a SMAL less than 10 tons per year is MDI Monomer; which due to the nature of the monomer and its use is never present in quantities above the SMAL (see Appendix B, MDI Estimator). MDI is not required to be reported on unless the MDI Estimator parameters used for calculation change. In that case a new MDI estimate should be made and reported to the permitting authority.

In those instances where a new, different HAP is introduced, the individual HAP shall be limited to less than the SMAL. A current listing of the SMAL values can be found in Appendix A or online at <http://dnr.mo.gov/env/apcp/docs/cp-hapraltbl6.pdf>.

Research performed by the EPA indicates that due to its low vapor pressure, emissions of MDI are expected to be minimal. The MDI emissions were calculated using the MDI Emissions Estimator software from the American Chemistry Council Center for the Polyurethanes Industry, which uses equations from the document "MDI/Polymeric MDI Emissions Reporting Guidelines for the Polyurethane Industry."

Particulate emissions from the spray gun and the shot blasting gun are controlled by booth/cabinet with fabric filters. These sources are not new, or a part of this current project. PM emissions from the spray booth were calculated through mass balances assuming a transfer efficiency of 50%, a device capture efficiency of 70% and a filter efficiency of 90%. The transfer efficiency is taken from Table 5-7, *Transfer Efficiencies For Different Spraying Methods and Surface Types*, in the Air Pollution Training Institute (APTI) course 482 manual. A device capture efficiency of 70% was used based on engineering judgment taking into account the design of the paint booth. The booth is a three-sided enclosure with emissions being drawn through a filter bank on the back side. The filter efficiency of 95% is a conservative value used by the Air Pollution Control Program for paint booth filters. For the blasting cabinet, PM emissions were calculated using a controlled emission factor in EPA document AP-42, *Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources*, Fifth Edition, Chapter 13.2.6, *Abrasive Blasting* (10/97). PM emissions were converted to PM_{2.5} and PM₁₀ by using particle size distribution determined by the California Emissions Inventory and Reporting System (CEIDARS). The emission factor for the blasting cabinet already takes into account the control device so no additional control efficiency was used.

The spray booth and the blasting cabinet are only used sparingly for research and quality control. They do not participate in the manufacturing process. It is estimated that the spray booth is used daily or every other day but only for a few minutes at a time. The potential amount of coatings used by the spray booth (6,833 pounds per year) was calculated by using historical usage and scaling it up to 8760 hours. The blast cabinet prepares panels for coating in the spray booth and is used roughly once every two weeks for a maximum of 20 minutes each time for a total of 520 minutes of operation. It takes approximately one minute to coat each panel and one pound of steel shot per panel. The maximum usage for the steel shot is then 520 pounds per year for 2600 hours of plant operations. This was scaled up to a maximum usage of 1752 pounds per year for 8,760 hours of operations.

PM and PM₁₀ emissions from powder mixing were calculated using emission factors from the EPA Factor Information Retrieval (FIRE) software for pigment handling (SCC 30101402). There are no particle size distributions available so all of the PM₁₀ were considered PM_{2.5}. Each blending vessel has a small opening on top with a hinged lid. Once the material is added, the lid is closed and the mixing occurs under total enclosure. A dust collector is used to control particulate emissions from the blending vessels. It is expected that some particulate emissions will not be captured during

material addition. A conservative capture efficiency of 70% was used in the calculations. A default efficiency of 99% was used for the dust collector. Emissions from blending were calculated using the actual usage rate in 2011, scaled up to 8,760 hours per year, so a 20% safety factor was added onto the calculations.

The following table provides an emissions summary for this project. Existing potential emissions were taken from previously issued construction permit 082015-003A. Existing actual emissions were taken from the installation's 2014 EIQ (MoEIS).

Table 3 Emissions Summary (tons per year)

*Pollutant	Regulatory De Minimis Levels/SMAL	Existing Potential Emissions	Existing Actual Emissions (2014 MoEIS)	Potential Emissions of the Application	New Installation Conditioned Potential
PM _{2.5}	10.0	5.98	0.24	N/A	5.99
PM ₁₀	15.0	6.52	0.26	N/A	6.53
PM	25.0	7.67	N/D	N/A	7.68
SO _x	40.0	N/D	N/A	N/A	N/A
NO _x	40.0	N/D	N/A	N/A	N/A
VOC	40.0	<40.0	7.92	17.3	<40.0
CO	100.0	N/D	N/A	N/A	N/A
HAPs	10.0/25.0	<SMAL/10.0/ 25.0	1.06	17.3	<SMAL/10.0/ 25.0

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 regulated air pollutants are conditioned below the *de minimis* threshold levels.

APPLICABLE REQUIREMENTS

Chemline Incorporated 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.

GENERAL REQUIREMENTS

- *Submission of Emission Data, Emission Fees and Process Information*, 10 CSR 10-6.110

- *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

- *Restriction of Emission of Particulate Matter From Industrial Processes*, 10 CSR 10-6.400
- *Maximum Achievable Control Technology (MACT) Regulations*, 10 CSR 10-6.075, *National Emission Standards for Hazardous Air Pollutants for Area Sources: Paint and Allied Products Manufacturing*, 40 CFR Part 63, Subpart CCCCCC

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*, I recommend 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 1, 2015, received October 14, 2015, designating Chemline Incorporated as the owner and operator of the installation.

Attachment D – Sample of On-Site Record Keeping

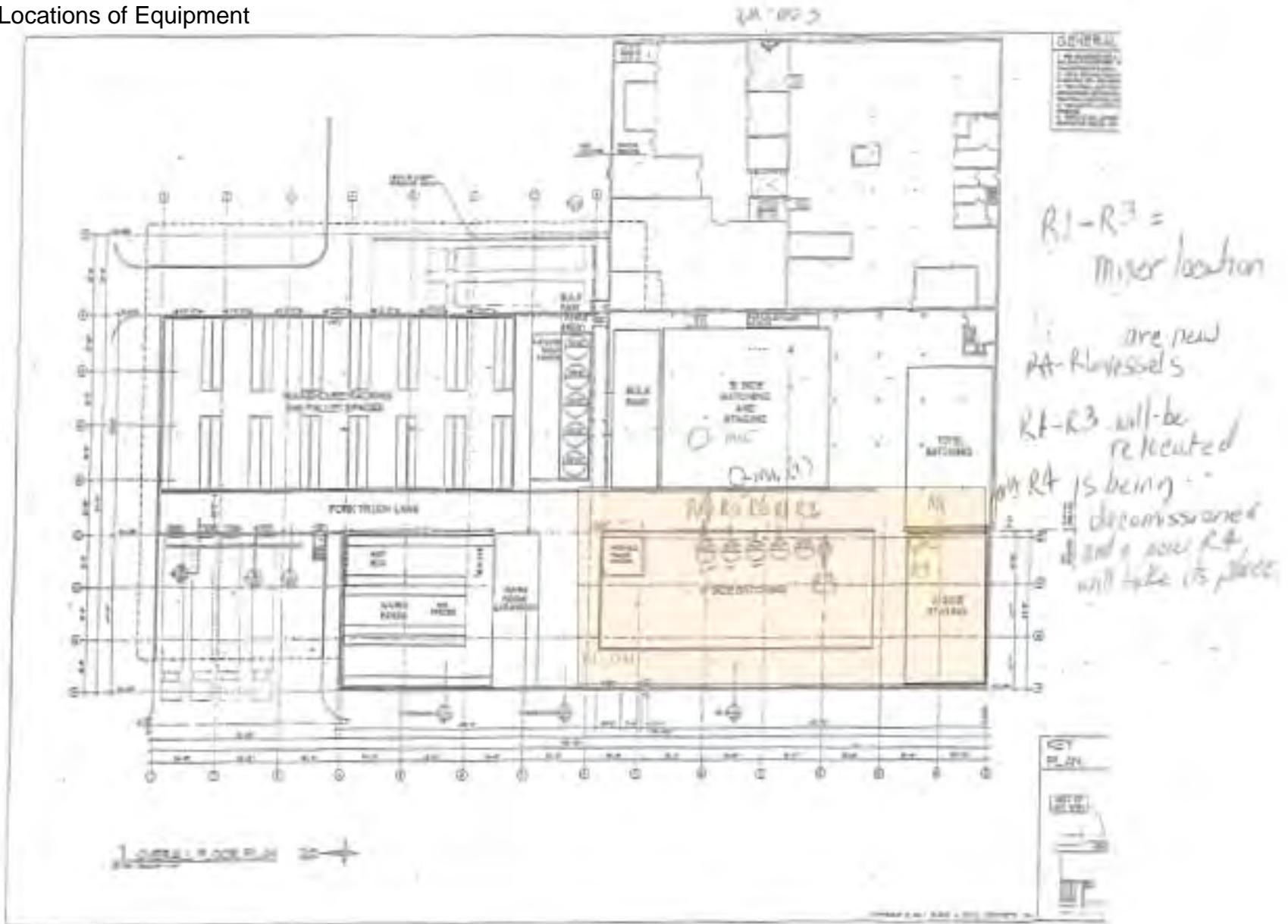
MSDS ID	Mfg Name	Material Name	CAS	Chemical	min %	Max %	HAP's	density	SG	% VOC	% HAP	Mar-15		Apr-15		Previous Month Component Used lbs	Previous Month Product Used lbs	Previous Month VOC Emissions lb	Previous Month Component VOC Emissions in Tons	Previous Month Component HAP Used lbs	Previous Month HAP Emissions in Tons	Annual Component Used lbs	Annual Product Used lbs	VOC Emissions lbyr	VOC Emissions TPY	Annual HAP Used lbs	HAP Emissions TPY
												1	2	1	2												
AA1-066	BYK-CHEMIE USA, INC.	BYK-066 N	108838	DIISOBUTYL KETONE		70		6.76	0.81	70		1.1	1.1	0.8	1.1	0.0	0.0000				5.6	8.0	0.2	0.0001			
AA1-066	BYK-CHEMIE USA, INC.	BYK-066 N	111762	2-BUTOXYETHANOL		0.2		6.76	0.81	0.2		1.1	1.1	0.0	1.1	0.0	0.0000				0.0	8.0	0.0	0.0000			
AA1-066	BYK-CHEMIE USA, INC.	BYK-066 N	19549805	2-HEPTANONE, 4,6-DIMETHYL-		29		6.76	0.81	29		1.1	1.1	0.3	1.1	0.0	0.0000				2.3	8.0	0.1	0.0000			
AA1-077	BYK-CHEMIE USA, INC.	BYK-077		PROPRIETARY ALKENE MIXTURE		1		7.42	0.89	1		213.8	6.3	0.1	6.3	0.0	0.0000				8.9	889.8	0.3	0.0002			
AA1-077	BYK-CHEMIE USA, INC.	BYK-077	95636	1,2,4-TRIMETHYLBENZENE		17		7.42	0.89	17		213.8	6.3	1.1	6.3	0.0	0.0000				151.3	889.8	5.1	0.0026			
AA1-077	BYK-CHEMIE USA, INC.	BYK-077	64742956	AROMATIC 100		48		7.42	0.89	48		213.8	6.3	3.0	6.3	0.1	0.0001				427.1	889.8	14.5	0.0073			
AA1-306	BYK-CHEMIE USA, INC.	BYK-306	100414	ETHYL BENZENE		14 III		7.76	0.93	14	14	0.0		0.0	0.0	0.0	0.0000	0.0	0.0000		0.0	0.1	0.0	0.0000	0.0	0.0000	
AA1-306	BYK-CHEMIE USA, INC.	BYK-306	104687	2-(2-PHENOXYETHOXY)ETHANOL		2		7.76	0.93	2		0.0		0.0	0.0	0.0	0.0000				0.0	0.1	0.0	0.0000			
AA1-306	BYK-CHEMIE USA, INC.	BYK-306	122996	ETHYLENE GLYCOL PHENYL ETHER		18 III		7.76	0.93	18	18	0.0		0.0	0.0	0.0	0.0000	0.0	0.0000		0.0	0.1	0.0	0.0000	0.0	0.0000	
AA1-306	BYK-CHEMIE USA, INC.	BYK-306	1330207	XYLENE		54 III		7.76	0.93	54	54	0.0		0.0	0.0	0.0	0.0000	0.0	0.0000		0.0	0.1	0.0	0.0000	0.0	0.0000	
AA1-354	BYK-CHEMIE USA, INC.	BYK-354	64742956	AROMATIC 100		60		7.76	0.93	60		0.1		0.0	0.0	0.0	0.0000				0.1	0.1	0.0	0.0000			
AA1-354	BYK-CHEMIE USA, INC.	BYK-354	95636	1,2,4-TRIMETHYLBENZENE		15		7.76	0.93	15		0.1		0.0	0.0	0.0	0.0000				0.0	0.1	0.0	0.0000			
AA1-354	BYK-CHEMIE USA, INC.	BYK-354	19549805	2-HEPTANONE, 4,6-DIMETHYL-		5		7.76	0.93	5		0.1		0.0	0.0	0.0	0.0000				0.0	0.1	0.0	0.0000			
AA1-354	BYK-CHEMIE USA, INC.	BYK-354	108838	DIISOBUTYL KETONE		5		7.76	0.93	5		0.1		0.0	0.0	0.0	0.0000				0.0	0.1	0.0	0.0000			
AA1-500	BYK USA, INC.	BYK-A 500 DEFOAMER	95636	1,2,4-TRIMETHYLBENZENE		30		7.34	0.88	30		14.0		0.0	0.0	0.0	0.0000				25.9	86.3	0.9	0.0004			
AA1-500	BYK USA, INC.	BYK-A 500 DEFOAMER	108656	1-METHOXY-2-ACETOXYPROPANE		5	10	7.34	0.88	10		14.0		0.0	0.0	0.0	0.0000				8.6	86.3	0.3	0.0001			
AA1-500	BYK USA, INC.	BYK-A 500 DEFOAMER	64742956	AROMATIC 100		60	100	7.34	0.88	100		14.0		0.0	0.0	0.0	0.0000				86.3	86.3	2.9	0.0015			

Appendix A: Table of HAPs and SMAL (continues for two pages)

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
AMINOBIHENYL, [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	DIMETHYLAMINOAZOBENZENE, [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-]	110-90-5	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	D[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	DICHLOROBENZIDENE, [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

Appendix B: Excerpts from Application
[continues for six (6) pages]

Floor Locations of Equipment



**Appendix B: Excerpts from Application
[continues for six (6) pages]**

Form 2-B Emission Point Information (Duplicate this form as needed) Emission Information for Air Construction Permit Application

Name of Facility: Chemical Incorporated		EPA ID Number (if any): 512		County (if any): 0942		
POINT IDENTIFICATION						
Point ID (if any): EU-004		Point Name (if any): Acids mixing				
Municipality (if any): 30101401		State (if any):	County (if any):	Year (if any):		
STACK/VENT PARAMETERS						
Stack/Vent ID (if any):		Height (ft) (if any):		Diameter (ft) (if any):		
Elevation (ft) (if any):		Emission Rate (if any):		Control Device (if any):		
OPERATING RATE SCHEDULE						
Operating Rate Schedule ID (if any): 4741002		Units (if any): POUNDS	Emission Rate (if any): 1139		Units (if any): POUNDS/HR	
Frequency (if any): 10		Duration (if any): 5		Season (if any): N3		
AIR POLLUTION CONTROLS						
Device No. (if any)	Control Device Description (if any)	Control Device Destruction/Removal Efficiency % (if any)				
		PM ₁₀	SO ₂	NO _x	VOC	CO
Device No.	Description of Collection/Separation System (if any)					
CALCULATION SECTION (if any)						
POLLUTANT	EMISSION FACTOR	REMISSION FACTOR DATE	CONTROL CONTROL EFFICIENCY	EMISSION RATE (LBS/HR)	POTENTIAL EMISSIONS (Tons/yr)	

Appendix B: Excerpts from Application [continues for six (6)pages]



Center for the
Polyurethanes Industry

MDI / PMDI Calculator

Introduction

The MDI/PMDI calculator provides a fast and convenient method to estimate MDI emissions from typical process activities. The calculator has built-in calculation formulas to estimate emissions for the activities listed below.

For more detail on the calculations in each sheet, click on the "Show/Hide Calculation Details." For even more detail and discussion of the equations used, see "MDI/Polymeric MDI Emissions Reporting Guidelines For the Polyurethane Industry" available from www.americanchemistry.com.

You must enable macros in order to use this workbook. This calculation tool requires the use of macros (executable code embedded within a workbook). Please make sure to use the following security settings to allow the macros to function properly:

- Microsoft Excel 2003: Set the security setting to **Medium** or **Low**.
- Microsoft Excel 2007/2010: Select either **Enable all macros** or **Disable all macros with notification** and allow macros when prompted.

R7 Reactor Vessel

M7 Filling-Blending Operation

Filling and Blending Operation

Calculation of emissions from filling/blending operations

How many sets of data do you have? 1 Select

Clear Value

Term	Quantity	Unit
% MDI in MDI/PMDI	100	percent
C_{bind}	100	percent
Volume of Container	110.0	gal
Number of Containers	1	1/yr
T_{in}	220.0	F
L_{in}	2.49E-04	lb/yr
L_{in}	2.49E-04	lb/yr

**Appendix B: Excerpts from Application
[continues for six (6)pages]**

R8 Reactor Vessel

M7 Filling-Blending Operation

Filling and Blending Operation

Calculation of emissions from filling/blending operations

How many sets of data do you have? 1 Select

Clear Value

Term	Quantity	Unit
% MDI in MDI/PMDI	100	percent
C_{blend}	100	percent
Volume of Container	550.0	gal
Number of Containers	1	1/yr
T_{fill}	220.0	F
L_m	1.25E-03	lb/yr
L_m	1.25E-03	lb/yr

APPENDIX C

Abbreviations and Acronyms

%	percent	m/s	meters per second
°F	degrees Fahrenheit	Mgal	1,000 gallons
acfm	actual cubic feet per minute	MW	megawatt
BACT	Best Available Control Technology	MHDR	maximum hourly design rate
BMPs	Best Management Practices	MMBtu	Million British thermal units
Btu	British thermal unit	MMCF	million cubic feet
CAM	Compliance Assurance Monitoring	MSDS	Material Safety Data Sheet
CAS	Chemical Abstracts Service	NAAQS ...	National Ambient Air Quality Standards
CEMS	Continuous Emission Monitor System	NESHAPs	National Emissions Standards for Hazardous Air Pollutants
CFR	Code of Federal Regulations	NO_x	nitrogen oxides
CO	carbon monoxide	NSPS	New Source Performance Standards
CO₂	carbon dioxide	NSR	New Source Review
CO_{2e}	carbon dioxide equivalent	PM	particulate matter
COMS	Continuous Opacity Monitoring System	PM_{2.5}	particulate matter less than 2.5 microns in aerodynamic diameter
CSR	Code of State Regulations	PM₁₀	particulate matter less than 10 microns in aerodynamic diameter
dscf	dry standard cubic feet	ppm	parts per million
EQ	Emission Inventory Questionnaire	PSD	Prevention of Significant Deterioration
EP	Emission Point	PTE	potential to emit
EPA	Environmental Protection Agency	RACT	Reasonable Available Control Technology
EU	Emission Unit	RAL	Risk Assessment Level
fps	feet per second	SCC	Source Classification Code
ft	feet	scfm	standard cubic feet per minute
GACT	Generally Available Control Technology	SDS	Safety Data Sheet
GHG	Greenhouse Gas	SIC	Standard Industrial Classification
gpm	gallons per minute	SIP	State Implementation Plan
gr	grains	SMAL	Screening Model Action Levels
GWP	Global Warming Potential	SO_x	sulfur oxides
HAP	Hazardous Air Pollutant	SO₂	sulfur dioxide
hr	hour	tph	tons per hour
hp	horsepower	tpy	tons per year
lb	pound	VMT	vehicle miles traveled
lbs/hr	pounds per hour	VOC	Volatile Organic Compound
MACT	Maximum Achievable Control Technology		
µg/m³	micrograms per cubic meter		

Mr. Kevin McCullough
VP Operations
Chemline Incorporated
5151 Natural Bridge Road
St. Louis, MO 63115

RE: New Source Review Permit - Project Number: 2015-10-023

Dear Mr. McCullough:

Enclosed with this letter is your permit to construct. Please study it carefully and refer to Appendix C 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 any questions regarding this permit contact Randy Raymond, Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102, (573) 751-4817.

AIR POLLUTION CONTROL PROGRAM

Sincerely,

Susan Heckenkamp
New Source Review Unit Chief

SH:rrl

Enclosures

c: St. Louis Regional Office
PAMS File: 2015-10-023

Permit Number: