DEQ
Montana Department
of Environmental Quality

March 26, 2015

Jeffrey Tomchak
Hexion Inc.
3670 Grant Creek Road
Missoula, MT 59808

Dear Mr. Tomchak:

Montana Air Quality Permit #2836-09 is deemed final as of March 26, 2015, by the Department of Environmental Quality (Department). This permit is for Hexion Inc.'s Missoula formaldehyde and thermoset resin production facility. All conditions of the Department's Decision remain the same. Enclosed is a copy of your permit with the final date indicated.

For the Department,

Julie A. Merkel
Air Permitting Supervisor
Air Quality Bureau
(406) 444-3626

Shawn Juers
Environmental Engineer
Air Quality Bureau
(406) 444-2049

JM:SJ
Enclosure

Montana Department of Environmental Quality
Permitting and Compliance Division

Montana Air Quality Permit #2836-09

Hexion Inc.
3670 Grant Creek Road
Missoula, MT 59808

March 26, 2015

MONTANA AIR QUALITY PERMIT

Issued to: Hexion Inc.
3670 Grant Creek Road
Missoula, MT 59808

MAQP: #2836-09
Administrative Amendment (AA) Request
Received: 3/2/2015
Department Decision on AA Issued: 3/10/2105
Permit Final: 3/26/2015
AFS #063-0021

A Montana Air Quality Permit (MAQP), with conditions, is hereby granted to Hexion Inc. pursuant to Sections 75-2-204 and 211 of the Montana Code Annotated (MCA), as amended, and Administrative Rules of Montana (ARM) 17.8.740, *et seq*., as amended, for the following:

SECTION I: Permitted Facilities

A. Plant Location

Hexion Inc. operates a formaldehyde and thermoset resin production facility located at 3670 Grant Creek Road in Missoula, Montana. The legal description is the West ½ of Section 8, Township 13 North, Range 19 West, in Missoula County. A list of equipment at the facility is contained in Section I of the permit analysis.

B. Current Permit Action

On March 2, 2015, the Montana Department of Environmental Quality – Air Resources Management Bureau (Department) received from Hexion Inc. a letter notifying the Department of a name change for the facility. Momentive Specialty Chemicals Inc. was renamed Hexion Inc. effective January 15, 2015. The current permit action updates the permit replacing instances of the Momentive Specialty Chemicals name to the Hexion Inc. name, except where appropriate to leave the reference in permit history or source testing references.

SECTION II: Conditions and Limitations

A. Emission Limitations

1. Hexion Inc. shall operate and maintain all emission control equipment as specified and documented in the application(s) for MAQP(s) (ARM 17.8.749).

2. The 25,617 gallon, fixed roof formaldehyde storage tank shall be equipped with conservation vent valve (ARM 17.8.752).

3. The combined formaldehyde storage tank throughput shall be limited to 200,000,000 pounds (lbs) per 12-month rolling time period (ARM 17.8.1204(3)).

4. The formaldehyde startup tank throughput shall be limited to 1,000,000 lbs per 12-month rolling time period (ARM 17.8.1204(3)).

5. The methanol storage tank throughput shall be limited to 125,000,000 lbs per 12-month rolling time period (ARM 17.8.1204(3)).

6. The phenol storage tank throughput shall be limited to 30,000,000 lbs per 12-month rolling time period (ARM 17.8.1204(3)).

7. The formaldehyde loading shall be limited to 30,000,000 lbs per 12-month rolling time period (ARM 17.8.1204(3)).

8. The methanol shipments shall be limited to 200,000 lbs per 12-month rolling time period (ARM 17.8.1204(3)).

9. The loading of high methanol 37% formaldehyde solutions shall be limited to 200,000 lbs per 12-month rolling time period (ARM 17.8.1204(3)).

10. The PF resin storage, loading and production shall be limited to 117,000,000 lbs per 12-month rolling time period (ARM 17.8.1204(3)).

11. The PF wash water tanks shall be limited to 29,347,296 lbs per 12-month rolling time period (ARM 17.8.1204(3)).

12. The Urea weigh scale shall be limited to 100,000 ton per 12-month rolling time period (ARM 17.8.1204(3)).

13. The Urea/Formaldehyde (UF) storage and production shall be limited to 398,000,000 lbs per 12-month rolling time period (ARM 17.8.1204(3)).

14. The UF resin loading shall be limited to 278,000,000 lbs per 12-month rolling time period (ARM 17.8.1204(3)).

15. The Urea/Formaldehyde Concentrate (UFC) production shall be limited to 2,000,000 lbs per 12-month rolling time period (ARM 17.8.1204(3)).

16. The UFC storage shall be limited to 10,000,000 lbs per 12-month rolling time period (ARM 17.8.1204(3)).

17. The UFC loading shall be limited to 2,000,000 lbs per 12-month rolling time period (ARM 17.8.1204(3)).

18. Distillate storage shall be limited to 6,700,000 lbs per 12-month rolling time period (ARM 17.8.1204(3)).

19. Resin drying pad throughput shall be limited to 500,000 lbs per 12-month rolling time period (ARM 17.8.1204(3)).

20. Wastewater pit throughput shall be limited to 20,134,115 lbs per 12-month rolling time period (ARM 17.8.1204(3)).

21. The natural gas consumed at the facility shall be limited to 100,000 MMBtu per 12-month rolling time period (ARM 17.8.1204(3)).

22. The methanol storage tank shall be vapor balanced with the rail cars to minimize working loss emissions (ARM 17.8.749).

23. Emissions of formaldehyde from the formaldehyde plant shall be routed to the tail gas boiler for combustion; except for a period of time not to exceed 100 hours per 12-month rolling time period (ARM 17.8.749).

24. Hexion Inc. shall comply with all applicable standards and limitations, and the reporting, recordkeeping, and notification requirements contained in 40 CFR Parts 60, 63 and 65 as described below (ARM 17.8.340, ARM 17.8.749, ARM 17.8.1204(3), 40 CFR Part 60, 40 CFR Part 63, and 40 CFR Part 65):

    a) 40 CFR 60, Subpart A, *General Requirements;*

    b) 40 CFR 60, Subpart VV *Standards of Performance for Equipment Leaks of Volatile Organic Compound (VOC) in Synthetic Organic Chemicals Manufacturing Industry (SOCMI)*;

    c) 40 CFR 60, Subpart NNN, *Standards of Performance for VOC Emissions from SOCMI Distillation Operations*;

    d) 40 CFR 63, Subpart H (only applicable sections §§63.162- §63.180), *National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks* shall apply to all equipment used in formaldehyde and methanol service; and

    e) 40 CFR 65, Subpart D, *Consolidated Federal Air Rule* shall apply to the distillate column.

25. The tail gas boiler on the formaldehyde process shall be maintained to reduce emissions of Total Organic Carbon (TOC) by at least 98 weight-percent or to a concentration of less than 20 parts per million by volume (ppm_v), whichever is less stringent. Because the boiler is a combustion device, the emission reduction or concentration shall be calculated on a dry basis and corrected to 3 percent oxygen (40 CFR 65, Subpart D).

26. Hexion Inc. shall not cause or authorize to be discharged into the outdoor atmosphere from any source installed after November 23, 1968, emissions that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes (ARM 17.8.304).

27. Hexion Inc. shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne particulate matter (ARM 17.8.308).

28. Hexion Inc. shall treat all unpaved portions of the haul roads, access roads, parking lots, or general plant area with water and/or chemical dust suppressant as necessary to maintain compliance with the reasonable precautions limitation in Section II.A.27 (ARM 17.8.749).

29. Hexion Inc. shall limit the UF, UFC, PF and formaldehyde production to ensure that the HAP emissions from the facility do not exceed 10 tons during any rolling 12-month time period for any single HAP, or 25 tons during any rolling 12-month time period for combined HAPs. Any calculations used to establish emissions shall be approved by the Department (ARM 17.8.1204).

B. Testing Requirements

1. All compliance source tests must conform to the requirements of the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106).

2. The Department may require further testing (ARM 17.8.105).

C. Operational Reporting Requirement

1. Hexion Inc. shall supply the Department with annual production information for all emission points, as required by the Department in the annual emission inventory request. The request will include, but is not limited to, all sources of emissions identified in the emission inventory contained in the permit analysis.

   Production information shall be gathered on a calendar-year basis and submitted to the Department by the date required in the emission inventory request. Information shall be in the units required by the Department. This information may be used to calculate operating fees, based on actual emissions from the facility, and/or to verify compliance with permit limitations (ARM 17.8.505). Hexion Inc. shall submit this information annually to the Department by March 1 of each year; the information may be submitted along with the annual emission inventory (ARM 17.8.505).

2. Hexion Inc. shall notify the Department of any construction or improvement project conducted, pursuant to ARM 17.8.745, that would include ***the addition of a new emissions unit***, change in control equipment, stack height, stack diameter, stack flow, stack gas temperature, source location, or fuel specifications, or would result in an increase in source capacity above its permitted operation. The notice must be submitted to the Department, in writing, 10 days prior to startup or use of the proposed de minimis change, or as soon as reasonably practicable in the event of an unanticipated circumstance causing the de minimis change, and must include the information requested in ARM 17.8.745(l)(d) (ARM 17.8.745)

3. Hexion Inc. shall document, by month, the following:

   a. Annual throughput of formaldehyde storage tanks (lbs/yr);
   b. Annual throughput of formaldehyde startup tank (lbs/yr);
   c. Annual throughput of methanol storage tank (lbs/yr);
   d. Annual throughput of phenol storage tank (lbs/yr);
   e. Annual formaldehyde shipments (lbs/yr);
   f. Annual methanol shipments (lbs/yr);
   g. Annual shipments and loading of high methanol 37% formaldehyde solution (lbs/yr);

h. Annual production of PF resin reactor (lbs/yr);
i. Annual storage, production and loading of UF resin (lbs/yr);
j. Annual storage, production and loading of UFC (lbs/yr);
k. Annual distillate storage (lbs/yr);
l. Annual throughput of urea (lbs/yr);
m. Annual throughput of resin drying pad (lbs/yr);
n. Annual natural gas consumption from the facility (MMBtu/yr); and
o. Amount of time tail gas boiler was bypassed (hours).

By the 25th day of each month, Hexion Inc. shall total the loading, storage, throughput and production of materials, as specified, for the previous month. The monthly information will be used to verify compliance with the rolling 12-month limitations. The information for each of the previous months shall be submitted along with the annual emission inventory (ARM 17.8.749).

4. All records compiled in accordance with this permit must be maintained by Hexion Inc. as a permanent business record for at least 5 years following the date of the measurement, must be available at the plant site for inspection by the Department, and must be submitted to the Department upon request (ARM 17.8.749).

5. Hexion Inc. shall annually certify that its actual emissions are less than those that would require the source to obtain an air quality operating permit as required by ARM 17.8.1204(3)(b). The annual certification shall comply with the certification requirements of ARM 17.8.1207. The annual certification shall be submitted along with the annual emission inventory information (ARM 17.8.749 and ARM 17.8.1204).

D. Notification

Hexion Inc. shall provide the Department with written notification of the following within the specified time periods (ARM 17.8.749):

1. Installation/Construction of the new tank within 30 days after construction has begun;

2. Installation/Construction of distillation column pursuant to 40 CFR 60.660(d)(4); and

3. Actual start-up date of the new tank and distillation column 15 days after the actual start-up.

SECTION III: General Conditions

A. Inspection – Hexion Inc. shall allow the Department's representatives access to the source at all reasonable times for the purpose of making inspections or surveys, collecting samples, obtaining data, auditing any monitoring equipment (Continuous Emissions Monitoring System (CEMS), Continuous Emissions Rate Monitoring System (CERMS)) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this permit.

B. Waiver – The permit and the terms, conditions, and matters stated herein shall be deemed accepted if Hexion Inc. fails to appeal as indicated below.

C. Compliance with Statutes and Regulations – Nothing in this permit shall be construed as relieving Hexion Inc. of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided in ARM 17.8.740, *et seq*. (ARM 17.8.756).

D. Enforcement – Violations of limitations, conditions and requirements contained herein may constitute grounds for permit revocation, penalties, or other enforcement action as specified in Section 75-2-401, *et seq*., MCA.

E. Appeals – Any person or persons jointly or severally adversely affected by the Department's decision may request, within 15 days after the Department renders its decision, upon affidavit setting forth the grounds therefore, a hearing before the Board of Environmental Review (Board). A hearing shall be held under the provisions of the Montana Administrative Procedures Act. The filing of a request for a hearing does not stay the Department's decision, unless the Board issues a stay upon receipt of a petition and a finding that a stay is appropriate under Section 75-2-211(11)(b), MCA. The issuance of a stay on a permit by the Board postpones the effective date of the Department's decision until conclusion of the hearing and issuance of a final decision by the Board. If a stay is not issued by the Board, the Department's decision on the application is final 16 days after the Department's decision is made.

F. Permit Inspection – As required by ARM 17.8.755, Inspection of Permit, a copy of the air quality permit shall be made available for inspection by the Department at the location of the source.

G. Permit Fee – Pursuant to Section 75-2-220, MCA, failure to pay the annual operation fee by Hexion Inc. may be grounds for revocation of this permit, as required by that section and rules adopted thereunder by the Board.

H. Duration of Permit – Construction or installation must begin, or contractual obligations entered into that would constitute substantial loss within 3 years of permit issuance, and Hexion Inc. must proceed with due diligence until the project is complete or the permit shall expire (ARM 17.8.762).

Montana Air Quality Permit (MAQP) Analysis
Hexion Inc.
MAQP #2836-09

I. Introduction/Process Description

Hexion Inc. owns and operates a formaldehyde and thermoset resin production facility located at 3670 Grant Creek Road in Missoula, Montana.

A. Permitted Equipment

The equipment associated with this facility includes, but is not limited to:

1. Formaldehyde Plant Tail Gas Boiler – This boiler is a 1970 Nebraska Water Tube boiler that is used to combust the tail gas from the formaldehyde plant.

2. Urea/Formaldehyde (UF) Resin Reactor – This 1970 batch reactor has a capacity of 17,000 gallons and is controlled by a packed column wet scrubber. A mechanical elevating device charges urea into the reactor.

3. Phenol/Formaldehyde (PF) Resin Reactor – This 1976 batch reactor has a capacity of 17,000 gallons and is controlled by a packed column wet scrubber.

4. Methanol Storage Tanks – The methanol storage tanks include a 250,000 gallon storage tank and a 100,000 gallon storage tank. Both tanks are fixed roof tanks and were manufactured in 1970. Vapor balancing with the rail car provides for some emission control.

5. Formaldehyde Storage Tanks – The formaldehyde storage tanks consist of two (2) 100,000 gallon tanks and one(1) 25,617 gallon tank used to store formaldehyde solution. All tanks are fixed roof tanks and emissions from the tanks are controlled by a wet scrubber.

6. Distillate Storage Tanks – There are two (2) 20,000 gallon fixed roof tanks used for the storage of distillate and both were manufactured in 1970.

7. Phenol Storage Tanks – There are two (2) 30,000 gallon fixed roof tanks used to store phenol. Both tanks were manufactured in 1970 and are controlled by a wet scrubber.

8. Phenol Weigh Tank – The phenol weigh tank is a 1971, 4,400 gallon fixed roof scale tank that is used to weigh the phenol prior to charging it to the PF resin reactor. Emissions are controlled by a wet scrubber.

9. Urea Scale – This scale is used to weigh urea and is controlled by a packed column wet scrubber.

10. Formaldehyde Weigh Tank – The formaldehyde weight tank is a 1971 13,500 gallon fixed roof scale tank used to weigh formaldehyde prior to charging it to the PF resin reactor. Emissions are controlled by a wet scrubber.

11. Resin Storage Tanks – The resin storage tanks include 21(21) fixed roof tanks, ranging from 18,000 - 30,000 gallons, and are used to store UF and PF resins. These tanks were manufactured in 1970.

12. Methanol and Formaldehyde Loading – Methanol and formaldehyde solutions are loaded to trucks or rail. Emissions from the formaldehyde loading are controlled by the formaldehyde storage tank wet scrubber.

13. Natural Gas-Fired Boiler – This boiler is a 1974 Cleaver Brooks natural gas-fired boiler rated at 26,500 pounds of steam per hour (lb/hr).

14. PF Washwater Tanks - Three fixed roof vertical tanks ranging from 18,000 - 21,327 gallons

15. Fugitive Emissions – Fugitive emissions consist of miscellaneous sources of process fugitive emissions of methanol, formaldehyde and phenol from pumps, valves and flanges.

B. Source Description

Hexion Inc. operates a formaldehyde and thermoset resin production facility. The Missoula facility began operation in the early 1970s and produces forest product adhesives. Hexion Inc. produces custom made adhesives that are shipped to customers to be used to make plywood, particle board, medium density fiber board, and oriented-strand board.

Hexion Inc. has five main processes that are completed on-site.

Urea-Formaldehyde Resin Process
In this process, the formaldehyde is first charged to the reactor followed by the urea. During this reaction process, a distillate is formed that is used in the formaldehyde process. The final product goes to storage and then loaded out to customers. Wastewater generated from this process is sent to the wastewater pits. When reactors are cleaned (all reactors are controlled by a single scrubber), the off product goes to the resin drying pad and then sent for disposal.

Urea-Formaldehyde Concentrate (UFC) Resin Process
In this process, the formaldehyde is first charged to the reactor, followed by the urea. During this reaction process, non-product materials are re-processed in the reactor. This reaction process also creates a distillate that is used in the formaldehyde process. The final product goes to storage and then loaded out to customers. Wastewater generated from this process is sent to the wastewater pits.

Phenol-Formaldehyde Resin Process
Formaldehyde and Phenol are both weighed and then charged at the reactor. During the reaction process, non-product materials are re-processed in the reactor. The reaction process ultimately creates a distillate. The wastewater generated goes to the wastewater pits and then the Phenol wash water tanks where it is reused in the process. The final product goes to storage and then loaded out to customers. When reactors are cleaned, the off product goes to the resin drying pad and then sent for disposal.

Formaldehyde Process

Liquid methanol is sent through a purifier where methanol vapors are created and sent to the reactors. Methanol vapors react with air to create raw formaldehyde. The raw formaldehyde is cooled and absorbed into the water in the absorber. Atmospheric hydrogen and nitrogen fed into the reactors is not absorbed and are considered by-product gases. These gases are sent to the tail gas boiler where they are burned as fuel. The un-reacted methanol is separated from the formaldehyde production by distillation. The un-reacted methanol goes to the purifier where it is recycled back into the process. The final formaldehyde product is produced in the distillation column and sent to storage. Final product not at specifications is diverted to startup tank (usually 30% methanol solution) until it meets specification. All material in the startup tank is reused in the process.

Emulsified Wax Production

The wax emulsion process involves combining slack, wax, stearic acid, triethanolamine and water into a premix tank. Combined materials are sent through a homogenizer to produce the wax emulsion. The final product goes into one of two emulsified wax storage tanks and loaded out to customers.

C. Permit History

On June 13, 1996, the Department of Environmental Quality (Department) issued **Montana Air Quality Permit (MAQP) #2836-00** to Borden Chemical, Inc. (BCI). The permit established federally enforceable limitations on Borden's Missoula facility to classify the facility as a synthetic minor source with respect to the Title V Operating Permit Program. In addition, the limits allowed BCI to certify the Missoula facility as an area source under the Hazardous Organic NESHAP (HON) rule.

On October 3, 1998, the Department modified Permit **#**2836-00 to include the addition of three (3) 30,000 gallon phenolic resin tanks. In addition, the unit measurement for natural gas (cubic feet) was changed to MMBtu, where the value of 1 MMBtu is equal to 1000 cubic feet of natural gas. **MAQP #2836-01** replaced MAQP #2836-00.

On April 15, 2001, the Department modified MAQP #2836-01 to increase the production of UF/UFC resins by enlarging resin kettle R100. This increase would change the operational limit for UF/UFC resin production from 200 million pounds per year to 300 million pounds per year. Although an operational limit was requested with this permit change, the facility remained classified as a synthetic minor source because the potential emissions remained below major facility threshold levels. Additional changes to the permit included the addition of a cyclone to charge urea into the kettle and a baghouse to control the release of dust. **MAQP #2836-02** replaced MAQP #2836-01.

On October 19, 2001, the Department received a request from BCI to modify MAQP #2836-02 to reflect a change in regulation under 40 CFR 65, Subpart D and its associated requirements instead of 40 CFR 60, Subparts III and RRR in accordance with the Consolidated Federal Air Rules. In addition, BCI requested to eliminate references to "a cyclone to charge urea into the reactor and a baghouse to control the release of dust," as a mechanical elevating device has replaced the need for that equipment in charging urea into the reactor. **MAQP #2836-03** replaced MAQP #2836-02.

On June 27, 2005, the Department received a request from BCI to change its name to Hexion Specialty Chemicals, Inc. (Hexion). **MAQP #2836-04** replaced MAQP #2836-03.

On December 30, 2008, the Department received a permit application from Hexion to expand and modify the existing formaldehyde production unit. The Department requested additional information on January 29, 2009; and the additional information was received on March 2, 2009. This permit modification and expansion project included: an increase in the methanol and formaldehyde storage tank throughputs; modification to production and storage permit limits; replacement of the existing distillation column; replacement of two positive displacement air blowers with a single but larger centrifugal fan; modification of pumps, lines and valves to support additional flows; changed the service of the existing 37% formaldehyde storage tank to a PF wash water tank; installation of a new 25,617 gallon storage tank to replace the 37% formaldehyde storage tank; clarification of production rate limits for UFC and Urea Formaldehyde UF resins; and addition of permit throughput limits for Resin drying pad, Wastewater pits, Distillate storage, PF Wash water tank, Urea Weigh scale, and cooling tower. **MAQP #2836-05** replaced MAQP #2836-04.

On June 24, 2009, August 3, 2009 and August 24, 2009, the Department received information from Hexion requesting that the Department correct emission calculations for formaldehyde and volatile organic compounds (VOC). After MAQP #2836-05 was finalized, Hexion realized that they had submitted incorrect partial pressures with the permit application and requested to amend MAQP #2836-05. Additionally, Hexion requested that the Department add a federally enforceable permit condition requiring Momentive to meet Leak Detection and Repair (LDAR) monitoring requirements pursuant to 40 CFR §§63.162- §63.180 and the recordkeeping requirements of 40 CFR 60, Subpart VV (collectively referred to as a Leak Detection and Repair program or LDAR). Momentive is currently subject to 40 CFR 60, Subpart VV which includes monitoring and recordkeeping requirements. These requests were combined and assigned permit application number **MAQP #2836-06**; however, this permit action was never finalized.

On February 2, 2010, Momentive submitted a permit modification to increase throughput for the wastewater pits and the PF wash water tanks and the permit application was deemed complete on February 17, 2010. This permit action corrected the emissions of formaldehyde, methanol and VOCs, added a federally enforceable permit condition for LDAR monitoring as requested under permit application number MAQP #2836-06, and increased the throughput limits for the wastewater pit and the PF wash water tanks. This permit also updated current permit language and rule references used by the Department. **MAQP #2836-07** replaced MAQP # 2836-05.

MAQP #2836-08 was an administrative amendment which incorporated six (6) de minimis notifications and a facility name change request received by the Department. The notification detailing the name change was received on October 20, 2010, and indicated that Hexion Specialty Chemicals Inc. (Hexion) had changed its name to Momentive Specialty Chemicals, Inc. Identification and description of the de minimis notifications addressed within this administrative action are as follows:

1. Emulsified Wax Production - Raw Material Change (Received 11/16/2010.) Momentive sent a notification for a de minimis change in the raw material used to manufacture emulsified wax. This entire process was previously deemed

insignificant (emits less than 5 tons per year (tpy)). According to Momentive, the new raw material being used in this process contains 13 parts per million (ppm) toluene which is considered a hazardous air pollutant (HAP). Based on annual emulsified wax production of 87,000,000 lbs/yrs, emissions that would result from the use of the new raw material were conservatively estimated at 0.57 tpy.

2. Urea Formaldehyde Resin (UF) Production - Dry Material Auger Installation (Received 04/28/2011). A de minimis notice was received which identified the installation of a dry material auger system and associated dust collector in the UF Resin production process. The dust collector was considered integral to the process and therefore the equipment's control efficiency was factored into the potential emissions calculations.

3. UF Resin Production - Raw Material Introduction (Received 05/17/2011). Momentive submitted a de minimis notification for the addition of a new raw material into one of the recipes for the production of UF Resins. The material known as Fentak contains ethanol and 2-Ethylhexnol, both volatile organic compounds (VOC) that are new the facility. Potential To Emit (PTE) calculations for the addition of the Fentak material results in a VOC emissions of 376.36 pounds per year (lbs/yr).

4. Phenol Formaldehyde Resin (PF) - Updated Resin Storage and Loading Emission Basis (Received 05/19/2011). The Department received correspondence from Momentive that identified discrepancies with emissions estimate data that was submitted in connection to the December 30, 2008 MAQP application for modification. According to Momentive it was determined that the partial pressure for formaldehyde in the phenol formaldehyde (PF) resin was inadvertently omitted in the resin loading emissions calculations. Furthermore, updates to the expressed partial pressure value for methanol were necessary. Updated potential emissions calculations were included within the correspondence correcting the above-mentioned deficiencies. The updated methanol vapor pressure for PF resins increased emissions by 5.89 lbs/yr for methanol and 6.06 lbs/year for VOC's.

5. UF Resin Production - Raw Material Introduction (Received 06/27/2011). Momentive submitted a de minimis notification for the addition of an alternate version of Fentak as a raw material into one of the recipes for the production of UF Resins. VOC constituent with this version of Fentak is limited diethylene glycol.

6. PF Resin - Washwater Storage Tank Replacement (Received July 6, 2011). Momentive proposed a like-kind replacement of the Red Washwater Tank (20,000 gallon) with the tank identified as V103 (21,327 gallons).

   This permit also updated current permit language and rule references used by the Department. In addition the emission inventory was updated as necessary. **MAQP #2836-08** replaced MAQP #2836-07.

D. Current Permit Action

On March 2, 2015, the Montana Department of Environmental Quality – Air Resources Management Bureau (Department) received from Hexion Inc. a letter notifying the Department of a name change for the facility. Momentive Specialty Chemicals Inc. was

renamed Hexion Inc. effective January 15, 2015. The current permit action updates the permit replacing instances of the Momentive Specialty Chemicals name to the Hexion Inc. name. **MAQP #2836-09** replaces MAQP #2836-08.

E. Additional Information

Additional information, such as applicable rules and regulations, Best Available Control Technology (BACT)/Reasonably Available Control Technology (RACT) determinations, air quality impacts, and environmental assessments, is included in the analysis associated with each change to the permit.

II. Applicable Rules and Regulations

The following are partial explanations of some applicable rules and regulations that apply to the facility. The complete rules are stated in the Administrative Rules of Montana (ARM) and are available, upon request, from the Department. Upon request, the Department will provide references for locations of complete copies of all applicable rules and regulations, or copies where appropriate.

A. ARM 17.8, Subchapter 1 - General Provisions, including but not limited to:

1. ARM 17.8.101 Definitions. This rule includes a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.

2. ARM 17.8.105 Testing Requirements. Any person or persons responsible for the emission of any air contaminant into the outdoor atmosphere shall, upon written request of the Department, provide the facilities and necessary equipment (including instruments and sensing devices) and shall conduct tests, emission or ambient, for such periods of time as may be necessary using methods approved by the Department.

3. ARM 17.8.106 Source Testing Protocol. The requirements of this rule apply to any emission source testing conducted by the Department, any source, or other entity as required by any rule in this chapter, or any permit or order issued pursuant to this chapter, or the provisions of the Clean Air Act of Montana, 75-2-101, *et seq.*, Montana Code Annotated (MCA).

   Hexion Inc. shall comply with all requirements contained in the Montana Source Test Protocol and Procedures Manual, including, but not limited to, using the proper test methods and supplying the required reports. A copy of the Montana Source Test Protocol and Procedures Manual is available from the Department upon request.

4. ARM 17.8.110 Malfunctions. (2) The Department must be notified promptly by telephone whenever a malfunction occurs that can be expected to create emissions in excess of any applicable emission limitation or to continue for a period greater than 4 hours.

5. ARM 17.8.111 Circumvention. (1) No person shall cause or permit the installation or use of any device or any means that, without resulting in reduction in the total amount of air contaminant emitted, conceals or dilutes an emission of air

contaminant that would otherwise violate an air pollution control regulation. (2) No equipment that may produce emissions shall be operated or maintained in such a manner as to create a public nuisance.

B. ARM 17.8, Subchapter 2 - Ambient Air Quality, including, but not limited to:

1. ARM 17.8.204 Ambient Air Monitoring
2. ARM 17.8.210 Ambient Air Quality Standards for Sulfur Dioxide
3. ARM 17.8.211 Ambient Air Quality Standards for Nitrogen Dioxide
4. ARM 17.8.212 Ambient Air Quality Standards for Carbon Monoxide (CO)
5. ARM 17.8.213 Ambient Air Quality Standard for Ozone
6. ARM 17.8.220 Ambient Air Quality Standard for Settled Particulate Matter (PM)
7. ARM 17.8.223 Ambient Air Quality Standard for Particulate Matter with an aerodynamic diameter of 10 microns or less (PM_{10})

Hexion Inc. must maintain compliance with the applicable ambient air quality standards.

C. ARM 17.8, Subchapter 3 - Emission Standards, including, but not limited to:

1. ARM 17.8.304 Visible Air Contaminants. This rule requires that no person may cause or authorize emissions to be discharged to an outdoor atmosphere from any source installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes.

2. ARM 17.8.308 Particulate Matter, Airborne. (1) This rule requires an opacity limitation of less than 20% for all fugitive emission sources and reasonable precautions be taken to control emissions of airborne particulate matter. (2) Under this rule, Hexion Inc. shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne particulate matter.

3. ARM 17.8.309 Particulate Matter, Fuel Burning Equipment. This rule requires that no person shall cause or authorize to be discharged into the atmosphere particulate matter caused by the combustion of fuel in excess of the amount determined by this section.

4. ARM 17.8.310 Particulate Matter, Industrial Process. This rule requires that no person shall cause or authorize to be discharged into the atmosphere particulate matter in excess of the amount set forth in this section.

5. ARM 17.8.322 Sulfur Oxide Emissions--Sulfur in Fuel. (4) Commencing July 1, 1972, no person shall burn liquid or solid fuels containing sulfur in excess of 1 pound of sulfur per million Btu fired. (5) Commencing July 1, 1971, no person shall burn any gaseous fuel containing sulfur compounds in excess of 50 grains per 100 cubic feet of gaseous fuel, calculated as hydrogen sulfide at standard conditions. Hexion Inc. combusts natural gas which will meet this limitation.

6. ARM 17.8.324 Hydrocarbon Emissions--Petroleum Products. (3) No person shall load or permit the loading of gasoline into any stationary tank with a capacity of 250 gallons or more from any tank truck or trailer, except through a permanent submerged fill pipe, unless such tank truck or trailer is equipped with a vapor loss control device as described in (1) of this rule.

7. ARM 17.8.340 Standard of Performance for New Stationary Sources. This rule incorporates, by reference, 40 CFR Part 60, Standards of Performance for New Stationary Sources (NSPS). Hexion Inc. has NSPS-affected facilities under 40 CFR Part 60 and is subject to the requirements of the following subparts:

   a. 40 CFR 60, Subpart A – *General Provisions* apply to all equipment or facilities subject to an NSPS Subpart as listed below.

   b. 40 CFR 60, Subpart VV - *Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry (SOCMI).* The provisions of this subpart apply to affected facilities in the synthetic organic chemicals manufacturing industry for any affected facility that commences construction, reconstruction, or modification after January 5, 1981, and on or before November 7, 2006. Hexion Inc. has completed modifications after January 5, 1981; and therefore, this subpart applies.

   c. 40 CFR 60, Subpart Kb - *Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels*). This subpart applies to storage vessels with a capacity greater than or equal to 75 cubic meters (m^3) used to store volatile organic liquids (VOL) for which construction, reconstruction, or modification is commenced after July 23, 1984. However, this subpart does not apply to storage vessels with a capacity greater than or equal to 151 m^3 storing a liquid with a maximum true vapor pressure less than 3.5 kilopascals (kPa), or with a capacity greater than or equal to 75 m^3 but less than 151 m^3 storing a liquid with a maximum true vapor pressure less than 15.0 kPa. Hexion Inc's formaldehyde storage tank has a capacity of 85 m^3, however true vapor pressure of the VOL will be less than 15.0 kPa. Therefore, this subpart does not apply to Hexion Inc's Missoula facility.

   d. 40 CFR 60, Subpart NNN – *Standards of Performance for VOC Emissions from SOCMI Distillation Operations.* This subpart applies to a distillate unit and the recovery system for which construction, modification, or reconstruction commenced after December 30, 1983. Because the distillate column at Hexion Inc. was constructed after December 30, 1983, this subpart applies. However, this subpart includes a provision to allow Hexion Inc. to comply with 40 CFR 65, Subpart D to satisfy the requirements of 40 CFR 60, Subpart NNN.

8. ARM 17.8.342 Emission Standards for Hazardous Air Pollutants. This source shall comply with the standards and provisions of 40 CFR Part 63, as appropriate.

9. 40 CFR 63, Subpart H – *National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks.* Based on the information submitted, Hexion Inc. is not subject to these provisions because this facility requested federally enforceable permit limits to remain under the major source HAP threshold. However, Hexion

Inc. submitted a request to add a permit condition requiring Hexion Inc's methanol and formaldehyde operations to meet the requirements of 40 CFR §§63.162- §63.180 (excluding recordkeeping requirements). Hexion Inc. will continue to meet the recordkeeping requirements of 40 CFR 60, Subpart VV.

D. ARM 17.8, Subchapter 5 - Air Quality Permit Application, Operation and Open Burning Fees, including, but not limited to:

1. ARM 17.8.504 Air Quality Permit Application Fees. This rule requires that an applicant submit an air quality permit application fee concurrent with the submittal of an air quality permit application. A permit application is incomplete until the proper application fee is paid to the Department. A permit fee is not required for the current permit action because the permit action is considered an administrative change.

2. ARM 17.8.505 Air Quality Operation Fees. An annual air quality operation fee must, as a condition of continued operation, be submitted to the Department by each source of air contaminants holding an air quality permit (excluding an open burning permit) issued by the Department. The air quality operation fee is based on the actual or estimated actual amount of air pollutants emitted during the previous calendar year.

   An air quality operation fee is separate and distinct from an air quality permit application fee. The annual assessment and collection of the air quality operation fee, described above, shall take place on a calendar-year basis. The Department may insert into any final permit issued after the effective date of these rules, such conditions as may be necessary to require the payment of an air quality operation fee on a calendar-year basis, including provisions that prorate the required fee amount.

E. ARM 17.8, Subchapter 7 - Permit, Construction and Operation of Air Contaminant Sources, including, but not limited to:

1. ARM 17.8.740 Definitions. This rule is a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.

2. ARM 17.8.743 Montana Air Quality Permits--When Required. This rule requires a person to obtain an air quality permit or permit modification to construct, modify, or use any air contaminant sources that have the Potential to Emit (PTE) greater than 25 tpy of any pollutant. Hexion Inc is required to maintain an air quality permit because the facility has a PTE greater than 25 tpy of CO and VOCs.

3. ARM 17.8.744 Montana Air Quality Permits--General Exclusions. This rule identifies the activities that are not subject to the Montana Air Quality Permit program.

4. ARM 17.8.745 Montana Air Quality Permits--Exclusion for De Minimis Changes. This rule identifies the de minimis changes at permitted facilities that do not require a permit under the Montana Air Quality Permit Program.

5. ARM 17.8.748 New or Modified Emitting Units--Permit Application Requirements. (1) This rule requires that a permit application be submitted prior to installation, modification, or use of a source. (7) This rule requires that the applicant notify the public by means of legal publication in a newspaper of general circulation in the area affected by the application for a permit. This permit action is considered an administrative action; therefore, Hexion Inc. was not required to submit a permit application and was not required to notify the public.

6. ARM 17.8.749 Conditions for Issuance or Denial of Permit. This rule requires that the permits issued by the Department must authorize the construction and operation of the facility or emitting unit subject to the conditions in the permit and the requirements of this subchapter. This rule also requires that the permit must contain any conditions necessary to assure compliance with the Federal Clean Air Act (FCAA), the Clean Air Act of Montana, and rules adopted under those acts.

7. ARM 17.8.752 Emission Control Requirements. This rule requires a source to install the maximum air pollution control capability that is technically practicable and economically feasible, except that BACT shall be utilized. The required BACT analysis is included in Section III of this permit analysis.

8. ARM 17.8.755 Inspection of Permit. This rule requires that air quality permits shall be made available for inspection by the Department at the location of the source.

9. ARM 17.8.756 Compliance with Other Requirements. This rule states that nothing in the permit shall be construed as relieving Hexion Inc of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided in ARM 17.8.740, *et seq*.

10. ARM 17.8.759 Review of Permit Applications. This rule describes the Department's responsibilities for processing permit applications and making permit decisions on those permit applications that do not require the preparation of an environmental impact statement.

11. ARM 17.8.762 Duration of Permit. An air quality permit shall be valid until revoked or modified, as provided in this subchapter, except that a permit issued prior to construction of a new or modified source may contain a condition providing that the permit will expire unless construction is commenced within the time specified in the permit, which in no event may be less than 1 year after the permit is issued.

12. ARM 17.8.763 Revocation of Permit. An air quality permit may be revoked upon written request of the permittee, or for violations of any requirement of the Clean Air Act of Montana, rules adopted under the Clean Air Act of Montana, the FCAA, rules adopted under the FCAA, or any applicable requirement contained in the Montana State Implementation Plan (SIP).

13. ARM 17.8.764 Administrative Amendment to Permit. An air quality permit may be amended for changes in any applicable rules and standards adopted by the Board of Environmental Review (Board) or changed conditions of operation at a source or stack that do not result in an increase of emissions as a result of those changed

conditions. The owner or operator of a facility may not increase the facility's emissions beyond permit limits unless the increase meets the criteria in ARM 17.8.745 for a de minimis change not requiring a permit, or unless the owner or operator applies for and receives another permit in accordance with ARM 17.8.748, ARM 17.8.749, ARM 17.8.752, ARM 17.8.755, and ARM 17.8.756, and with all applicable requirements in ARM Title 17, Chapter 8, Subchapters 8, 9, and 10.

14. ARM 17.8.765 Transfer of Permit. This rule states that an air quality permit may be transferred from one person to another if written notice of Intent to Transfer, including the names of the transferor and the transferee, is sent to the Department.

F. ARM 17.8, Subchapter 8 - Prevention of Significant Deterioration of Air Quality, including, but not limited to:

1. ARM 17.8.801 Definitions. This rule is a list of applicable definitions used in this subchapter.

2. ARM 17.8.818 Review of Major Stationary Sources and Major Modifications--Source Applicability and Exemptions. The requirements contained in ARM 17.8.819 through ARM 17.8.827 shall apply to any major stationary source and any major modification with respect to each pollutant subject to regulation under the Federal Clean Air Act (FCAA) that it would emit, except as this subchapter would otherwise allow.

This facility is a listed source, but the PTE is less than 100 tpy of any regulated pollutant (including fugitives). Therefore, Hexion Inc is not a major stationary source.

G. ARM 17.8, Subchapter 12 - Operating Permit Program Applicability, including, but not limited to:

1. ARM 17.8.1201 Definitions. (23) Major Source under Section 7412 of the FCAA is defined as any stationary source having:

a. PTE > 100 tpy of any pollutant;

b. PTE > 10 tpy any one HAP, PTE > 25 ton/year of a combination of all HAPs, or lesser quantity as the Department may establish by rule; or

c. PTE > 70 ton/year of PM_{10} in a serious PM_{10} nonattainment area.

2. ARM 17.8.1204 Air Quality Operating Permit Program Applicability. (1) Title V of the FCAA Amendments of 1990 requires that all sources, as defined in ARM 17.8.1204 (1), obtain a Title V Operating Permit. In reviewing and issuing MAQP #2836-09 for Hexion Inc's Missoula facility, the following conclusions were made:

a. Hexion Inc. has federally enforceable limits to maintain the facility's PTE below the major source permitting threshold.

b. The facility's PTE is less than 10 tpy for any one HAP and less than 25 tpy of all HAPs.

c. This source is located in a serious PM_{10} nonattainment area.

d. This facility is subject to a current NSPS (40 CFR 60, VV and NNN).

e. The facility is not subject to a current NESHAP; however Hexion Inc. monitors methanol and formaldehyde operations according to the provisions of 40 CFR §§63.162 - §63.180.

f. The source is not a Title IV affected source.

g. The source is not a solid waste combustion unit.

h. The source is not an EPA designated Title V source.

i. ARM 17.8.1204(3). The Department may exempt a source from the requirement to obtain an air quality operating permit by establishing federally enforceable limitations, which limit that source's PTE.

Hexion Inc. has federally-enforceable permit limitations to remain a minor source of emissions with respect to Title V. Based on these limitations, the Department determined that this facility is not subject to the Title V Operating Permit Program. The Department has determined that the annual reporting requirements contained in the permit are sufficient to satisfy this requirement.

i. In applying for an exemption under this section the owner or operator of the source shall certify to the Department that the source's PTE does not require the source to obtain an air quality operating permit.

ii. Any source that obtains a federally enforceable limit on PTE shall annually certify that its actual emissions are less than those that would require the source to obtain an air quality operating permit.

2. ARM 17.8.1207 Certification of Truth, Accuracy, and Completeness. Hexion Inc. shall annually certify that its actual emissions are less than those that would require the source to obtain an air quality operating permit as required by ARM 17.8.1204 (3)(b). The annual certification shall comply with requirements of ARM 17.8.1207. The annual certification shall be submitted along with the annual emission inventory information.

Based on these facts, the Department determined that Hexion Inc. will be a minor source of emissions as defined under Title V. However, if minor sources subject to NSPS are required to obtain a Title V Operating Permit, Hexion Inc. will be required to obtain a Title V Operating Permit.

III. BACT Analysis

A BACT determination is required for each new or modified source. Hexion Inc. shall install on the new or modified source the maximum air pollution control capability which is technically practicable and economically feasible, except that BACT shall be utilized. A BACT analysis was not required for the current permit action because the current permit action is considered an administrative permit action.

IV. Emission Inventory

Facility Emissions (TPY)

							HAPs			
Source	**PM**	**PM_{10}**	**NOx**	**VOC**	**CO**	**SOx**	HCHO	MeOH	Phenol	Toluene
Natural Gas Boiler	0.38	0.38	5.00	0.28	4.20	0.03	0.00368	0.0	0.0	0.0
Tailgas Boiler	0.0	0.0	0.0	7.58	25.76	0.0	0.345	0.288	0.0	0.0
Tailgas bypass	0.0	0.0	0.0	8.75	4.25	0.0	0.2	0.17	0.0	0.0
Formaldehyde Storage	0.0	0.0	0.0	1.79	0.0	0.0	1.53	0.263	0.0	0.0
Formaldehyde Loading	0.0	0.0	0.0	2.09	0.0	0.0	0.42	0.0773	0.0	0.0
Formaldehyde Weigh tank	0.0	0.0	0.0	0.942	0.0	0.0	0.768	0.174	0.0	0.0
UF Resin Produced	0.037	0.037	0.0	5.96	0.0	0.0	3.98	1.79	0.0	0.0
UF Resin Storage	0.0	0.0	0.0	0.257	0.0	0.0	0.00266	0.252	0.0	0.0
UF Resin Loading	0.0	0.0	0.0	0.483	0.0	0.0	0.005	0.474	0.0	0.0
UFC Produced in Reactors	0.0	0.0	0.0	0.049	0.0	0.0	0.04	0.009	0.0	0.0
Imported UFC Storage	0.0	0.0	0.0	0.0145	0.0	0.0	0.0079	0.00663	0.0	0.0
UFC Loading	0.0	0.0	0.0	0.00572	0.0	0.0	0.00221	0.0035	0.0	0.0
PF Resin Production	0.0	0.0	0.0	1.19	0.0	0.0	0.0234	1.17	0.0017	0.0
PF Resin Storage	0.0	0.0	0.0	0.026	0.0	0.0	0.00102	0.024	0.00003	0.0
PF Resin Loading	0.0	0.0	0.0	0.1	0.0	0.0	0.004	0.094	0.00012	0.0
Methanol Storage	0.0	0.0	0.0	1.07	0.0	0.0	0.0	1.07	0.0	0.0
Methanol Loading	0.0	0.0	0.0	0.0157	0.0	0.0	0.0	0.0157	0.0	0.0
Phenol Storage	0.0	0.0	0.0	0.00275	0.0	0.0	0.0	0.0	0.00275	0.0
Phenol Scale	0.0	0.0	0.0	0.000905	0.0	0.0	0.0	0.0	0.000905	0.0
Resin Drying Pad	0.0	0.0	0.0	0.0239	0.0	0.0	0.007	0.017	0.0	0.0
Wastewater Pits*	0.0	0.0	0.0	0.00566	0.0	0.0	0.00015	0.0055	0.0	0.0
Distillate Storage	0.0	0.0	0.0	0.00503	0.0	0.0	0.000871	0.00416	0.0	0.0
Distillate Scale	0.0	0.0	0.0	0.0207	0.0	0.0	0.00745	0.0132	0.0	0.0
PF Wash water Tanks	0.0	0.0	0.0	0.00018	0.0	0.0	0.0	0.00018	0.0	0.0
Startup Formaldehyde tank	0.0	0.0	0.0	0.16	0.0	0.0	0.0137	0.147	0.0	0.0
Urea Weigh Scale	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cooling Tower	23.14	23.14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wax Emulsion Production	0.0	0.0	0.0	0.69	0.0	0.0	0.0	0.0	0.0	0.57
Fugitives	0.0	0.0	0.0	1.26	0.0	0.0	0.117	0.859	0.286	0.0
Total Emissions ►	23.66	23.66	5.00	32.77	34.21	0.03	7.48	6.93	0.29	0.57

Note: the majority of the emissions inventory was developed using the EPA Tanks Program.

* Wastewater pit calculations were completed assuming 5,176 tons UF washwater and 4,891 tons PF washwater.

Natural Gas Boiler

Heating value:	11.2 MMBtu/hr			
Fuel capacity:	100000 MMBtu/yr	(company information)	=	100 MMscf/yr
Heating value:	100 MMscf/yr	(conversion from Company information)		
Operating hours:	8760 hrs/year			

PM Emissions

Emission Factor:	7.6 lb/MMscf	(AP-42, Table 1.4-2, 7/98)
Calculations:	7.6 lb/MMscf * 100 MMscf/yr * 0.0005 tons/lb =	0.38 tons/yr

PM10 Emissions

Emission Factor:	7.6 lb/MMscf	(AP-42, Table 1.4-2, 7/98)
Calculations:	7.6 lb/MMscf * 100 MMscf/yr * 0.0005 tons/lb =	0.38 tons/yr

CO Emissions

Emission Factor:	84 lb/MMscf	(AP-42, Table 1.4-1, 7/98)
Calculations:	84 lb/MMscf * 100 MMscf/yr * 0.0005 tons/lb =	4.20 tons/yr

NOx Emissions

Emission Factor:	100 lb/MMscf	(AP-42, Table 1.4-1, 7/98)
Calculations:	100 lb/MMscf * 100 MMscf/yr * 0.0005 tons/lb =	5.00 tons/yr

SOx Emissions

Emission Factor:	0.6 lb/MMscf	(AP-42, Table 1.4-2, 7/98)
Calculations:	0.6 lb/MMscf * 100 MMscf/yr * 0.0005 tons/lb =	0.03 tons/yr

VOC Emissions

Emission Factor:	5.5 lb/MMscf	(AP-42, Table 1.4-2, 7/98)
Calculations:	5.5 lb/MMscf * 100 MMscf/yr * 0.0005 tons/lb =	0.28 tons/yr

HAP Emissions	*see HAP emission inventory on file with the Department*	0.094 tons/yr

Tail Gas Boiler

CO

Emission Factor:	85 lb/hr	(Source Test on boiler, 10/4/95)
Calculations:	85 lb/hr * 8660 hrs/year * 0.0005 tons/lb * (1-.93)=	25.76 tons/yr

VOC

Emission Factor:	175 lb/hr	(Assumes TOC=VOC, Source Test on boiler, 10/4/95)
Calculations:	175 lb/hr * 8660 hrs/year * 0.0005 tons/lb * (1-0.99) =	7.58 tons/yr

Methanol (MeOH)

Emission Factor:	3.3 lb/hr	(Assumes TOC=VOC, In-house test conducted on 12/2007)
Calculations:	3.3 lb/hr * 8660 hrs/year * 0.0005 tons/lb * (1-0.98) =	0.29 tons/yr

Formaldehyde (HCHO)

Emission Factor:	4 lb/hr	(MAQP# 2836-04, per Hexion submittal 12/5/2008)
Calculations:	4 lb/hr * 100 hrs/year * 0.0005 tons/lb *(1-0.98) =	0.35 tons/yr

Bypass Emissions from Tailgas Boiler

CO (from bypass)

Emission Factor:	85 lb/hr	(Source Test on boiler, 10/4/95)
Calculations:	85 lb/hr * 100 hrs/year * 0.0005 tons/lb =	4.25 tons/yr

VOC (from bypass)

Emission Factor:	175 lb/hr	(Assumes TOC=VOC, Source Test on boiler, 10/4/95)
Calculations:	175 lb/hr * 100 hrs/year * 0.0005 tons/lb =	8.75 tons/yr

Methanol (MeOH) (from bypass)

Emission Factor: 3.3 lb/hr (Emission rate based on ratio of MeOH to TOC=VOC, Source Test on boiler, 10/4/95)

Calculations: 3.3 lb/hr * 100 hrs/year * 0.0005 tons/lb = 0.17 tons/yr

Formaldehyde Production (HCHO from bypass)

Emission Factor: 4 lb/hr (MAQP# 2836-04, test on boiler at 100% * 2, 6/5/92)

Calculations: 4 lb/hr * 100 hrs/year * 0.0005 tons/lb = 0.20 tons/yr

Phenol (from bypass)

Emission Factor: 0 lb/hr (MAQP# 2836-04, test on boiler at 100%, 8/5/92)

Calculations: 0 lb/hr * 100 hrs/year * 0.0005 tons/lb = 0.00 tons/yr

Miscellaneous PM Emissions:

Urea Weigh Scale

Maximum Urea Used: 100,000 ton/yr (permit limit)

PM Emissions:

Emission Factor: 0.19 lb/ton (AP-42, Table 8.2-1, 7/93, 0.19 lb/ton for urea bagging)

Control Efficiency: 99% (Packed column wet scrubber)

Calculations: 0.19 lb/ton * 100,000 ton/yr =19,000 lb/yr

19,000 lb/yr * 0.0005 ton/lb = 9.5 ton/yr

9.5 ton/yr * (1.00 - 0.99) = 0.10 ton/yr

PM_{10} Emissions: Assume all particulate matter is PM_{10}.

Emission Factor: 0.19 lb/ton (AP-42, Table 8.2-1, 7/93, 0.19 lb/ton for urea bagging)

Control Efficiency: 99% (Wet Scrubber)

Calculations: 0.19 lb/ton * 100,000 ton/yr =19,000 lb/yr

19,000 lb/yr * 0.0005 ton/lb = 9.5 ton/yr

9.5 ton/yr * (1.00 - 0.99) = 0.10 ton/yr

Cooling Tower Emissions

PM and PM_{10} Emissions

Operating rate: 168 kgal/hr (permit limit)

Emission factor: 0.3145 lb/kgal (assuming Liq. Drift of 1.7 lb/kgal and TDS + 18000 ppm)

Calculations: 0.3145 lb/kgal * 168 kgal/hr = 5.284 lb/hr

5.284 lb/hr * 8760 hrs/yr * 0.0005 ton/lb = 23.14 tons/yr

Other Miscellaneous Formaldehyde Emissions:

UF Resin Reactor Emissions:

Max Production 398 MMlb/yr (permit limit)

Emission Factor: 2.00e-05 lb/lb (Momentive Source test 10/6/95)

Calculations: 0.000020 lb/lb * 398 MMlb/yr = 7960.0 lb/yr

7960.0 lb/yr * 0.0005 ton/lb = 3.98 ton/yr

UFC Production Emissions:

Max Production 2 MMlb/yr (permit limit)

Emission Factor: 4.00e-05 lb/lb (Momentive 10/6/95 Submittal)

Calculations: 0.000040 lb/lb * 2 MMlb/yr = 80.0 lb/yr

80.0 lb/yr * 0.0005 ton/lb = 0.04 ton/yr

PF Resin Reactor Emissions:

Max Production 117 MMlb/yr (permit Limit)

Emission Factor: 4.00e-07 lb/lb (Momentive 10/6/95 Submittal)

Calculations: 0.0000004 lb/lb * 117 MMlb/yr = 46.8 lb/yr

46.8 lb/yr * 0.0005 ton/lb = 0.02 ton/yr

Resin Drying Pad Emissions:

Resin Drying pad throughput: 500,000 lb/yr (46, 089 gallons per Momentive)

Maximum Resin Density: 10.8 lb/gallon

Resin Liquid Content: 10% wt per % liquid (Momentive submittal)

Maximum HCHO Resin content: 0.028 % liq per % HCHO

Calculations: 46,089 gal * 10.8 lb/gal * 0.10 * 0.00028 = 13.94 lb/yr

13.94 lb/yr * 0.0005 ton/lb = 0.007 tpy

Formaldehyde Fugitive Emissions (valves, pumps, flanges, etc):

Emission Factor:	SOCMI FACTOR (Momentive Submittal)
Calculations:	234.94 lb/yr
	234.94 lb/yr * 0.0005 ton/lb = 0.1174 ton/yr

Other Miscellaneous Methanol Emissions:

UF Resin Reactor Emissions:

Max Production	398 MMlb/yr (permit Limit)
Emission Factor:	9.00e-06 lb/lb (Momentive Source test 10/6/95)
Calculations:	0.000009 lb/lb * 398 MMlb/yr = 3582.0 lb/yr
	3582.0 lb/yr * 0.0005 ton/lb = 1.79 ton/yr

UFC Production Emissions:

Max Production	2 MMlb/yr (permit limit)
Emission Factor:	9.00e-06 lb/lb (Momentive Source test 10/6/95)
Calculations:	0.000009 lb/lb * 2 MMlb/yr = 18.0 lb/yr
	18.0 lb/yr * 0.0005 ton/lb = 0.009 ton/yr

PF Resin Reactor Emissions:

Max Production	117 MMlb/yr (permit limit)
Emission Factor:	2.00e-05 lb/lb (Momentive 10/6/95 Submittal)
Calculations:	0.00002 lb/lb * 117 MMlb/yr = 2340 lb/yr
	2340 lb/yr * 0.0005 ton/lb = 1.17 ton/yr

Fugitive Emissions:

Emission Factor:	SOCMI FACTOR (Momentive Submittal)
Calculations:	1718.91 lb/yr
	1718.91 lb/yr * 0.0005 ton/lb = 0.85 ton/yr

Resin Drying Pad Emissions:

Resin Drying pad throughput:	500,000 lb/yr (46, 089 gallons per Momentive)
Maximum Resin Density:	10.8 lb/gallon
Resin Liquid Content:	10% wt per % liquid (Momentive submittal)
Maximum HCHO Resin content:	0.068 % liq per % HCHO
Calculations:	46,089 gal * 10.8 lb/gal * 0.10 * 0.00068 = 33.84 lb/yr
	33.84 lb/yr * 0.0005 ton/lb = 0.017 tpy

Other Miscellaneous Phenol Emissions:

PF Resin Reactor

Max Production	117 MMlb/yr (permit limit)
Emission Factor:	2.00e-08 lb/lb (Momentive 10/6/95 Submittal)
Calculations:	0.00000002 lb/lb * 117 MMlb/yr= 2.34 lb/yr
	2.34 lb/yr * 0.0005 ton/lb = 0.00117 ton/yr

Fugitive Emissions:

Emission Factor:	SOCMI Average FACTOR (Momentive Submittal)
Calculations:	572.12 lb/yr
	572.12 lb/yr * 0.0005 ton/lb = 0.286 ton/yr

V. Existing Air Quality

The Missoula area is currently listed as a nonattainment area for PM_{10}. The current permit action is an administrative action, with no new or changed emissions taking place as part of this action.

VI. Ambient Air Impact Analysis

As an administrative action with no change in emissions, the issuance of MAQP #2836-09 would not be considered to cause or contribute to a violation of any ambient air quality standard.

VII. Taking or Damaging Implication Analysis

As required by 2-10-101 through 105, MCA, the Department conducted a private property taking and damaging assessment and determined there are no taking or damaging implications.

YES	NO	
X		1. Does the action pertain to land or water management or environmental regulation affecting private real property or water rights?
	X	2. Does the action result in either a permanent or indefinite physical occupation of private property?
	X	3. Does the action deny a fundamental attribute of ownership? (ex.: right to exclude others, disposal of property)
	X	4. Does the action deprive the owner of all economically viable uses of the property?
	X	5. Does the action require a property owner to dedicate a portion of property or to grant an easement? [If no, go to (6)].
		5a. Is there a reasonable, specific connection between the government requirement and legitimate state interests?
		5b. Is the government requirement roughly proportional to the impact of the proposed use of the property?
	X	6. Does the action have a severe impact on the value of the property? (consider economic impact, investment-backed expectations, character of government action)
	X	7. Does the action damage the property by causing some physical disturbance with respect to the property in excess of that sustained by the public generally?
	X	7a. Is the impact of government action direct, peculiar, and significant?
	X	7b. Has government action resulted in the property becoming practically inaccessible, waterlogged or flooded?
	X	7c. Has government action lowered property values by more than 30% and necessitated the physical taking of adjacent property or property across a public way from the property in question?
	X	Takings or damaging implications? (Taking or damaging implications exist if YES is checked in response to question 1 and also to any one or more of the following questions: 2, 3, 4, 6, 7a, 7b, 7c; or if NO is checked in response to questions 5a or 5b; the shaded areas)

Based on this analysis, the Department determined there are no taking or damaging implications associated with this permit action.

VIII. Environmental Assessment

This permitting action will not result in an increase of emissions from the facility and is considered an administrative action; therefore, an Environmental Assessment is not required.

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