

**MISSOURI**  
DEPARTMENT OF  
NATURAL RESOURCES

**MISSOURI AIR CONSERVATION COMMISSION**

**PERMIT TO CONSTRUCT**

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

Permit Number: **07 2 0 1 7 - 0 0 2**

Project Number: 2015-11-047  
Installation Number: 077-0019

Parent Company: Merrill Iron & Steel

Parent Company Address: 900 Alderson Street, Schofield, WI 54476

Installation Name: Merrill Iron & Steel

Installation Address: 2101 N Packer Road, Springfield, MO 65803

Location Information: Greene County, S9, T28N, R21W

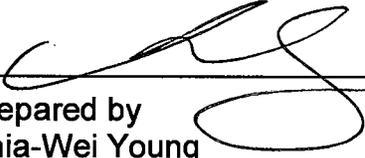
Application for Authority to Construct was made for:

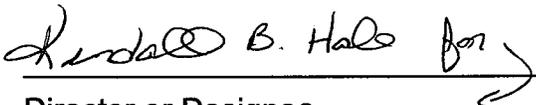
The addition and removal of various painting and blasting equipment to expand plant production. This review was conducted in accordance with Section (6), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

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

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

  
Prepared by  
Chia-Wei Young  
New Source Review Unit

  
Director or Designee  
Department of Natural Resources

**JUL 06 2017**

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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 Enforcement and Compliance Section of 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 Enforcement and Compliance Section of the Department's Air Pollution Control Program of the anticipated date of start up of this (these) air contaminant source(s). The information must be made available within 30 days of actual startup. Also, you must notify the Department's regional office responsible for the area within which you are located within 15 days after the actual start up of this (these) air contaminant source(s).

A copy of the permit application and this permit and permit review shall be kept at the installation address and shall be made available to Department's 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 source(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 using the contact information below.

**Contact Information:**  
Missouri Department of Natural Resources  
Air Pollution Control Program  
P.O. Box 176  
Jefferson City, MO 65102-0176  
(573) 751-4817

The regional office information can be found at the following website:  
<http://dnr.mo.gov/regions/>

**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."*

Merrill Iron and Steel  
Greene County, S9, T28, R21

1. VOC and HAPs Emission Limitations
  - A. Merrill Iron and Steel shall emit less than 40.0 tons of VOCs in any consecutive 12-month period from the entire installation.
  - B. Merrill Iron and Steel shall emit individual HAPs less than the screening model action levels (SMAL) and combined HAPs less than 25.0 tons in any consecutive 12-month period from the entire installation. The SMAL for each HAP is listed in Appendix B, current to the date of permit issuance. An updated SMAL can be obtained by contacting the New Source Review Unit of the Missouri Air Pollution Control Program.
  - C. Merrill Iron and Steel shall develop and use forms to demonstrate compliance with Special Conditions 1.A. and 1.B. The forms shall be developed using the procedures and calculation methods in Special Condition 3.
  - D. The following equipment shall be counted in the HAPs and VOC emissions tracking required in Special Condition 1.C. to show compliance with Special Conditions 1.A. and 1.B.
    - 1) For VOCs, equipment include the spray paint guns (EP4), natural gas combustion (EP7), and propane gas combustion (EP7a)
    - 2) For HAPs, equipment include the flux-cored welders (EP1A), submerged arc welders (EP1B), plasma cutters (EP2B), and airless spray paint guns (EP4). The natural gas and propane combustion are also expected to emit HAPs, but due to the low level of HAPs emitted from combustion, the facility is not required to include them in the HAPs emissions tracking.
2. PM<sub>2.5</sub> and PM<sub>10</sub> Emissions Limitations
  - A. Merrill Iron and Steel shall emit less than 10.0 tons of PM<sub>2.5</sub> and 15.0 tons of PM<sub>10</sub> in any consecutive 12-month period from the entire installation. The equipment expected to emit PM<sub>2.5</sub> and PM<sub>10</sub> at the installation include welders (EP1A/EP1B), grinders and plasma cutters (EP2A/2B), glass blasting operation (EP3), airless spray paint guns (EP4), abrasives blasting (EP6), and haul roads (EP8).

**SPECIAL CONDITIONS:**

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

- B. Merrill Iron and Steel shall develop and use forms to demonstrate compliance with Special Condition 2.A. The forms shall be developed using the procedures and calculation methods specified in Special Condition 3.
3. Tracking Sheet Development Procedure
- A. The tracking sheets required in Special Condition 1.C. and 2.B. shall contain, at a minimum, the following information.
- 1) Installation name
  - 2) Installation ID
  - 3) Permit number
  - 4) Current month
  - 5) Current 12-month date range
  - 6) Monthly throughput for emission units with the potential to emit PM<sub>2.5</sub>, PM<sub>10</sub>, PM, VOC, and HAPs
  - 7) Emission factors and calculation method used for each emission point
  - 8) Total emissions from the current month.
  - 9) Total emissions from the current 12-month period
  - 10) Emissions Limit
  - 11) Indication of compliance with Special Conditions 1.A., 1.B., and 2.A.
- B. The VOC tracking sheet as required in Special Condition 1.C. shall use the following emission factors and calculation methods.
- 1) For the airless spray paint guns (EP4), the VOC emissions shall be calculated using mass balances assuming that 100% of the VOC contained in the coatings are emitted. VOC content shall be determined from the SDS or the Environmental Data Sheet for the coatings. If a range is given, the higher value shall be used.
  - 2) For the natural gas combustion (EP7), the VOC emission factor shall be 5.5 lb/mmscf from EPA document AP-42, *Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources*, Chapter 1.4, *Natural Gas Combustion*, (7/1998).
  - 3) For propane gas combustion (EP7a), the VOC emission factor shall be 1.0 lb/Mgal from EPA document AP-42, Chapter 1.5, *Liquefied Petroleum Gas Combustion*, (7/2008).
- C. The HAPs tracking sheet as required in Special Condition 1.C. shall use the following emission factors and calculations methods.
- 1) For the welding wires (EP1A/1B), emission factors shall be taken from AP-42, Chapter 12.19, *Electric Arc Welding*, Table 12.19-2. (1/1995)

**SPECIAL CONDITIONS:**

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

- 2) For the airless spray paint guns (EP4), the volatile HAP emissions shall be calculated using mass balances assuming that 100% of the HAP contained in the coatings are emitted. If a range is given, the higher value shall be used.
- 3) For the airless spray paint guns (EP4), the particulate HAP emissions shall be calculated by using the following equation

$$\text{HAP (tons)} = \text{Paint Usage (lb)} \times \text{HAPs Content (Wt. \%)} \times (1 - \text{Transfer Efficiency (\%)/100}) \times (1 - \text{Control Efficiency (\%)/100}) \times 2,000 \text{ lb/ton}$$

The HAPs content (Wt. %) shall be taken from the SDS or other technical data sheets. If a range is listed, the higher value shall be used. The control efficiency is 99% for the filter. The transfer efficiency is 75% for flat surfaces and 10% for non-flat surfaces.

- 4) For the plasma cutters (EP2B), HAP emission shall be calculated using mass balances as follows:

$$\text{HAP Emissions (tons)} = 0.0029 \text{ lb/hr} \times (\text{hours of operations}) \times (\text{HAP content \%}) \div 2,000 \text{ lb/ton}$$

If the facility does not track its hours of operations, it may also chose to use 8,760 hours as worst case. The 0.0029 lb/hr emission factor takes into account the 99% control efficiency from the dust collector and is based on mass balances.

- D. The particulate emissions tracking sheet as required in Special Condition 2.B. shall use the following emission factors and calculations methods.
  - 1) For Welding (EP1A/1B), emission factors shall be taken from AP-42, Chapter 12.19, *Electric Arc Welding*, Table 12.19-1 (1/1995). There is only one particulate emission factor in Table 12.19-1 for each type of welding wires. It shall be assumed that this emission factor applies to PM<sub>2.5</sub> and PM<sub>10</sub>.
  - 2) For the handheld grinders (EP2A), the following emission factors shall be used. 0.163 lb/hr for PM<sub>10</sub> and 0.0489 lb/hr for PM<sub>2.5</sub>. Emission factors taken from the paper *Comparative Emissions of Random Orbital Sanding between Conventional and Self Generated Vacuum Systems*, Annals of Occupational Hygiene, 2013. Particle size distribution taken from California Emissions Inventory Development and Reporting System (CEIDARS) table.
  - 3) For the plasma cutters (EP2B), PM<sub>2.5</sub> and PM<sub>10</sub> emissions shall be calculated using the equation below:

$$\text{PM}_{2.5}, \text{PM}_{10} \text{ Emissions (tons)} = 0.0029 \text{ lb/hr} \times (\text{hours of operations})$$

**SPECIAL CONDITIONS:**

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

÷ 2,000 lb/ton.

If the facility does not track its hours of operations, it may also chose to use 8,760 hours as worst case. The 0.0029 lb/hr emission factor takes into account the 99% control efficiency from the dust collector and is based on mass balances.

- 4) For the glass blasting operation (EP3), the emission factor for PM is 0.69 pounds of PM per 1,000 pounds of abrasive. PM<sub>2.5</sub> and PM<sub>10</sub> emissions shall be calculated assuming that 4.8% of PM is PM<sub>2.5</sub> and 48% of PM is PM<sub>10</sub>. All data taken from AP-42, Chapter 13.2.6, *Abrasive Blasting*, Table 13.2.6-1 (10/1997).
- 5) For the airless spray paint guns (EP4), PM<sub>2.5</sub> and PM<sub>10</sub> emissions shall be calculated using the following equations.

$$PM_{10} \text{ (lb)} = \text{Paint Usage (lb)} \times \text{Solid Content (Wt. \%)} \times (1 - \text{Transfer Efficiency (\%)/100}) \times (1 - \text{Control Efficiency (\%)/100}) \times 0.96$$

$$PM_{2.5} \text{ (lb)} = \text{Paint Usage (lb)} \times \text{Solid Content (Wt. \%)} \times (1 - \text{Transfer Efficiency (\%)/100}) \times (1 - \text{Control Efficiency (\%)/100}) \times 0.925$$

The solid content (Wt. %) shall be taken from the SDS or other technical data sheets. If a range is listed, the higher value shall be used. The control efficiency is 99% for the filter. The transfer efficiency is 75% for flat surfaces and 10% for non-flat surfaces. 0.96 and 0.925 is the percentage of PM<sub>10</sub> and PM<sub>2.5</sub> that is PM, taken from the California Emission Inventory and Reporting System (CEIDARS).

- 6) For the Abrasives Blasting Machine (EP6), the emission factor for PM is 0.69 pounds of PM per 1,000 pounds of abrasive. PM<sub>2.5</sub> and PM<sub>10</sub> emissions shall be calculated assuming that 4.8% of PM is PM<sub>2.5</sub> and 48% of PM is PM<sub>10</sub>. All data taken from AP-42, Chapter 13.2.6, *Abrasive Blasting*, Table 13.2.6-1 (10/1997).
- 7) For the natural gas combustion (EP7), the PM<sub>2.5</sub> and PM<sub>10</sub> emission factor shall be 7.6 lb/mm scf from EPA document AP-42, *Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources*, Chapter 1.4, *Natural Gas Combustion*, (7/1998).
- 8) For propane combustion (EP7a), the PM<sub>2.5</sub> and PM<sub>10</sub> emission factor shall be 0.7 lb/1,000 gal from EPA document AP-42, *Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources*, Chapter 1.5, *LPG Combustion*, (7/2008).
- 9) Haul road particulate emissions shall be calculated using the following emission factors.

**SPECIAL CONDITIONS:**

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

**Table 1: Haul Road Emission Factors (lb/Truck or Forklift)**

Road	PM <sub>2.5</sub>	PM <sub>10</sub>
East-West	0.104	0.104
North-South	0.0405	0.405
Yard	0.153	1.53

All emission factors derived from equations in AP-42, Chapter 13.2.2, *Unpaved Roads* (11/2006)

- E. All emission factors and calculation methods listed in Special Condition 3.B. through 3.D may be changed upon approval by the Air Pollution Control Program. Emission factors and calculation methods listed in Special Conditions 3.B. through 3.D. that are from AP-42 may be also changed upon updates to the AP-42 document.
4. Control Device Requirement - Baghouse
- A. Merrill Iron and Steel shall control emissions from the two plasma arc cutters with downdraft tables (EP2) and glass blasting operation (EP3) using baghouses (CD2/S2, CD3/S3, CD1/S1) as specified in the permit application.
- B. The baghouses shall be operated and maintained in accordance with the manufacturer's specifications. The baghouse 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 Department of Natural Resources' employees may easily observe them.
- C. Replacement filters for the baghouses 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. Merrill Iron and Steel shall monitor and record the operating pressure drop across the baghouses at least once every 24 hours. The operating pressure drop shall be maintained within the design conditions specified by the manufacturer's performance warranty.
- E. Merrill Iron and Steel shall maintain a copy of the baghouse manufacturer's performance warranty on site.
- F. Merrill Iron and Steel shall maintain an operating and maintenance log for the baghouses which shall include the following:
- 1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and

**SPECIAL CONDITIONS:**

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

- 2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
5. Control Device – Total Building Enclosure and Filters
    - A. All doors and windows to the building shall remain closed during the coating operations (EP4) except for personnel and equipment entry and exit (i.e. there should be no propping open of doors, etc.).
    - B. Merrill Iron and Steel shall control particulate emissions from the airless spray paint guns using filter panels as specified in the permit application.
    - C. The filters shall be operated and maintained in accordance with the manufacturer's specifications. The filters 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 Department of Natural Resources' employees may easily observe them.
    - 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. Merrill Iron and Steel shall monitor and record the operating pressure drop across the filters at least once every 24 hours. The operating pressure drop shall be maintained within the design conditions specified by the manufacturer's performance warranty.
    - F. Merrill Iron and Steel shall maintain a copy of the filter manufacturer's performance warranty on site.
    - G. Merrill Iron and Steel 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; and
      - 2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
  6. Control Device – Cartridge Dust Collector
    - A. Merrill Iron and Steel shall control the particulate emissions from the abrasive blasting unit (EP6) using cartridge dust collectors as specified in the permit application.
    - B. The filters shall be operated and maintained in accordance with the manufacturer's specifications. The filters shall be equipped with a gauge or meter, which indicates the pressure drop across the control device.

**SPECIAL CONDITIONS:**

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

These gauges or meters shall be located such that Department of Natural Resources' employees may easily observe them.

- C. Replacement filters shall be kept on hand at all times. The filters shall be made of fibers appropriate for operating conditions expected to occur (i.e. temperature limits, acidic and alkali resistance, and abrasion resistance).
  - D. Merrill Iron and Steel shall monitor and record the operating pressure drop across the filters at least once every 24 hours. The operating pressure drop shall be maintained within the design conditions specified by the manufacturer's performance warranty.
  - E. Merrill Iron and Steel shall maintain a copy of the filter manufacturer's performance warranty on site.
  - F. Merrill Iron and Steel 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; and
    - 2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
7. Record Keeping and Reporting Requirements
- A. Merrill Iron and Steel shall maintain all records required by this permit for not less than five years and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request. These records shall include SDS for all materials used.
  - B. Merrill Iron and Steel shall report to the Air Pollution Control Program's Compliance/Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than 30 days after the end of the month during which any record required by this permit shows an exceedance of a limitation imposed by this permit.

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

Project Number: 2015-11-047  
Installation ID Number: 077-0019  
Permit Number: 07 2 0 1 7 - 0 0 2

Installation Address:  
Merrill Iron and Steel  
2101 N Packer Road  
Springfield, MO 65803

Parent Company:  
Merrill Iron and Steel  
900 Alderson St.  
Schofield, WI 54476

Greene County, S9, T28N, R21W

REVIEW SUMMARY

- Merrill Iron and Steel has applied for authority to increase production at the facility by making the following changes.
  - Addition of six (6) airless spray paint guns to the surface coating operation (EP4). The maximum number of guns after the expansion will be ten (10). Two new HVAC units with PM filter panels and make up air units will be constructed to control particulate matter emissions.
  - Replacement of a crushed glass abrasive blasting booth (EP3) using baghouse control with a new steel shot blaster (EP6) with cartridge dust collector as control (CD6). The crushed glass abrasive blasting booth (EP3) will be kept onsite as a touchup unit.
- The application was deemed complete on December 21, 2015.
- HAP emissions are expected from the welding equipment (EP1A/1B), the plasma cutters (EP2), the surface coating operation (EP4), and the natural gas/propane combustion (EP7/7a).
- None of the NSPS regulations apply to this installation.
- None of the NESHAPs apply to this installation.
- The MACT standard, 40 CFR Part 63, Subpart XXXXXX, *National Emission Standards for Nine Metal Fabrication and Finishing Source Categories*, applies to the proposed equipment.
- Torit baghouse units (CD2/3) are being used to control the particulate emissions from two plasma arc cutters (S2/S3). HVAC units with PM filter panels and make up air units (CD4/5) will be used to control the particulate emissions from the surface painting operation (S4/5). A blasting booth with a cartridge dust collector (CD6) are being used to control particulate emissions from the shot blaster (EP6).

- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of PM<sub>2.5</sub>, PM<sub>10</sub>, PM, VOC, and HAPs are conditioned below de minimis levels.
- This installation is located in Greene County, an attainment area for all criteria pollutants.
- This installation is not on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2. The installation's major source levels for all pollutants are 250 tons per year. Fugitive emissions are not counted toward major source applicability.
- Ambient air quality modeling was not performed since potential emissions of the application are conditioned below de minimis levels.
- Emissions testing is not required for the equipment as a part of this permit. Testing may be required as part of other state, federal or applicable rules.
- No operating permit is required for this installation.
- Approval of this permit is recommended with special conditions.

#### INSTALLATION DESCRIPTION

Merrill Iron and Steel is a large-scale structural steel fabricator in Springfield. Before this project, equipment at the facility included welders (EP1A/1B), cutting/grinding/polishing units (EP2), a crushed glass/sand blaster (EP3), a surface coating operation (EP4), a small shot blasting cabinet (EP5), a crushed glass abrasive blasting unit (EP6), and a fuel oil heating system (EP7). The installation has never applied for or received any construction or operating permits from the Missouri Air Pollution Control Program or Springfield Air Quality Control Division. It has also never submitted an emissions calculation for the entire facility. Therefore, it was not known, before the current project, what type of source the installation is under either construction permits (Major, Minor, or De minimis) or operating permits (Basic, Intermediate, Part 70). This current permit limits all pollutants, except for PM, at the installation to under the *de minimis* levels of emissions. With the *de minimis* limit for PM<sub>2.5</sub> and PM<sub>10</sub>, the installation's PM emissions are not expected to be less than *de minimis*, but are expected to be less than the major source level of 250.0 tpy. The facility is now considered a minor source for construction permits. PM emissions do not trigger the need for operating permits. Although Subpart XXXXXX of the MACT applies to the installation, there is a condition in the subpart that exempts an installation from obtaining an operating permit if the subpart is the only reason that an operating permit is needed. Therefore, Merrill Iron and Steel does not need to apply for an operating permit.

## PROJECT DESCRIPTION

The installation proposes the following changes to its operation.

- Six spray guns (6) will be added to the surface coating operation (EP4). The total number of guns after the addition will be ten (10) guns. Due to the various lengths of the products (ranging from a few inches to 100 feet) and width (ranging from a few inches to 25 feet), a traditional spray booth is not used. Instead, the building which houses the spray guns will have two filter panels on one end and two make-up air units on the other end to control emissions from the spray guns.

One concern regarding this setup is whether the facility will emit all of the particulates through the filters or will some be emitted through other openings (i.e. doors, windows, etc.). In order to ensure complete 100% capture of the particulates, the facility is now required to keep all openings (i.e. doors, windows, etc.) closed except during personnel and material entry and exit.

- An existing crushed glass abrasive blasting unit (EP3) controlled by a baghouse will be replaced with a new steel shot blaster controlled by a cartridge dust collector (EP6). The MHDR for the shot blaster is 3600 pounds per minute, but the facility will never reach this value. The maximum amount of steel shot is 1,000,000 pounds per year, as estimated by the facility. The crushed glass abrasive blasting unit (EP3) will be kept onsite to operate as a touchup unit.
- An existing fuel oil heating system (EP7) will also be replaced by a natural gas heating system. The new installation includes two units, each with a maximum design rate of 2.8 MMBtu/hr.
- The welding activities (EP1A/1B) will increase by approximately 20% after the expansion. No equipment will be added. The increase will be from additional manpower. The facility uses 50 flux-cored welders and 5 submerged arc welders.
- A small shot blasting cabinet (EP5) will be removed.

## EMISSIONS/CONTROLS EVALUATION

PM<sub>2.5</sub>, PM<sub>10</sub>, PM, VOC, and HAPs potential emissions were not calculated for this project. The facility fabricates structural steel on a job-to-job basis and uses a variety of coatings, each with different VOC, HAPs, and solids content. Therefore, it is not easy to calculate reasonable potential emissions. Therefore, all of these pollutants, with the exception of PM, are limited to their respective *de minimis* levels. PM does not have any modeling requirements, so a limit to the *de minimis* level is not needed. With the

PM<sub>2.5</sub> and PM<sub>10</sub> *de minimis* limits, the PM emissions may be greater than the *de minimis* level of 25.0 tpy, but are expected to be less than the major source level of 250.0. Therefore, this project is issued under section (6).

NO<sub>x</sub>, SO<sub>x</sub>, CO, GHG-Mass, and GHG-CO<sub>2</sub> emissions from natural gas combustion were calculated using emission factors from AP-42, Chapter 1.4, *Natural Gas Combustion*, 7/1998. NO<sub>x</sub> emissions from plasma cutting were calculated using emission factors from the paper, *Emission of Fume, Nitrogen Oxides and Noises in Plasma Cutting of Stainless and Mild Steel*, March, 1994. The facility uses CO<sub>2</sub> as a shielding gas during welding. CO<sub>2</sub> emissions during welding are calculated using the hourly discharge rate and multiplying by 8,760 hours per year.

The following table provides an emissions summary for this project. Existing actual emissions were not available because the facility has never submitted an EIQ. Potential emissions of the application represent the conditioned potential of the entire installation, assuming continuous operation (8760 hours per year).

**Table 2: Emissions Summary (tpy)**

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions	Existing Actual Emissions (EIQ)	Potential Emissions of the Project	New Installation Conditioned Potential
PM	25.0	N/D	N/D	N/D	<Major
PM <sub>10</sub>	15.0	N/D	N/D	N/D	<15.0
PM <sub>2.5</sub>	10.0	N/D	N/D	N/D	<10.0
SO <sub>x</sub>	40.0	N/D	N/D	0.01	N/A
NO <sub>x</sub>	40.0	N/D	N/D	30.07	N/A
VOC	40.0	N/D	N/D	N/D	<40.0
CO	100.0	N/D	N/D	2.06	N/A
GHG (CO <sub>2</sub> e)	75,000	N/D	N/D	2960.85	N/A
GHG (mass)	250.0	N/D	N/D	2943.47	N/A
HAPs	10.0/25.0	N/D	N/D	N/D	<SMAL/25.0

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

### PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (6) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions PM are greater than the *de minimis* level but less than major.

### APPLICABLE REQUIREMENTS

Merrill Iron and Steel 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
  - Per 10 CSR 10-6.110(4)(B)2.B(II) and (4)(B)2.C(II) a full EIQ is required for the first full calendar year the equipment (or modifications) approved by this permit are in operation.
- *Operating Permits*, 10 CSR 10-6.065
- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*, 10 CSR 10-6.170
- *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.220
- *Restriction of Emission of Odors*, 10 CSR 10-6.165

#### SPECIFIC REQUIREMENTS

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

#### STAFF RECOMMENDATION

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

#### PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated November 16, 2015, received November 19, 2015, designating Merrill Iron and Steel as the owner and operator of the installation.

Documents relied upon in the preparation of this permit:

- AP-42, *Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources*, Chapter 1.4, *Natural Gas Combustion*, (7/1998).
- E-mail communications between Merrill Iron & Steel and the Missouri Air Pollution Control Program.
- Broman B. et al, *Emissions of Fume, Nitrogen Oxides and Noises in Plasma Cutting of Stainless and Mild Steel*, The Swedish Institute of Production Engineering Research, March, 1994.

## APPENDIX A

### Abbreviations and Acronyms

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

**Appendix B**  
**Hazardous Air Pollutant (HAP) Screening Model Action Levels (SMAL)**

Chemical	CAS#	Emission Threshold Levels (tons/year)	Synonyms
Acetaldehyde	75-07-0	9	Acetic Aldehyde, Aldehyde, Ethanal, Ethyl Aldehyde
Acetamide	60-35-5	1	Acetic Acid Amide, Ethanamide
Acetonitrile	75-05-8	4	Methyl Cyanide, Ethanenitrile, Cyanomethane
Acetophenone	98-86-2	1	Acetylbenzene, Methyl Phenyl Ketone, Hypnone
Acetylaminofluorine, [2-]	53-96-3	0.005	N-2-Fluorenyl Acetamide, N-Fluorenyl Acetamide, 2-Acetamideofluorene
Acrolein	107-02-8	0.04	Acrylaldehyde, Acrylic Aldehyde, Allyl Aldehyde, Propenal
Acrylamide	79-06-1	0.02	Propenamide, Acrylic Amide, Acrylamide Monomer, Ethylenecarboxamide
Acrylic Acid	79-10-7	0.6	Propenoic Acid, Ethylene Carboxylic Acid, Vinylformic Acid
Acrylonitrile	107-13-1	0.3	Vinyl Cyanide, Cyanoethylene, Propenenitrile
Allyl Chloride	107-05-1	1	1-Chloro-2-Propene, 3-Chloropropylene, Chloroallylene, Alpha-Propylene
Aminobiphenyl, [4-]	92-67-1	1	Biphenylene, P-Phenylaniline, Xenylamine, 4-Aminodiphenyl, 4-Biphenylamine
Aniline	62-53-3	1	Aminobenzene, Phenylamine, Aniline Oil, Aminophen, Arylamine
Anisidine, [Ortho-]	90-04-0	1	O-Methoxyaniline
Anthracene	120-12-7	0.01	Anthracin, Green Oil, Paranaphthalene, Tetraolive N2G
Antimony Compounds (Notes 2, 4)		5	Elemental Antimony (CAS 7440-36-0), Antimony (Pentachloride, Tribromide, Trichloride, Trifluoride)
Antimony Pentafluoride	7783-70-2	0.1	
Antimony Potassium Tartrate	28300-74-5	1	
Antimony Trioxide	1309-64-4	1	
Antimony Trisulfide	1345-04-6	0.1	
Arsenic Compounds (Notes 2, 4)		0.005	Arsenic (Diethyl, Disulfide, Pentoxide, Trichloride, Trioxide, Trisulfide), Arsinine, Elemental Arsenic (CAS 7440-38-2)
Asbestos	1332-21-4	0	Chrysotile, Amosite, Crocidolite, Tremolite, Anthophyllite, Actinolite
Benz(a)Anthracene	56-55-3	0.01	Benzanthrene, Benzo(a)anthracene, Benzphenanthrene, Naphthanthracene

Benzene	71-43-2	2	Benzol, Phenyl Hydride, Coal Naphtha, Phene, Benxole, Cyclohexatriene
Benzidine	92-87-5	0.0003	4,4'-Biphenyldiamine, P-Diaminodiphenyl, 4,4'-Diaminobiphenyl, Benzidine Base
Benzo(a)pyrene	50-32-8	0.01	3,4-Benzpyrene
Benzo(b)fluoranthene	205-992	0.01	
Benzo(k)fluoranthene	107-08-9	0.01	
Benzotrichloride	98-07-7	0.006	Benzoic Trichloride, PhenylChloroform, Trichloromethylbenzene
Benzyl Chloride	100-44-7	0.1	Alpha-Chlorotoluene, Toly Chloride
Beryllium Compounds (Notes 2, 4)		0.008	Elemental Beryllium (CAS 7440-41-7), Glucinum
Beryllium Salts		0.00002	
Biphenyl, [1, 1-]	92-52-4	10	Diphenyl, Phenylbenzene
Bis(Chloroethyl)Ether	111-44-4	0.06	Dichloroethyl ether, Dichloroether, Dichloroethyl Oxide, BCEE
Bis(Chloromethyl)Ether	542-88-1	0.0003	BCME, Sym-Dichloromethyl ether, Dichloromethyl Ether, Oxybis-(Chloromethane)
Bromoform	75-25-2	10	Tribromomethane, Methyl Tribromide
Bromomethane	74-83-9	10	Methyl Bromide
Butadiene, [1,3-]	106-99-0	0.07	Biethylene, Biviny, Butadiene Monomer, Divinyl Erythrene, Vinylethylene
Butoxyethanol Acetate [2-]	112-07-2	5	2-Butoxyethyl Acetate, Butyl Cellosolve Acetate, Butyl Glycol Acetate
Butylene Oxide, [1,2-]	106-88-7	1	1,2-Epoxybutane, 1-Butene Oxide, 1,2-Butene Oxide
Cadmium Compounds (Notes 2, 4)		0.01	Cadmium (Dust, Fume, Acetate, Chlorate, Chloride, Fluoride, Oxide, Sulfate, Sulfide), Elemental Cadmium (CAS 7440-43-9)
Calcium Cyanamide	156-62-7	10	Nitrolime, Caciium Carbimide, Cyanamide
Caprolactam (Delisted)	105-60-2		Hexahydro-2H-Azepin-2-One, Aminocaproic Lactam, Epsilon-Caprolactam
Captan	133-06-2	10	N-Trichloromethylmercapto-4-Cyclohexene-1.2-Dicarboximide
Carbaryl	63-25-2	10	1-Naphthyl-N-Methylcarbamate
Carbon Disulfide	75-15-0	1	Carbon Bisulfide, Dithiocarbonic Anhydride
Carbon Tetrachloride	56-23-5	1	Tetrachloromethane, Perchloromethane
Carbonyl Sulfide	463-58-1	5	Carbon Oxide Sulfide, Carbonoxysulfide
Catechol	120-80-9	5	Pyrocatechol, O-Dihydroxybenzene
Chloramben	133-90-4	1	3-Amino-2,5-Dichlorobenzoic Acid, Amben, Amiben*, Vegiben* (*Trademark)
Chlordane	57-74-9	0.01	ENT9932, Octachlor
Chlorine	7782-50-5	0.1	Bertholite
Chloroacetic Acid	79-11-8	0.1	Monochloroacetic Acid, Chloroethanoic Acid
Chloroacetophenone, [2-]	532-27-4	0.06	Phenacyl Chloride, Chloromethyl Phenyl Ketone, Tear Gas,

			Mace
Chlorobenzene	108-90-7	10	Benzene Chloride, Monochlorobenzene, Chlorobenzol, Phenyl Chloride, MCB
Chlorobenzilate	510-15-6	0.4	Ethyl-4,4'-Dichlorobenzilate, Ethyl-4,4'Dichlorophenyl Glycollate
Chloroform	67-66-3	0.9	Trichloromethane
Chloromethyl Methyl Ether	107-30-2	0.1	CMME, Methyl Chloromethyl Ether, Chloromethoxymethane, Monochloromethyl Ether
Chloroprene	126-99-8	1	2-Chloro-1,3-Butadiene, Chlorobutadiene, Neoprene Rubber Compound
Chromium (VI) Compounds (Notes 4, 10)		0.002	Chromate (VI) [Lead, Eilithium, Trioxide, Phosphate, Potassium, Zinc], Chromic Acid (CAS 7738-94-5), Calcium Chromate (CAS 13765-19-0)
Chromium Compounds (Notes 4, 10)		5	Elemental Chromium (CAS 7440-47-3), Chromium (II) Compounds, Chromium (III) Compounds [Acetate, Bromide, Fluoride, Nitrate, Oxide, Sulfate], Chromic Chloride )(CAS 10025-73-7)
Chrysene	218-01-9	0.01	
Cobalt Compounds (Notes 2,4)	12010-68-1	0.1	Cobalt (Bromide, Carboyl, Chloride, Diacetate, Formate, Nitrate, Oxide, Sulfamate) Elemental Cobalt (CAS 7440-48-4)
Coke Oven Emissions	8007-45-2	0.03	Coal Tar, Coal Tar Pitch, Coal Tar Distillate
Cresol, [Meta-]	108-39-4	1	3-Cresol, M-Cresylic Acid, 1-Hydroxy-3-Methylbenzene, M-Hydroxytoluene
Cresol, [Ortho-]	95-48-7	1	2-Cresol, O-Cresylic Acid, 1-Hydroxy-2-Methylbenzene, 2-Methylphenol
Cresol, [Para-]	106-44-5	1	4-Cresol, P-Cresylic Acid, 1-Hydroxy-4-Methylbenzene, 4-Hydroxytoluene
Cresols (Mixed Isomers)	1319-77-3	1	Cresylic Acid
Cumene	98-82-8	10	Isopropyl Benzene, 2-Phenylpropane
Cyanide Compounds (Notes 7)	20-09-7	0.1	Hydrogen Cyanide (CAS 74-90-8), Potassium Cyanide (CAS 151-50-8), Sodium Cyanide (CAS 143-33-9), Copper Cyanide (CAS 544-92-3), Cupricin, Cuprous Cyanide, Chlorine Cyanide (CAS 506-77-4), Cyanogen Chloride, Chlorocyanogen, Chlorcyan, Barium Cyanide (CAS 542-62-1), Cyanogen (CAS 460-19-5), Cyanogen Bromide (CAS 506-68-3), Potassium Silver Cyanide (CAS 506-61-6), Silver Cyanide (CAS 506-64-9), Zinc Cyanide (CAS 557-21-1), and other cyanide salts
DDE (p,p'-Dichlorodiphenyl Dichloroethylene	72-55-9	0.01	Dichlorodiphenyldichloroethylene
Di(2-Ethylhexyl)Phthalate, (DEHP)	117-81-7	5	Bis(2-ethylhexyl)Phthalate, Di(2-Ethylhexyl)Phthalate, DOP, Di-Sec-Octyl Phthalate

Diaminotoluene, [2,4-]	95-80-7	0.02	2,4-Toluene Diamine, 3-Amino-Para-Toluidine, 5-Amino-Ortho-Toluidine
Diazomethane	334-88-3	1	Azimethylene, Diazirine
Dibenz(a,h)anthracene	53-70-3	0.01	1,2,5,6-Benzanthracene, Dibenzo(a,h)anthracene
Dioxins/Furans (Note 9)		6.E-7	Polychlorinated Dibenzodioxin (PCDD), Polychlorinated Dibenzofurans (PCDF)
Dibenzofuran	132-64-9	5	Diphenylene Oxide
Dibromo-3-Chloropropane, [1,2-]	96-12-8	0.01	DBCP
Dibromomethane, [1,2-]	106-93-4	0.1	Ethylene Dibromide, Ethylene Bromide, Sym-Dibromoethane
Dibutyl Phthalate	84-74-2	10	DBP, Dibutyl 1,2-Benzenedicarboxylate, Di-N-Butylphthalate
Dichlorobenzene, [1,4-]	106-46-7	3	1,4-Dichloro-P-DCB, 1-4-DCB, PDB, PDCB
Dichlorobenzidene, [3,3-]	91-94-1	0.2	4,4'-Diamino-3,3'-Dichlorobiphenyl, 3,3'-Dichlorobiphenyl-4,4'-Diamine, DCB
Dichloroethane, [1,1-]	75-34-3	1	Ethylidene Dichloride, 1,1-Ethylidene Dichloride, Asymmetrical Dichloroethane
Dichloroethane, [1,2-]	107-06-2	0.8	Ethylene Dichloride, Glycol Dichloride, Ethylene Chloride
Dichloroethylene, [1,1-]	75-35-4	0.4	Vinylidene Chloride, DCE, VDC
Dichloromethane	75-90-2	10	Methylene Chloride, Methane Dichloride
Dichlorophenoxyacetic acid, [2,4-] (Note 6)	94-75-7	10	2,4-D Acid
Dichloropropane, [1,2-]	78-87-5	1	Propylene Dichloride
Dichloropropene [1,3-]	542-75-6	1	1,3-Dichloropropylene, Alpha-Chlorallyl Chloride
Dichlorvos	62-73-7	0.2	DDVP, 2,2-Dichlorovinyl dimethylphosphate
Diethanolamine	11-42-2	5	Bis(2-Hydroxyethyl)Amine, 2,2'-Dihydroxydiethylamine, Di(2-Hydroxyethyl)Amine
Diethyl Sulfate	64-67-5	1	Diethyl Ester Sulfuric Acid, Ethyl Sulfate
Diethylene Glycol Monobutyl Ether	112-34-5	5	2-(2-Butoxyethoxy)ethanol, Butyl Carbitol, Butyl Digol
Dimethoxybenzidine, [3,3-]	119-90-4	0.1	Fast Blue B Base, Dianisidine, O-Dianisidine
Dimethyl Benzidine, [3,3-]	119-93-7	0.008	O-Tolidine, Bianisidine, 4,4'-Diamino-3,3'-Dimethylbiphenyl, Diaminoditoyl
Dimethyl Carbamoyl Chloride	79-44-7	0.02	DMCC, Chloroformic Acid Dimethyl Amide, Dimethyl Carbamyl Chloride
Dimethyl Formamide	68-12-2	1	DMF, Formyldimethylamine
Dimethyl Hydrazine, [1,1-]	57-14-7	0.008	Unsymmetrical Dimethylhydrazine, UDMH, Dimazine
Dimethyl Phthalate*	131-11-3	10	Phthalic Acid, Dimethyl Ester, Dimehtyl 1,2-Benzenedicarboxylate, DMP
Dimethyl Sulfate	77-78-1	0.1	Sulfuric Acid Dimethyl Ester, Methyl Sulfate, DMS
Dimethylaminoazobenzene, [4-]	60-11-7	1	N,N-Dimethyl-P-Phenylazo-Aniline, Benzeneazo Dimethylaniline
Dimethylaniline, [N,N-]	121-69-7	1	N,N-Diethyl Aniline, N,N-Dimethylphenylamine, DMA
Dinitro-O-Cresol, [4,6-] (Note 6)	534-52-1	0.1	DNOC, 3,5-Dinitro-O-Cresol, 2-Methyl-4,6-Dinitrophenol

Dinitrophenol, [2,4-]	51-28-5	1	DNP
Dinitrotoluene, [2,4-]	121-14-2	0.02	Dinitrotoluol, DNT, 1-Methyl-2,4-Dinitrobenzene
Dioxane, [1,4-]	123-91-1	6	1,4-Diethyleneoxide, Diethylene Ether, P-Dioxane
Diphenylhydrazine, [1,2-]	122-66-7	0.09	Hydrazobenzene, N,N'-Diphenylhydrazine, N,N'-Bianiline, 1,1'-Hydrodibenzene
Diphenylmethane Diisocyanate, [4,4-]	101-68-8	0.1	Methylene Bis(Phenylisocyanate), Methylene Diphenyl Diisocyanate, MDI
Epichlorohydrin	106-89-8	2	1-Chloro-2,3-Epoxypropane, EPI, Chloropropylene Oxide, Chloromethyloxirane
Ethoxy Ethanol, [2-]	110-80-5	10	Cellosolve Solvent, Ethylene Glycol Monoethyl Ether
Ethoxyethyl Acetate, [2-]	111-15-9	5	Cellosolve Acetate, EGEEA, Ethylene Glycol Monoethyl Acetate
Ethyl Acrylate	140-88-5	1	Ethyl Propenoate, Acrylic Acid Ethyl Ester
Ethyl Benzene	100-41-4	10	Ethylbenzol, Phenylethane, EB
Ethyl Chloride	75-00-3	10	Chloroethane, Monochloroethane, Hydrochloric Ether
Ethylene Glycol	107-21-1	10	1,2-Ethanediol, Glycol Alcohol, Blycol, EG
Ethylene Glycol Monobutyl Ether (Delisted)	111-76-2		Butyl Cellosolve, 2-Butoxyethanol
Ethylene Glycol Monoethyl Ether	112-25-4	5	Glycol monoethyl Ether, N-Hexyl Glycol, EGHE, Hexyl Cellosolve
Ethylene Imine (Aziridine)	151-56-4	0.003	Azacyclopropane, Dimethyleneimine, Ethylenimine, Vinylamine, Azirane
Ethylene Oxide	75-21-8	0.1	1,2-Epoxyethane, Oxirane, Dimethylene Oxide, Anprolene
Ethylene Thiourea	96-45-7	0.6	2-Imidazolidinethione, ETU
Formaldehyde	50-00-0	2	Oxymethylene, Formic Aldehyde, Methanal, Methylene Oxide, Oxomethane
Glycol Ethers (Ethylene Glycol Ethers)(Notes 3, 5)		5	
Glycol Ether (Diethylene Glycol Ethers)(Notes 3, 5)		5	
Heptachlor	76-44-8	0.02	1,4,5,6,7,8,8A-Heptachloro-3A,4,7,7A-Tetrahydro-4,7-Methanoindiene
Hexachlorobenzene	118-74-1	0.01	Perchlorobenzene, HCB, Pentachlorophenyl Benzene, Phenyl Perchloryl
Hexachlorobutadiene	87-68-3	0.9	Perchlorobutadiene, 1,3-Hexachlorobutadiene, HCB
Hexachlorocyclohexane, [Alpha-]	319-84-6	0.01	Benzene Hexachloride-Alpha isomer, ENT-9232, Alpha-Lindane, Alpha-BHC
Hexachlorocyclohexane, [Beta-]	319-85-7	0.01	Trans-Alpha Benzenehexachloride, Beta-BHC, Beta-Lindane, Beta-Hexachlorobenzene
Hexachlorocyclohexane, [Delta-]	319-86-8	0.01	Delta-Benzene Hexachloride, Delta-BHC, Delta-Lindane, ENT-9236

Hexachlorocyclohexane, [Technical]	608-73-1	0.01	Benzene hexachloride, HCH, BHC, ENT-8601, Gammexane, Compound-666
Hexachlorocyclopentadiene	77-47-4	0.1	HCCPD, HEX
Hexachloroethane	67-72-1	5	Perchloroethane, Carbon Hexachloride, HCE, 1,1,1,2,2,2-Hexachloroethane
Hexamethylene Diisocyanate, 1,6-	822-06-0	0.02	1,6-Diisocyanatohexane, 1,6-Hexanediol Diisocyanate
Hexamethylphosphoramide	680-31-9	0.01	Hexamethylphosphoric Triamide, HEMPA, Hexametapol, Hexamethylphosphoramide
Hexane	110-54-3	10	Hexane, NCI-c60571
Hydrazine	302-01-2	0.004	Methylhydrazine, Diamide, Diamine, Hydrazine Base
Hydrogen Chloride	7647-01-0	10	Hydrochloric Acid, Muriatic Acid, Anhydrous Hydrochloric Acid
Hydrogen Fluoride	7664-39-3	0.1	Hydrofluoric Acid Gas, Fluorhydric Acid Gas, Anhydrous Hydrofluoric Acid
Hydroquinone	123-31-9	1	Quinol, Hydroquinol, P-Diphenol, 1,4-Benzenediol, Hydrochinone, Arctuvine
Indeno(1,2,3-cd)Pyrene	193-39-5	0.01	
Isophorone	78-59-1	10	3,3,5-Trimethyl-2-Cyclohexene-1-One, Trimethylcyclohexone, Isoacetophorone
Lead Compounds (Notes 2, 4)	20-11-1	0.01	Lead (Arsenate, Chloride, Fluoride, Iodide, Nitrate, Sulfate, Sulfide), Lead Acetate (CAS 301-04-2), Lead Subacetate (CAS 13335-32-6), Tetraethyl lead (CAS 78-00-2)
Lindane [Gamma-Hexachlorocyclohexane] (Notes 3, 5)	58-89-9	0.01	Benzene Hexachloride – Gamma Isomer
Maleic Anhydride	108-31-6	1	2,5-Furandiene, Cis-Butenedioic Anhydride, Toxilic Anhydride
Manganese Compounds (Notes 2, 4)	20-12-2	0.8	Manganese (Acetate, Chloride, Dioxide, (II)-Oxide, (III)-Oxide, (II)-Sulfate), MANEB (CAS 12427-38-2), Elemental Manganese (CAS 7439-96-5), Methylcyclopentadienyl Manganese (CAS 12108-13-3)
Mercury Compounds (Notes 2, 4)	20-13-3	0.01	Mercury (Chloride, Cyanide, (I,II)-[Bromide, Iodide, Nitrate, Sulfate], Oxide), Elemental Mercury (CAS 7439-97-6), Colloidal Mercury, Quick Silver, NCI-c60399, (Alkyl & Aryl), Methyl Mercury (CAS 22967-92-6), Phenyl Mercuric Acetate (CAS 62-38-4)
Methanol	67-56-1	10	Methyl Alcohol, Carbinol, Wood Alcohol, Wood Spirit
Methoxychlor	72-43-5	10	2,2-Bis(P-Methoxyphenyl)-1,1,1-Trichloroethane, Dimethoxy-DDT
Methoxy Ethanol, [2-]	108-86-4	10	Ethylene Glycol Monomethyl Ether, Methol Cellosolve
Methyl Chloride	74-87-3	10	Chloromethane, Monochloromethane
Methyl Ethyl Ketone (Delisted)	78-93-3		2-Butanone, MEK, Butanone, Ethyl Methyl Ketone

Methyl Hydrazine	60-34-4	0.06	Monomethylhydrazine, Hydrozomethane, 1-Methylhydrazine
Methyl Iodide	74-88-4	1	Idomethane
Methyl Isobutyl Ketone	108-10-1	10	Hexone, 4-Methyl-2-Pentanone, Isobutyl Methyl Ketone, MIBK
Methyl Isocyanate	624-83-9	0.1	Isocyanatomethane, Isocyanic Acid, Methyl Ester
Methyl Methacrylate	80-62-6	10	Methyl-2-Methyl-2-Propenoate, Methacrylic Acid, Methyl Ester, MME
Methyl Tert-Butyl Ether	12108-13-3	10	MTBE
Methylcyclopentadienyl Manganese	12108-13-3	0.1	
Methylene Bis(2-Chloroaniline), [4,4-]	101-14-4	0.2	Curene, MOCA, 4,4'-Diamino-3,3'-Dichlorodiphenylmethane
Methylenedianiline, [4,4-]	101-77-9	1	4,4'-Diaminodipheylmethane, DDM, MDA, Bis(4-Aminophenyl)Methane, DAPM
Mineal Fibers (Notes 1, 2, 5)		0	
Naphthalene	91-20-3	10	Naphthalin, Moth Flake, Tar Caphor, White Tar, Moth Balls
Naphthylamine [Alpha-]	134-32-7	0.01	1-Naphthylamine, 1-Aminonaphthalene, Naphthallidine
Naphthylamine, [Beta-]	91-59-8	0.01	2-Aminonaphthalene, 6-Naphthylamine, 2-Naphthylamine Mustard
Nickel Carbonyl	13463-39-3	0.1	Nickel Tetracarbonyl
Nickel Compounds (Notes 2, 4)		1	Nickel (Acetate, Ammonium Sulfate, Chloride, Hydroxide, Nitrate, Oxide, Sulfate), Nickel Oxide (CAS 1313-99-1), nickel Refinery Dust, Nickel Subsulfide (CAS 12035-72-2), Elemental Nickel (CAS 7440-02-0), Nickel Carbonyl (CAS 13463-39-3)
Nickel Refinery Dust	12035-72-2	0.08	Nickel Dust (CAS 7440-02-0), Nickel Particles
Nickel Subsulfide		0.04	Nickel Sulphide, Heazlewoodite, Nickel Tritadisulphide
Nitrobenzene	98-95-3	1	Nitrobenzoil, Oil of Mirbane, Oil of Bitter Almonds
Nitrobiphenyl, [4-]	92-93-3	1	4-Nitrodiphenyl, P-Nitrobiphenyl, P-Nitrophenyl, PNB
Nitrophenol, [4-]	100-02-7	5	4-Hydroxynitrobenzene, Para-Nitrophenol
Nitropropane, [2-]	79-46-9	1	Dimethylnitromethane, Sec-Nitropropane, Isonitropropane, Nitroisopropane
Nitrosodimethylamine, [N-]	62-75-9	0.001	Dimethylnitrosamine, DMN, DMNA
Nitrosomorpholine, [N-]	59-89-2	1	4-Nitrosomorpholine
Nitroso-N-MethylUrea, [N-]	684-93-5	0.0002	N-Methyl-N-Nitrosourea, N-Nitroso-N-Methylcarbamide
Octachloronapthalene	2234-13-1	0.01	Halowax 1051
Parathion	56-38-2	0.1	DNTP, Monothiophosphate, Diethyl-P-Nitrophenyl
PCB (Polychlorinated Biphenyls)	1336-36-3	0.009	Aroclors
Pentachloronitrobenzene	82-68-8	0.3	Quintobenzene, PCNB, Quiniozene
Pentachlorophenol	87-86-5	0.7	PCP, Penchlorol, Pentachlorophenate, 2,3,4,5,6-Pentachlorophenol
Phenol	108-95-2	0.1	Carbolic Acid, Phenic Acid, Phenylic Acid, Phenyl Hydrate, Hydroxybenzene

Phenylenediamine, [para-]	106-50-3	10	P-Aminoaniline, 1,4-Diaminobenzene, Benzenediamine, Para
Phosgene	75-44-5	0.1	Carbonyl Chloride, Carbon Oxychloride, Carbonic Acid Dichloride
Phosphine	7803-51-2	5	Hydrogen Phosphide, Phosphoretted Hydrogen, Phosphorus Trihydride
Phosphorous (Yellow or White)	7723-14-0	0.1	Common Sense Cockroach and Rate Preparations
Phthalic Anhydride	85-44-9	5	Phthalic Acid Anhydride, Benzene-O-Dicarboxylic Acid Anhydride, Phthalandione
Polycyclic Organic Matter (Notes 3, 5)	TP15	0.01	POM, PAH, Polyaromatic Hydrocarbons,
Propane Sultone, [1,3-]	1120-71-4	0.03	1,2-Oxathiolane-2,2-Dioxide, 3-Hydroxy-1-Propanesulphonic Acid Sultone
Propiolactone, [Beta-]	57-57-8	0.1	2-Oxeatanone, Propiolactone, BPL, 3-Hydroxy-B-Lactone-Propanoic Acid
Propionaldehyde	123-38-6	5	Propanal, Propyl Aldehyde, Propionic Aldehyde
Propoxur [Baygon]	114-26-1	10	O-Isopropoxyphenol Methylcarbamate, 2-(1-Methyloxy)Phenol Methylcarbamate
Propylene Oxide	75-56-9	5	1,2-Epoxypropane, Methylethylene Oxide, Methyl Oxirane, Propene Oxide
Propyleneimine, [1,2-]	75-55-8	0.003	2-Methyl Aziridine, 2-Methylazacyclopropane, Methylethyleneimine
Quinoline	91-22-5	0.006	1-Azanaphthalene, 1-Benzazine, Benzo(B)Pyridine, Chinoleine, Leucoline
Quinone	016-51-4	5	Benzoquinone, Chinone, P-Benzoquinone, 1,4-Benzoquinone
Radionuclides		(note 9)	Radon 222 (CAS 14859-67-7), Radium 226, 228 (CAS 7440-14-4), Uranium (Natural) (CAS 7440-61-1)
Selenium Compounds (Notes 2, 4)	7782-49-2	0.1	Selenium (Metal, Dioxide, Disulfide, Hexafluoride), Elemental Selenium (CAS 7782-49-2), Selenious Acid (CAS 7783-00-8), Selenium Sulfide (CAS 7446-34-6), Selenourea (CAS 630-10-4), Thallium Selenite (CAS 12039-52-0)
Styrene	100-42-5	1	Cinnamene, Cinnamol, Phenethylene, Phenylethylene, Vinylbenzene
Styrene Oxide	96-09-3	1	Epoxyethylbenzene, Phenylethylene Oxide, Phenyl Oxirane, Epoxystyrene
Tetrachlorodibenzo-P-Dioxin,[2,3,7,8] (Note 9)	1746-01-6	6E-7	TCDD
Tetrachloroethane, [1,1,2,2-]	79-34-5	0.3	Sym-Tetachloroethane, Acetylene Tetrachloride, Ethane Tetrachloride
Tetrachloroethylene	127-18-4	10	Perchloroethylene
Titanium Tetrachloride	7550-45-0	0.1	Titanium Chloride

Toluene	108-88-3	10	Toluol, MethylBenzene, Phenylmethane, MethylBenzol
Toluene Diisocyanate, [2,4-]	584-84-9	0.1	TDI, Tolyene Diisocyanate, Diisocyanatoluene
Toluidine, [Ortho-]	95-53-4	4	Ortho-Aminotoluene, Ortho-Methylaniline, 1-Methyl-1,2-Aminobenzene
Toxaphene	8001-35-2	0.01	Chlorinated Camphene, Camphechlor, Polychlorcamphene
Trichlorobenzene [1,2,4-]	120-82-1	10	Umsym-Trichlorobenzene
Trichloroethane, [1,1,1-]	71-55-6	10	Methyl Chloroform
Trichloroethane, [1,1,2-]	79-00-5	1	Vinyl Trichloride, Beta-Trichloroethane
Trichloroethylene	79-01-6	10	Ethylene Trichloride, Ethinyl Trichloride, Trichloroethene, TRI, TCE
Trichlorophenol, [2,4,5-]	95-95-4	1	2,4,5-TCP
Trichlorophenol, [2,4,6-]	88-06-2	6	2,4,6-TCP
Triethylamine*	121-44-8	10	N,N-Diethylethanamine, TEA, (Diethylamino)Ethane
Trifluralin	1582-09-8	9	2,6-Dinitro-N-N-Dipropyl-4-(Trifluoromethyl)Benzeneamine
Trimethylpentane, [2,2,4-]	540-84-1	5	Isobutyltrimethylethane, Isoctane
Urethane [Ethyl Carbamate]	51-79-6	0.8	Ethyl Urethane, O-Ethylurethane, Leucothane, NSC 746, Urethan
Vinyl Acetate	108-05-4	1	Acetic Acid Vinyl Ester, Vinyl Acetate Monomer, Ethenyl Ethanoate
Vinyl Bromide	593-60-2	0.6	Bromoethylene, Bromoethene
Vinyl Chloride	75-01-4	0.2	Chloroethylene, Chloroethene, Monochloroethylene
Xylene, [meta-] (Notes 5, 11)	108-38-3	10	M-Dimethylbenzene, 1,3-Xylene, 1,3-Dimethylbenzene, M-Xylol
Xylene, [ortho-] (Notes 5, 11)	95-47-6	10	O-Xylol, O-Dimethylbenzene, O-methyltoluene, 1,2-Xylene, 1,2-Dimethylbenzene
Xylene, [para-] (Notes 5, 11)	106-42-3	10	P-dimethylbenzene, P-Methyltoluene, 1,4-Xylene, 1,4-Dimethylbenzene, P-Xylol
Xylenes (Mixed Isomers) (Notes 5, 11)	1330-20-7	10	Aromatic hydrocarbons Mixed, Diemthylbenzene

Note 1: Includes mineral fiber emissions from facilities manufacturing or processing glass, rock, or slag fibers (or other mineral derived fibers) of average diameter 1 micrometer or less.

Note 2: For those compounds specifically listed, emissions of compounds in this aggregate group are combined for comparison to the SMALS.

Note 3: Emissions of compounds in this aggregate group are not combined for comparison to the SMAL.

Note 4: Mass of the metal portion of the compound is used to determine emissions for comparison to the SMALS.

Note 5: The total mass of the compound is used to determine emissions for comparison to the SMALS.

Note 6: For these compounds, emissions within the same aggregate group are combined for comparison to the SMALS and the 2,4-D portion of the 2,4-D salts and esters and the Dinitro-ortho-cresol (DNOC) portion of 4,6 Dinitro-o-cresol salts are used to determine emissions for comparison to the SMALS.

Note 7: Except for those compounds specifically listed, emissions of cyanide compounds are combined and the mass of the cyanide portion of the compound is used to determine emissions for comparison to the SMALS. For those compounds specifically listed in the table, emissions are not combined and the total mass of the compound is used for comparison to the SMAL.

Note 8: The SMAL for radionuclides is defined as the effective dose equivalent to 0.3 millirems per year for 7 year exposure associated with a cancer risk of 1 in 1 million.

Note 9: For comparison to the SMAL, emissions of polychlorinated dibenzodioxins & polychlorinated dibenzofurans (PCDD/PCDF) and polychlorinated biphenyls

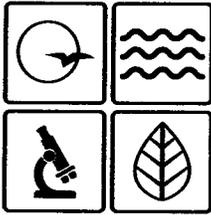
(PCB) are scaled according to the toxic equivalency factor method and then combined for comparison to the RAL:

- 1) Scale the annual emissions of each PCDD/PCDF and PCB by its respective toxic equivalency factor (TEF)
- 2) After the emissions are scaled, combine them into a single potential annual emissions (tons/year) for comparison to the SMAL

Toxic Equivalency Factors for PCDD, PCDF, and PCB compounds

PCDDs	TEF	PCDFs	TEF	PCBs	TEF
2,3,7,8-TCDD	1.0	2,3,7,8-TCDF	0.1	3,3',4,4'-TCB (77)	0.0001
1,2,3,7,8-PeCDD	1.0	1,2,3,7,8-PeCDF	0.03	3,4,4',5-TCB (81)	0.0003
1,2,3,4,7,8-HxCDD	0.1	2,3,4,7,8-PeCDF	0.3	3,3',4,4',5-PeCB (126)	0.1
1,2,3,7,8,9-HxCDD	0.1	1,2,3,4,7,8-HxCDF	0.1	3,3',4,4',5,5'-HxCB (169)	0.03
1,2,3,6,7,8-HxCDD	0.1	1,2,3,7,8,9-HxCDF	0.1	2,3,3',4,4' PeCB (105)	0.00003
1,2,3,4,6,7,8-HpCDD	0.01	1,2,3,6,7,8-HxCDF	0.1	2,3,4,4',5 PeCB (114)	0.00003
1,2,3,4,6,7,8,9-OCDD	0.0003	2,3,4,6,7,8-HxCDF	0.1	2,3',4,4',5 PeCB (118)	0.00003
		1,2,3,4,6,7,8-HpCDF	0.01	2',3,4,4',5 PeCB (123)	0.00003
		1,2,3,4,7,8,9-HpCDF	0.01	2,3,3',4,4',5-HxCB (156)	0.00003
		1,2,3,4,6,7,8,9-OCDF	0.0003	2,3,3',4,4',5-HxCB (157)	0.00003
				2,3',4,4',5,5'-HxCB (167)	0.00003
				2,3,3',4,4',5,5'-HpCB	0.00003
			(189)		

Note 10: Chromium (VI) compounds, also known as hexavalent chromium compounds, are combined for comparison to the SMAL for Chromium (VI) compounds. Chromium Compounds of all other oxidation states [i.e. excluding Chromium (VI) Compounds] are combined for comparison to the SMAL for Chromium Compounds.  
 Note 11: Emissions of all isomers are combined and compared to the SMAL for any of the listed isomers as they are all the same.



Missouri Department of dnr.mo.gov

# NATURAL RESOURCES

Eric R. Greitens, Governor

Carol S. Comer, Director

JUL 06 2017

Mr. Greg Rajek  
Process Engineer  
Merrill Iron and Steel  
2101 N Packer Road  
Springfield, MO 65803

RE: New Source Review Permit - Project Number: 2015-11-047

Dear Mr. Rajek:

Enclosed with this letter is your permit to construct. Please study it carefully and refer to Appendix A for a list of common abbreviations and acronyms used in the permit. Also, note the special conditions, if any, on the accompanying pages. The document entitled, "Review of Application for Authority to Construct," is part of the permit and should be kept with this permit in your files. Operation in accordance with these conditions and your new source review permit application 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.

This permit may include requirements with which you may not be familiar. If you would like the department to meet with you to discuss how to understand and satisfy the requirements contained in this permit, an appointment referred to as a Compliance Assistance Visit (CAV) can be set up with you. To request a CAV, please contact your local regional office or fill out an online request. The regional office contact information can be found at the following website: <http://dnr.mo.gov/regions/>. The online CAV request can be found at <http://dnr.mo.gov/cav/compliance.htm>.

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, United States Post Office Building, 131 West High Street, Third Floor, P.O. Box 1557, Jefferson City, Missouri 65102, phone: 573-751-2422, fax: 573-751-5018, website: [www.oa.mo.gov/ahc](http://www.oa.mo.gov/ahc).



Recycled paper

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

Sincerely,

AIR POLLUTION CONTROL PROGRAM



Susan Heckenkamp  
New Source Review Unit Chief

SH:cj

Enclosures

c: Southwest Regional Office  
PAMS File: 2015-11-047

Permit Number: