AIR QUALITY BUREAU
ATTN: Application Log in
7900 Hickman Rd Ste 1
Windsor Heights, IA 50324

FORM MI-2: MODELING INFORMATION (EMISSION SOURCE CHARACTERISTICS)

Please see instructions on reverse side.

Company Name: _____ Modeling Contact: _____

Modeling Contact Email: _____ Modeling Contact Phone: _____

☐ Check here if including calculations and/or source list as attachments. Please label those pages "MI-2A".

CALCULATIONS
This table is provides a basis for the modeled emission rates.

1. EP ID	2. Permit No.	3. Emission Unit Name	4. Throughput	5. Throughput Units	6. Emission Factor	7. Emission Factor Units	8. Rate Basis
EP001	12-A-001	Feed Dryer			2.3	lb/hr	Permit Limit
EP002	13-A-010	Boiler			0.56	lb/hr	Stack Test
EP004	98-A-100	Wood Chipper			0.01	lb/hp-hr	1,200 kW Capacity provided by vendor x 1.341 hp/kW = 1,609 hp lb/hp-hr emission factors from AP-42 'Large Stationary Diesel And All Stationary Dual-fuel Engines' (10/96) Table 3.4.1; SO_2:0.00809 x S lb/hp-hr; Assume diesel fuel sulfur content (S) of 0.05% = 4.045E-4 lb SO_2/hp-hr

POINT SOURCE															
9. EP ID	10. Permit No.	11. Emission Unit Name	12. Air Pollutant Emission Rate (lb/hr)							13. Rate Basis (Potential or Actual)	14. Height (ft)	15. Diam (in or in x in)	16. Exit Temp (°F)	17. Discharge Style (V, VR, D, H, I)	18. Flow Rate (SCFM)
			$PM_{2.5}$	PM_{10}	NO_2	SO_2	CO	Pb	O_3						
EP001	12-A-001	Feed Dryer		3.2	0.4					☒ Pot ☐ Act	48	18	180	VR	12,000
EP002	13-A-010	Boiler		1	2.2					☐ Pot ☒ Act	45.67	5.5	150	D	2,400
EP004	98-A-100	Wood Chipper		0.5	1					☐ Pot ☒ Act	46	14	330	VR	6,000
										☐ Pot ☐ Act					
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NON-POINT SOURCE											
19. EP ID	20. Permit No.	21. Emission Unit Name	22. Air Pollutant Emission Rate (lb/hr)							23. Rate Basis (Potential or Actual)	24. Height of EP (ft)
			$PM_{2.5}$	PM_{10}	NO_2	SO_2	CO	Pb	O_3		
FS001	14-A-002	Storage Pile								☒ Pot ☐ Act	25
EP WELD	13-A-001	Welding Operations		3.25						☒ Pot ☐ Act	35
FS002	99-A-020	Haul Road								☒ Pot ☐ Act	0
										☐ Pot ☐ Act	
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Instructions for Form MI-2: Modeling Information (Emission Source Characteristics)

- **Submit this form if air dispersion modeling is required by form MD or if requested by the DNR. This form is optional if air dispersion modeling is not required in Form MD.**

- **This form is designed to provide the review engineer and dispersion modeler with information on the emission characteristics of each existing emission unit/point and fugitive source located at the facility. This information may be used by the DNR to perform air dispersion modeling analyses or to review air dispersion modeling analyses submitted with the permit application.**

- **All calculations, spreadsheets, figures, assumptions, control efficiency rate, and justifications used to determine the *actual* emission rates for existing facility emission units and nearby sources must be submitted with the modeling analysis report. If this information is not submitted, the DNR will use allowable permitted emission rates or standards.**

NOTE: Permit applicants may create their own tables; however, the information required on this form must be included in any format that they may choose to use.

Understanding MI-2 Form Information: Each number provides an explanation for the corresponding field on the form.

Company Name: This is useful if application pages become separated.

Modeling Contact: Provide the name of the person the DNR should contact with questions related to modeling.

Modeling Contact Email and Phone Number: Provide the email address and telephone number of the modeling contact.

Calculations:

1. **Emission Point (EP) ID:** Called the emission point (EP) identification (ID). It can be any combination of letters or number up to 16 characters in length. The ID should match the ID for this equipment used on other construction permit applications and within this application. If also submitting an operating permit application, the ID used in this application should be consistent with those used in the operating permit application.

2. **Permit No.:** Provide the permit number of the emission source, if applicable. Indicate the emission points that part of this application by stating “this application” in the permit no. line so they are clearly distinguished. For emission units being modified as part of this project the permit number should be indicated in earlier application forms (i.e., Form EU).

3. **Emission Unit Name:** Provide the name of the emission unit, such as “Emergency Engine”, “Boiler 1”, “Haul Road”, etc.

4. **Throughput:** Provide the production rate of the equipment that was used to estimate emissions for this emission point.

5. **Throughput Units:** Provide the throughput units (i.e. hours/year, material processed tons/year, etc.).

6. **Emission Factor:** Provide either the modeled emission rate or the emission factor used to generate the modeled emission rate. The modeled emission rate will be in lbs/hr and will be equivalent to the number listed in the applicable modeling table (Point or Non-Point).

7. **Emission Factor Units:** Provide the emission factor units (i.e., lbs/hr, MMBtu/hr, lbs/ton, etc.).

8. **Rate Basis:** Indicate the methodology used to estimate emissions. Emissions must be based on the best possible method available and may vary between emission units/points. In general, DNR recommends that emissions be calculated using the hierarchy of estimation methods detailed below. The methods listed are in order of decreasing accuracy. Supporting documentation that allows DNR to recreate your calculations should be included for any calculations that cannot be easily verified.

a. Continuous Emissions Monitoring System (CEMS) data
b. Most recent stack test results
c. Material or Mass balance calculations
d. EPA or State-Approved Emission Factors
e. Vendor Supplied Emission Factors or Emissions Data
f. Engineering Estimates

When actual emission rates are calculated the facility may use actual hours of operation. Actual emissions calculations must be based on a minimum of 12 months of actual operating data. If 12 months of data is not available, then the allowable or permitted emission rate should be used.

Additional information on the emissions hierarchy, sources of emission factors and calculating emissions can be found in the DNR guidance on calculating emissions.

Point Source:

9. **Emission Point (EP) ID:** Called the emission point (EP) identification (ID). It can be any combination of letters or number up to 16 characters in length. The ID should match the ID for this equipment used on other construction permit applications and within this application. If also submitting an operating permit application, the ID used in this application should be consistent with those used in the operating permit application.

10. **Permit No.:** Provide the permit number of the emission source, if applicable. Indicate the emission points that part of this application by stating “this application” in the permit ID line so they are clearly distinguished. For emission units being modified as part of the project the permit number should be indicated in earlier application forms (i.e., Form EU).

11. **Emission Unit Name:** Provide the name of the emission unit, such as “Emergency Engine”, “Boiler 1”, “Haul Road”, etc.

12. **Air Pollutant Emission Rate:** Provide the emission rate (potential or actual) in pounds per hour (lbs/hr) for each pollutant which the Form MD requires to be modeled. Additional pollutant emission rates may be provided by the applicant. See form MD for a description of the listed pollutants.

13. **Rate Basis:** Indicate whether the emission rate calculated in question 8 is based on potential (POT) or actual (ACT) emissions.

14. **Height:** Provide the height of the emission point (stack or vent) above the ground.

15. **Diameter:** Provide the stack opening size. For a circular stack, this is the diameter (inches) of the opening. For a rectangular or square stack, this is the length and width (inches x inches) of the opening.

16. **Exit Temp:** Provide the exhaust temperature in degrees Fahrenheit.

17. **Discharge Style:** Provide the type of discharge (V, VR, D, H, or I), where V = Vertical (without rain cap or obstruction), VR = Vertical with rain cap or obstruction, D = Downward discharge; for example, a goose neck stack, H = Horizontal discharge, and I = Inside (Vent inside building).

18. **Flow Rate:** Provide the exhaust flow rate in standard cubic feet per minute (SCFM). The modeled flowrate for stacks labeled O for horizontal, obstructed or downward should be 0.001 m/s.

Non-Point Source:

This section should be used to list both indoor venting, uncaptured and fugitive emissions. Indoor venting and uncaptured emissions must be included in the modeling analysis, if applicable for that pollutant. Examples include welding operations, grain receiving areas, etc. For guidance on modeling emission units that vent inside a building please contact the DNR modeling section at (515) 725-9500 and ask to speak to a member of the Modeling Group.

Fugitive emissions are those emissions that cannot reasonably be made to pass through a stack or vent or equivalent opening. Examples include coal piles, paved and unpaved roads, equipment leaks, etc. Fugitive emissions must be included on this form if:

- Your fugitive emission sources are quantifiable;
- Your plant is one of the 28 named source categories found in PSD rules in 40 CFR 52.21;

- Your emission unit is of the source category regulated by a NSPS (40 CFR Part 60) or NESHAP (either 40 CFR Part 61 or Part 63) standard that was promulgated as of August 7, 1980;
- Your plant has been determined to be major for PSD.

If none of the above applies to your application, you do not have to include fugitive emissions.

19. **Emission Point (EP) ID:** Called the emission point (EP) identification (ID). It can be any combination of letters or number up to 16 characters in length. The ID should match the ID for this equipment used on other construction permit applications and within this application. If also submitting an operating permit application, the ID used in this application should be consistent with those used in the operating permit application.

20. **Permit No.:** Provide the permit number of the emission source, if applicable. Indicate the emission points that part of this application by stating “this application” in the permit no. line so they are clearly distinguished.

21. **Emission Unit Name:** Provide the name of the emission unit, such as “Welding Area”, “Grain Receiving Building”, “Haul Road”, etc.

22. **Air Pollutant Emission Rate:** Provide the emission rate (potential or actual) in pounds per hour (lbs/hr) for each pollutant which the Form MD requires to be modeled. Additional pollutant emission rates may be provided by the applicant. See form MD for a description of the listed pollutants.

23. **Rate Basis:** Indicate whether the emission rate calculated in question 8 is based on potential (POT) or actual (ACT) emissions.

24. **Height:** Provide the height of the emission point (stack or vent) above the ground.