POLK COUNTY PUBLIC WORKS
AIR QUALITY DIVISION
CONSTRUCTION PERMIT APPLICATION

☞SEE INSTRUCTIONS ON REVERSE SIDE☞

(1) COMPANY NAME:

(2) CERTIFICATION:

I certify that based on information and belief formed after reasonable inquiry, the enclosed documents including the attachments are true, accurate, and complete.

Responsible Official: Print Name:_____

Signature: _____

Title/Date: _____

FOR POLK COUNTY USE ONLY:

DATE RECEIVED:_____

PERMIT NUMBER:_____

FACILITY NUMBER:_____

ISSUE DATE:_____

(3) PLANT PERMIT CONTACT PERSON:

Name/Title:	Telephone:	Email:	
Street Address:	City:	State:	Zip:

(4) EQUIPMENT LOCATION:

Street or Route:	City:	State: Iowa	Zip:

Is the Equipment Portable? ☐ Yes, other Locations(s): ☐ No

(5) PERMIT PREPARER/CONSULTANT:

Name/Title:		Iowa P.E. Reg. # (if any):	
Company Name:	Telephone/Fax:	Email:	
Street Address:	City:	State:	Zip:

(6) PERMIT APPLICATION TYPE:

☐ New Source ☐ Modification to a permitted existing source (Previous Permit No._____)

☐ Unpermitted existing source ☐ Other:

(7) Briefly describe the activity of your business and its principal product:

(8) Provide a NAIC code (if known):

(9) Provide a SIC code (if known):

(10) Actual initial cost of the new equipment excluding installation costs: $_____ (Enclose Documentation)

INSTRUCTIONS

This form is used by Polk County to identify a company or facility, equipment locations, and personnel involved in the permit application. Additional information may be requested.

1. Provide the name of the company or organization applying for the permit.

2. Fill in the certification section with a signature, name, title and date. The certification **MUST** be signed by a responsible official. A responsible official could be the owner, the designated representative of the owner, or the permit engineer who prepared the application.

3. Provide the name, address, email and telephone number of the person who can be reached for questions about your permit application during the review.

4. If the equipment to be permitted is at a different location than the plant permit contact person's address, give the address here. If the equipment is at the same location, mark "same". If the equipment is portable (such as an asphalt plant), identify by marking "yes" here. Also, if there are other known locations where portable equipment will be used, write the location(s) beside "Other location(s)". Attach a separate sheet, if needed, to list multiple locations.

5. If the permit application has been prepared by a consultant, provide the name, address, etc., of the consultant. An Iowa Professional Engineering registration number should be available from the consultant. If the permit application was prepared by a company employee who is not a registered Professional Engineer, then leave this blank.

6. Mark the type of permit you are applying for, such as a new source which has not been constructed, an existing permitted source that is being modified, or an existing source (as-built) that is applying for a permit for the first time.

7. Briefly describe the primary activity and principal product of your business.

8. Provide the NAICS code (if known) for your business The North American Industry Classification System (NAICS) is the standard used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy.

9. Also provide a SIC code (if known) for your business. The Standard Industrial Classification codes are a compilation by the federal government of businesses by type of activity in which they are engaged. Standard Industrial Classification (SIC) codes are intended to cover the entire field of economic activity.

10. Provide documentation showing the cost of the new control equipment. Do not include the cost of process equipment installation.

POLK COUNTY PUBLIC WORKS
AIR QUALITY DIVISION
AIR CONSTRUCTION PERMIT APPLICATION

EMISSION UNIT INFORMATION

☞SEE INSTRUCTIONS ON REVERSE SIDE☞

Company Name:

EMISSION UNIT (SOURCE OF AIR POLLUTANT(S)) DESCRIPTION AND SPECIFICATIONS

(1) Emission Unit (EU) Name:	(2) EU ID Number:	(3) Date of Construction:
(4) Manufacturer:	(5) Model:	(6) Date of Modification (if applicable):
(7) Maximum Capacity:	(8) SCC Code (if known):	(9) Control Device Name and No. (if any)

(10) Are you requesting any permit limits?

☐ NO

☐ YES

If yes, write down all that apply:

(a) Hourly limits:_____

(b) Production limits:_____

(c) Material usage limits:_____

(d) Other:_____

Rationale for requesting the limit(s):

(11) Provide a description **AND** a drawing to show quantitatively how product or material flows through this emission unit. Include product input and output, fuel throughput, and any parameters which impact air emissions. If space below is insufficient, attach a separate sheet.

INSTRUCTIONS

This form is designed to provide Polk County about the emission unit, including a written description of how product and/or material flow through the emission unit. An emission unit is the equipment or process which generates emissions of regulated air pollutants. This form is used by the reviewer to become familiar with the emission unit.

Please put your company name in the box provided. This is useful in case any pages of the application get separated.

1. Provide the name of the emission unit, such as "paint booth", "boiler", etc.

2. Provide the identification number of the emission unit. This number is used for this permit application to identify the emission unit. It can be any number. **However, if you submitted a Title V permit application, the numbers used for identification purposes in this application should be consistent with the ID numbers used in your Title V application. Also, the ID number should match the ID numbers used on other construction permit applications and within this application.** Each emission unit in the application must have its own number. If there are multiple emission units which are involved in this permit application and they are not identical, fill out a separate form for each emission unit. If you have two emission units going to one control device with one stack, fill out a form for both emission units if they are not identical. If the emission units are identical, attach a separate sheet listing each emission unit by name, number, date of construction, date of modification (if applicable) and any other information which is different.

3. The date of construction of the emission unit is the date, month, and year in which construction or modification begins as defined in Chapter V of the Polk County Board of Health Rules and Regulations.

4. Provide the manufacturer of the emission unit's name. If the unit is custom-designed or homemade, indicate this.

5. Provide the model number of the emission unit. If the unit is custom-designed or homemade, indicate this.

6. If the emission unit has been or will be modified, give the date, month and year of the most recent or future modification.

7. Provide the maximum capacity of the emission unit or process which is generating emissions of air pollutants. For example, a bake oven would have a capacity in terms of heat input of natural gas it is fueled on (in MMBtu/hr); an assembly line would have a capacity of parts produced per day. This capacity should be based on a rated nameplate or manufacturer's literature capacity.

8. The Source Classification Code (SCC) represents a unique process or function within a source category associated with a point of air pollution emissions. SCC's were developed by the EPA to aid in classifying and tabulating air pollution emissions. SCCs try to estimate the emissions of the six criteria pollutants by providing emission factors for various industrial processes. For example, if you have a process heater fueled on natural gas with a rating if 50 MMBtu/hr, then your SCC code is 1-02-006-02 and there are emission factors listed to estimate the emissions of the six criteria pollutants from your process heater. If you do not know the emission unit's SCC code, then leave this blank.

9. Provide the control device name and number, if there is a control device attached to this emission unit. The name and number of the control device should be consistent throughout the application.

10. If you wish to have permit limits placed on the emission unit mark "Yes". Then, write down each type of limit that applies to your permit application and put the requested limit. For example, production limits may be in terms of parts produced per year, material usage limits may be in gallons per day. If requesting a permit limit(s), indicate the reason for the requested limit. This is to help Polk County and the applicant determine whether the limits are necessary, and whether or not they will accomplish the desired purpose.

11. The process description should include what raw materials or products enter and exit the emission unit, how they flow through the emission unit, any fuel usage which occurs at the emission unit, and any other material or product which flows into and out of the emission unit.

POLK COUNTY PUBLIC WORKS
AIR QUALITY DIVISION
AIR CONSTRUCTION PERMIT APPLICATION

CONTROL DEVICE AND STACK/VENT INFORMATION

☞SEE INSTRUCTIONS ON REVERSE SIDE☞

Company Name:

CONTROL DEVICE DESCRIPTION AND SPECIFICATIONS

(1) Control Device (CD) Name:	(2) CD ID:	(3) Date of Installation:
(4) Manufacturer:	(5) Model:	(6) Date of Modification (if any):

(7) Is operating schedule different than emission unit(s) controlled?

☐ No

☐ Yes Specify the schedule:

8) Capture Hood Involved? ☐ No ☐ Yes	(9) Capture Efficiency (if known):	(10) No. of EU(s) Controlled:

(11) Control efficiency supporting document attached: ☐ Manufacturer's design specifications and performance data/guarantee ☐ Stack testing report	Pollutant Controlled: Control Efficiency %:

12) If manufacturer's data is not available, use space below or attach a separate sheet to provide the control equipment design specifications and performance data to support the above-mentioned control efficiency.

STACK/VENT (EMISSION POINT) SPECIFICATIONS

(13) EP (Stack/Vent) ID:	(14) Height from the ground: ( ) feet	(15) ☐ circular stack, diameter is ( ) inches ☐ other, size is ( ) inches x inches

(16) Discharge style:

☐ V (Vertical, with unobstructing rain cap or without rain cap)

☐ VR (Vertical, with obstructing rain cap)

☐ D (Downward discharge)

☐ H (Horizontal discharge)

☐ O (Other:)

EXHAUST INFORMATION

17) Rated Flow Rate ☐ acfm ☐ scfm	(18) Moisture Content % (if known):	(19) Exit Temperature (°F)

INSTRUCTIONS

This form is used by Polk County to identify the control equipment and the emission point (stack or vent) used for the emission unit(s) proposed in this permit application. This form also asks for supporting documents to verify stated control efficiencies and details about the emission point. Additional information may be requested.

Please put your company name in the box provided. This is useful in case any pages of the application get separated.

1. Provide the name of the type of control device used. IF THERE IS NO CONTROL DEVICE ATTACHED TO THE EMISSION UNIT DESCRIBED IN EU PUT "NONE" AND GO TO BOXES (13) THROUGH (19).
2. Identify the control device by number. This number should match numbers used in other permit applications and be consistent within this application.
3. Provide the date the control device was installed or will be installed at the emission unit(s).
4. Provide the manufacturer's name for the control device. If custom-designed or homemade, indicate here.
5. Provide the model number for the control device. If custom-designed or homemade, indicate here.
6. If the control device has been or will be modified, write the date, month and year of the modification.
7. Indicate whether the control device operates on the same schedule as the emission unit it controls. If it does not, write down what the schedule is.
8. Indicate whether there is a capture hood associated with the emission unit.
9. If there is a capture hood, write down its capture efficiency, if known.
10. Write down the emission unit number(s) that are controlled by this control device.
11. If you have supporting documentation for the control efficiency(s) of the control device, mark the type of documentation you have, either manufacturer's data or stack testing report. Manufacturer's data can include a manufacturer's guaranteed emission rate or a guaranteed control efficiency. Attach the supporting documentation and label this attachment. Then, list the pollutant and provide the estimated or proven control efficiency for the control device on this form. If the control device will be controlling more than one pollutant at this emission unit, list all pollutants and the corresponding efficiencies.
12. If you do not have the documentation requested in box (11), provide other documentation for the control efficiency such as calculations or design data or other reference document. You may use the space in box (12) or attach a separate sheet.
13. Provide the number(s) of the emission point(s). **An emission point is the same as a stack or vent.**
14. Provide the height of the top of the emission point(s) above ground. If you have multiple stacks from one emission unit or control device, attach a sheet that gives the information requested in (13)-(16) for each stack.
15. Indicate by checking a box whether the stack or vent opening is circular or other shape and write in the dimensions of the opening.
16. Indicate by checking a box what the discharge style is.
17. If there is a fan with the emission point, give the rated capacity of the fan in actual or standard cubic feet.
18. Provide the moisture content, in percent, of the exhaust gas, if known. If unknown, leave blank.
19. Provide the temperature of the exhaust at the emission point in degrees Fahrenheit.
20. **Collection of Greenhouse Gas (GHG) Emissions Data** - Starting on July 2, 2007, construction permit applications must include potential greenhouse gas emissions for the project. Applications received without this information will be considered incomplete and the permit(s) cannot be issued until the information has been received. The following are the GHG emissions that must be accounted:
    (a) **CO_2:** Carbon dioxide.
    (b) **CH_4:** Methane.
    (c) **N_2O:** Nitrous oxide. Also known as dinitrogen oxide or dinitrogen monoxide or laughing gas.
    (d) **SF_6:** Sulfur hexafluoride.
    (e) **HFC:** Hydrofluorocarbons: **SEE TABLE A: COMMON GREENHOUSE GASES**
    (f) **PFC:** Perfluorocarbons: **SEE TABLE A: COMMON GREENHOUSE GASES**

POLK COUNTY PUBLIC WORKS
AIR QUALITY DIVISION
AIR CONSTRUCTION PERMIT APPLICATION

PROJECT EMISSIONS SUMMARY

☞ SEE INSTRUCTIONS ON REVERSE SIDE ☞

(1) Company Name	(4) Emission Calculation. This calculation is based on (check all that apply): ☐ Emission Factors ☐ Requested Limits ☐ Mass Balance ☐ Testing Data ☐ Other
(2) Emission Point (Stack/Vent) Number(s):	
(3) Process Flow Diagram	

SUMMARY OF EMISSIONS FROM THIS EMISSION POINT

	Pollutant	PM	PM_{10}	SO_2	NOx	VOC	CO	Lead	CARBON DIOXIDE (tpy)	METHANE (tpy)	NITROUS OXIDE (tpy)	SULPHUR HEXAFLUORIDE (lbs/yr)	HYDROFLUORO CARBONS (lbs/yr)	PERFLUORO CARBONS (lbs/yr)
(5) Emissions (After control if applicable)	Concentration													
	lbs/hr													
	tons/year or lbs/yr													
(6) *Total Project Emissions of Greenhouse Gases (GHGs)									(a) tons/year					
									(b) *CO_2e					

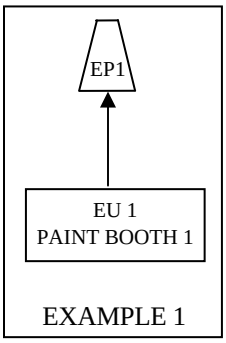
INSTRUCTIONS

This form is used by Polk County to better understand the process that is being permitted and to verify the emissions calculations and how they are calculated.

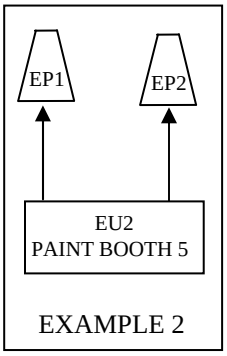
1. Provide company name.

2. Provide the number of the emission point (stack(s) or vent(s)) through which the emission unit(s) will exhaust into the atmosphere. This should be the same number as on all other forms submitted.

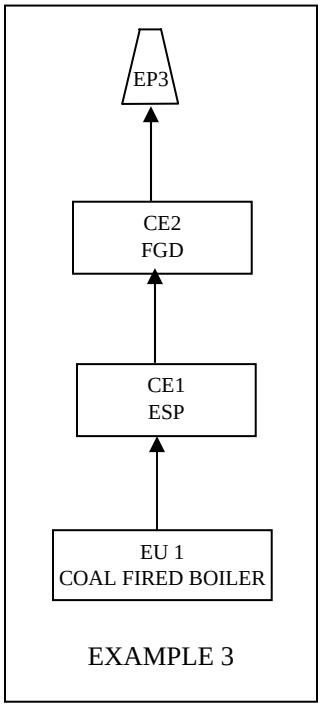
3. Process Flow Diagram:
   Identify all emission units, showing the pathway of air emissions from each emission unit through each control device (if any) to the stack of vent (see examples below). Identification numbers used in the flow diagram must be consistent throughout this application. You may use this form or attach another diagram if it provides all the information required.



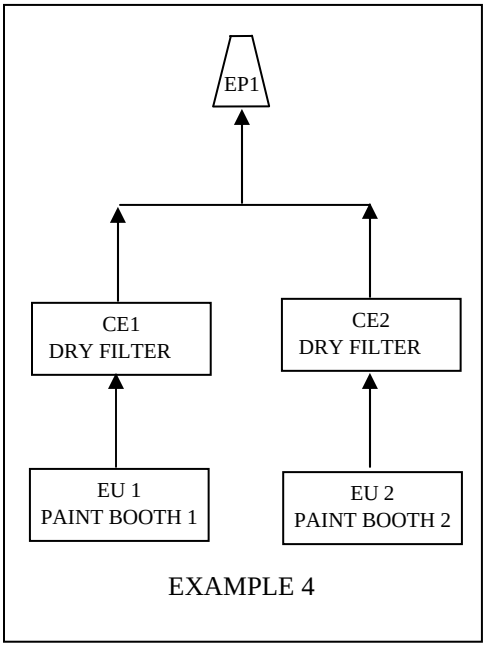
EXAMPLE 1



EXAMPLE 2



EXAMPLE 3



EXAMPLE 4

4. Emission Calculations:

   Check the appropriate box to indicate the basis for emission calculations. Show emissions calculations in detail for actual and potential to emit **for each air pollutant emitted from this emission point**. Include a description of any assumptions used in making the calculations. If more space is needed, attach an 8.5" x 11" sheet(s) labeled accordingly.

5. Summarize the emissions calculations in this table for each air pollutant emitted from this emission point (stack or vent). Emissions should be calculated as potential to emit. Potential to emit is the uncontrolled emissions at maximum design or achievable capacity (whichever is higher), and year-round continuous operation (8760 hours per year). IF there are no federally-enforceable permit limits on the source. If the emission point will have a control device or some other proposed permit limitation such as hours of operation or material usage, this can be used in calculating potential to emit. For pollutant definitions, refer to Form EI instructions number **5. Indicate** the concentration unit for each pollutant. Concentration is usually expressed in grains per standard cubic feet for particulates, and parts per million by volume or pounds per million Btu for gaseous pollutants. The blank spaces are for regulated Hazardous Air Pollutants for optional use by Polk County in the future.

6. Fill in the sum of the total project emissions for Greenhouse Gas Emissions (GHGs) on a mass basis (tpy).
   Fill in the sum of the total project emissions for Greenhouse Gas Emissions (GHGs) on an equivalent basis (CO_2e).

   * See page 10 under **Calculating Carbon dioxide equivalent** for instructions in calculating CO_2e.
   Results should be reported in box 6(b).

POLK COUNTY PUBLIC WORKS
AIR QUALITY DIVISION
AIR CONSTRUCTION PERMIT APPLICATION

PLANT EMISSION INVENTORY

☞SEE INSTRUCTIONS ON REVERSE SIDE☞

Company Name:

STACK/VENT EMISSIONS SUMMARY

(1)	(2)	(3)	(4)	(5) Potential or Permitted Emission Rate												
EP ID	**EU ID**	**Source Description**	**Permit Number**	**PM**	**PM_{10}**	**SO_2**	**NOx**	**VOC**	**CO**	**Lead**	***CARBON DIOXIDE (tpy)**	***METHANE (tpy)**	***NITROUS OXIDE (tpy)**	***SULPHUR HEXAFLUORIDE (lbs/yr)**	***HYDROFLUORO CARBONS (lbs/yr)**	***PERFLUORO CARBONS (lbs/yr)**
(6) **Total Stack Emissions**																

FUGITIVE EMISSIONS SUMMARY

(7) **Source ID**									
(8) **Total Fugitive Emissions**									
(9) **Total Plant Emissions**									
(10) ****Total Plant Emissions of Greenhouse Gases (GHGs)**									(a) tons/year
									(b) ****CO_2e**

INSTRUCTIONS:

This form is designed to provide the reviewer information on plant-wide total emissions and emissions from each source. Total emissions are verified by checking emissions from each source and are used to classify the plant into the appropriate categories for PSD, NSPS, etc. **If your facility is a Title V facility, you may submit annual emissions inventory data in lieu of this form if the inventory is current and contains all the information requested in this form**. Additional information may be requested.

Please put your company name in the box provided. This is useful in case any pages of the application get separated.

1. Provide the emission point (stack/vent) identification number. Include the emission point number of the source you are seeking a permit for.
2. Provide the emission unit(s) identification number.
3. Provide a brief description of the source identified in 1. & 2.
4. Provide the permit number for the source, if any.
5. Fill in the rate of potential to emit or permitted emission rate in **tons per year** for each pollutant. Potential to emit is defined as uncontrolled emissions at maximum design or achievable capacity (whichever is higher) and year-round continuous operation (8760 hours per year) if there are no federally-enforceable permit limits on the source. If an emission point has been permitted, then the permitted emission rate in tons per year is the potential to emit. If the emission point will have a control device or some other limitation such as hours or material usage, this can be used in calculating potential to emit. Proposed or existing permit limits may be considered to be potential to emit. The following are regulated pollutants which must be accounted for: a. PM: All Particulate Matter (same as total suspended particulate matter). b. PM10: Particulate matter with an aerodynamic diameter of ten microns or less, as measured by an EPA-approved reference method. c. SO2: Sulfur Dioxide. d. NOx: Nitrogen Oxides. e. VOCs: Photochemically reactive volatile organic compounds. F. CO: Carbon Monoxide. g. Lead (Pb). h. "Green house gases" - Carbon Dioxide, Methane, Nitrous Oxide, Sulphur Hexafluoride, Hydrofluoro Carbons (HFC), Perfluoro Carbons (PFC).

   *** Collection of Greenhouse Gas (GHG) Emissions Data** - Starting on July 2, 2007, construction permit applications must include potential greenhouse gas emissions for the project. Applications received without this information will be considered incomplete and the permit(s) cannot be issued until the information has been received. The following are the GHG emissions that must be accounted:

   CO_2: Carbon dioxide.
   CH_4: Methane.
   N_2O: Nitrous oxide. Also known as dinitrogen oxide or dinitrogen monoxide or laughing gas.
   SF_6: Sulfur hexafluoride.
   HFC: Hydrofluorocarbons: **SEE TABLE A: COMMON GREENHOUSE GASES**
   PFC: Perfluorocarbons: **SEE TABLE A: COMMON GREENHOUSE GASES**
6. Fill in the sum for each pollutant for all emission points (stacks or vents).
7. Fugitive emissions are those emissions which cannot reasonably be made to pass through a stack or vent or equivalent opening. In so me cases, fugitive emissions must be included with a permit application. Fugitive emissions must be included if your facility is one of the 28 named source categories found in PSD rules in 40CFR 52.521; if your facility is subject to a NSPS standards as of August 7, 1980; if your facility is subject to a NESHAP standard as of August 7, 1980; or if your facility has been determined to be major for PSD, fugitive emissions, to the extend quantifiable, must be included in subsequent applications. Examples of fugitive emissions include coal piles, and unpaved roads. <u>If your facility is not subject to one of these categories, you do not need to list fugitive emissions</u>. For each source of fugitive emissions, assign a number to identify the source. This can be nay number, as long as it is difference from the emission point (stack or vent) numbers and consistent with the numbers submitted in other permit applications, such as Title V (if your facility submitted a Title V application). The number should also be consistent with other construction permit applications, and be consistent within this application. If you have more fugitive emission sources than can fit on this form, attach a list to the form. Briefly describe the source, and provide the permit number if it has one. Fill the rate of potential to emit in **tons per year** for each pollutant.
8. Fill in the sum of all fugitive emissions for each pollutant.
9. Fill in the sum of the total plant emissions for each pollutant, including emission points and fugitive sources.
10. Fill in the sum of the total plant emissions for Greenhouse Gas Emissions (GHGs) on a mass basis (tpy) **<u>AND</u>** an equivalent basis (CO_2e).

    ****Calculating Carbon dioxide equivalent**. CO_2e emissions are defined as the sum of the mass emissions of each individual GHG adjusted for each pollutant's global warming potential (GWP) as shown in Example 1 below. Guidance on calculating CO_2e is also available at http://www.iowadnr.com/air/prof/ghg/ghg.html under the heading "Emissions Estimate Tools". Since GWP values may vary for each individual GHG pollutant, applicants should use the GWP values in Table A of this form or if not listed, the values in Table A-1 of the Greenhouse Gas Reporting Program (GHGRP) (40 CFR Part 98, Subpart A, Table A-1).

Example 1:

Pollutant	Mass (TPY)	GWP	CO_2e (TPY)
CO_2	10,000	1	10,000
CH_4	100	21	2,100
N_2O	50	310	15,500
SF_6	51 lb/yr	23,900	609
Total	**10,150**		**28,209**

Attach a copy of your calculations showing how the potential GHG emissions were calculated to this form. Total HFCs, PFCs, CO, Methane, Nitrous Oxide, and Sulfur Hexafluoride are to be listed in Box 10(b), but the calculations shall separate out the individual HFCs and PFCs. Please note that individual HFCs and PFCs also have different GWP and care should be taken to calculate CO_2e when these pollutants are emitted. If you have more stack/vent emission sources than can fit on this form, attach a list (labeled GHG-A) to this form.

POLK COUNTY PUBLIC WORKS
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AIR CONSTRUCTION PERMIT APPLICATION

INSTRUCTIONS

PLOT PLAN REQUIREMENTS

A scaled plot plan of the entire plant is required.
Attach the plot plan, labeled as "MI-1", with your permit application.

The plot plan must show:

1. A scale bar and a north arrow; the scale must be of sufficient size as to allow the drawings to be converted to electronic format. 1 inch = 50 ft is usually sufficient.
2. Property lines;
3. Fence lines (if any);
4. Locations of all buildings **within the property lines**. Locations of tiers on multi-level buildings. Include the building and structure heights, and tier heights. A description of the buildings or structures is optional.
5. Locations of **ALL** emission points. Emission point symbols need not be to scale.
6. Locations of all structures **above ground level** and **within property lines.** Structures **above ground level** such as a gasoline storage tank, grain storage silos, etc., must be shown. Structures **at ground level,** such as concrete pads, paved parking lots, etc., should not be on the plot plan.
7. Locations of unpaved roads (need not be to scale) and area sources, such as coal piles must be shown, if fugitive emissions must be included in the permit application.
8. Highlight or mark the emission point that is the subject of this permit application so that it is clearly distinguished from other emission points or labels on the plot plan.

All buildings and structures above ground level and all emission points must be marked with identification numbers. The numbers MUST be consistent with all forms in the application.

Note: 1. Auto CAD or equivalent computer-aid drawings on paper and on disk are preferred.
2. Sketches are acceptable.
3. Aerial photographs are not acceptable.

TABLE A: COMMON GREENHOUSE GASES

Common Name	Name	Formula	CAS Number	GWP**
	Carbon Dioxide	CO_2	124-38-9	1
	Methane	CH_4	74-82-8	21
	Nitrous Oxide	N_2O	10024-97-2	310
	Sulfur Hexafluoride	SF_6	2551-62-4	23,900

Hydrofluorocarbons:

HFC-23	trifluoromethane	CHF_3	75-46-7	11,700
HFC-32	difluoroethane	CH_2F_2	75-10-5	650
HFC-41	fluoromethane	CH_3F	593-53-3	150
HFC-43-10mee	1,1,1,2,2,3,4,5,5,5-decafluoropentane	$CF_3CHFCHFCF_2CF_3$	138495-42-8	1,300
HFC-125	pentafluoroethane	C_2HF_5	354-33-6	2,800
HFC-134	1,1,2,2-tetrafluoroethane	$C_2H_2F_4$	359-35-3	1,000
HFC-134a	1,1,1,2-tetrafluoroethane	CH_2FCF_3	811-97-2	1,300
HFC-143	1,1,2-trifluoroethane	$C_2H_3F_3$	430-66-0	300
HFC-143a	1,1,1-trifluoroethane	$C_2H_3F_3$	420-46-2	3,800
HFC-152	1,2-difluroethane	$C_2H_4F_2$	624-72-6	53
HFC-152a	1,1-difluoroethane	CH_3CHF_2	75-37-6	140
HFC-161	fluoroethane	CH_3CH_2F	353-36-6	12
HFC-227ea	1,1,1,2,3,3,3-heptafluoropropane	CH_3HF_7	431-89-0	2,900
HFC-236cb	1,1,1,2,2,3-hexafluoropropane	$CH_2FCF_2CF_3$	677-56-5	1,340
HFC-236ea	1,1,1,2,3,3-hexafluoropropane	CHF_2CHFCF_3	431-63-0	1,370
HFC-236fa	1,1,1,3,3,3-hexafluoropropane	$C_3H_2F_6$	690-39-1	6,300
HFC-245ca	1,1,2,2,3-pentafluoropropane	$C_3H_3F_5$	679-86-7	560
HFC-245fa	1,1,1,3,3-pentafluoropropane	$CHF_2CH_2CF_3$	460-73-1	1,030
HFC-365mfc	1,1,1,3,3-pentafluorobutane	$CH_3CF_2CH_2CF_3$	406-58-6	794

Perfluorocarbons:

PFC-14	perfluoromethane	CF_4	75-73-0	6,500
PFC-116	perfluoroethane	C_2F_6	76-16-4	9,200
PFC-218	perfluorpropane	C_3F_8	76-19-7	7,000
PFC-3-1-10	perfluorobutane	C_4F_{10}	355-25-9	7,000
PFC-318	perfluorocyclobutane	$C\text{-}C_4F_8$	115-25-3	8,700
PFC-4-1-12	perfluoropentane	C_5F_{12}	678-26-2	7,500
PFC-5-1-14	perfluorohexane	C_6F_{14}	355-42-0	7,400

* 567 IAC 20.2 defines a greenhouse gases as carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. This is not an all inclusive list of HFCs and PFCs. Please see http://www.iowadnr.gov/air/prof/ghg/ghg.html for a list of HFC and PFC Chemical Names, Trade Names, and Blends.

**Applicants should use the GWP values required by the federal Greenhouse Gas Reporting Program in 40 CFR 98, Subpart A, Table A-1. The GWPs are included on this form for convenience.