

# Minor Source Emission Inventory (MSEI) Instructions

(Revised January 2022)



Iowa DNR - Air Quality Bureau

<http://www.iowacleanair.gov>

**Return the MSEI with relevant Safety Data Sheets and supporting documentation by May 15 to:**

**Emissions Inventory  
Air Quality Bureau, DNR  
Wallace Building, 2<sup>nd</sup> Floor  
502 E 9<sup>th</sup> St  
Des Moines IA 50319**

## ***Table of Contents***

DNR Air Quality Contacts .....	1
Online Resources .....	2
General Instructions/Purpose.....	3
Introduction.....	3
Getting Help Completing Your Inventory .....	3
Emissions Reporting .....	3
Actual Emissions.....	4
Exemptions .....	5
Small Unit Exemptions.....	6
Emissions Estimation Methods .....	7
Sources of Emission Factors .....	8
Tips to Avoid Common Mistakes when filling out your MSEI: .....	8
Submitting the MSEI to the DNR .....	9
Submitting an Emissions Inventory Using SLEIS.....	10
Accessing SLEIS .....	10
SLEIS Help Features .....	10
SLEIS Training.....	10
Minor Source Emission Inventory Form Instructions .....	11
Form Instructions: Form INV-1.....	11
Form Instructions: Form INV-2.....	13
Form Instructions: FORM INV-4 .....	14
Form Instructions: FORM INV-5 .....	18
Form Instructions: FORM INV-6 .....	19
Example Calculations and Forms .....	20
Introduction.....	20
Example MSEIs.....	21
Appendices.....	51
APPENDIX A: Air Quality Glossary .....	51
APPENDIX B: List of Criteria Pollutants, Chemicals Not Considered VOCs, and Hazardous Air Pollutants .....	56
APPENDIX C: Iowa DNR Control Efficiency Guidance .....	64
APPENDIX D: Abbreviations, Conversion Factors, and Spray Painting Transfer Efficiencies .....	68
APPENDIX E: Minor Source Emissions Inventory Completeness Checklist .....	70

## ***DNR Air Quality Contacts***

Emission Inventory Questions

[Nick Page](#) 515-725-9544

[Krysti Mostert](#) 515-725-9567

[Seth Anderson](#) 515-725-9559

Greenhouse Gas Questions

[Krysti Mostert](#) 515-725-9567

Iowa Waste Reduction Center

[Iowa Air Emissions Assistance Program](#) (IAEAP)

University of Northern Iowa

1-800-422-3109 or

319-273-8905, Fax: 319-273-6582

Air Bureau Records Center

515-725-9553

Air Bureau Numbers

515-725-8200 (phone)

515-725-9501 (fax)

Asbestos Program

[Tom Wuehr](#) 515-494-8212

[Construction Permit Section](#)

1-877-AIR-IOWA (1-877-247-4692)

Compliance Section

[Mark Fields](#) 515-343-6589

Hazardous Air Pollutants, MACTs

[Sarah Mousel](#) 515-418-7304

[SLEIS Helpdesk](#)

[SLEIS electronic resources](#)

Stack Test Information

[Mark Fields](#) 515-418-6589

Title V Operating Permits

[Chris Kjellmark](#) 515-725-9537

[Jeremy Arndt](#) 515-725-9511

[Polk County Air Quality](#)

515-286-3705 (phone)

515-286-3437 (fax)

[Linn County Air Quality](#)

319-892-6000 (phone)

319-892-6099 (fax)

## **Online Resources**

DNR Air Quality Bureau

[Air Quality Bureau Homepage](#)

Minor Source Emissions Inventory Forms

[DNR MSEI Forms](#)

eAirServices

Access [eAirServices](#) - a secure portal for online business services. It is the entry point for the regulated community and consultants to electronically complete and file air emissions inventories and permit applications.

[EPA Emission Factors](#)

Latitude and Longitude

[Google Maps](#)

[iTouchMap](#)

[Google Earth](#)

[GPS Visualizer](#)

Facility Classification Systems

[SIC Codes](#)

[NAICS Association](#)

SCC Codes

For a list of SCC codes visit the [Emissions Inventory Tools webpage](#). Scroll down to "Classification Lists and Conversions." Click on "[Updated Source Classification Codes 11/23/20.](#)" Ethanol and Biodiesel plants should click on "[Ethanol and Biodiesel Source Classification Code \(SCC\) List.](#)"

Calculation Spreadsheet and Tools

To access calculation spreadsheets for painting operations, haul roads, and asphalt, concrete and limestone processes visit the [Emissions Inventory Tools webpage](#). Scroll down to "Emissions Inventory Worksheets" then click on the spreadsheet of interest.

Iowa Air Emissions Assistance Program (IAEAP)

<http://iwrc.uni.edu/iaeap>

Iowa Administrative Code (IAC)

<https://www.legis.iowa.gov/law/administrativeRules/agencies> See section 567, Chapters 20-32

## General Instructions/Purpose

### Introduction

This packet contains forms, instructions, and information needed to complete a **minor source emissions inventory**. Submitting a complete inventory is required by 21.1(3) of the Iowa Administrative Code. Some companies may be unfamiliar with air quality terms, therefore a glossary is included in Appendix A. Terms included in the glossary are bolded and italicized. In addition, general air program definitions are found in 567 Iowa Administrative Code (IAC) 20.2. The IAC is available on the internet at <https://www.legis.iowa.gov/law/administrativeRules/agencies>.

The deadline for submitting a completed Minor Source Emissions Inventory is May 15. If you need assistance completing the inventory please contact the DNR or the [Iowa Air Emissions Assistance Program](#).

### SLEIS

The DNR offers an online emissions inventory reporting tool called the State & Local Emissions Inventory System (SLEIS). This web-based system has been populated with emissions data and facility equipment information that will allow for simpler and streamlined reporting. In addition, SLEIS offers the option of importing emissions data via a spreadsheet template, significantly reducing data entry for facilities with a large number of emission processes. Since its inception in December 2015, more facilities have used SLEIS than any other method. In fact, when comparing the number of SLEIS submittals with the number of paper copy submittals, the usage rate of SLEIS has increased from 45% in 2015 to 70% in 2020. For more information about accessing your facility's data in SLEIS and e-reporting, please visit [the Iowa DNR's eAirServices website](#) or contact us at [sleis@dnr.iowa.gov](mailto:sleis@dnr.iowa.gov).

SLEIS training sessions will be announced on the Air Quality Bureau's home page on the eAirServices website under the "What Kind of Training Is Available" heading, and through the DNR's Air Quality listserv. DNR's air quality technical listserv is targeted to the regulated public and consultants to deliver timely regulatory news, program updates, and technical guidance to your e-mail account. To subscribe, go to [www.IowaCleanAir.gov](http://www.IowaCleanAir.gov) and click on Sign up for Air Quality Technical Updates. For more information, please contact DNR's Wendy Walker at 515-725-9570 or [wendy.walker@dnr.iowa.gov](mailto:wendy.walker@dnr.iowa.gov).

### Getting Help Completing Your Inventory

The DNR assists small businesses by funding the Iowa Air Emissions Assistance Program (IAEAP) at the University of Northern Iowa. The IAEAP has developed a support webpage that contains emissions calculators, on-line tutorials, helpful links, answers to frequently asked questions and contact information. IAEAP also offers one on one assistance as requested by facilities as time permits. If you would like to utilize this free assistance, please contact IAEAP staff by calling 1-800-422-3109 or visiting the Iowa Air Emissions Assistance Program [website](#).

The DNR will provide assistance to facilities upon request or as time permits. If your facility would like assistance, please contact one of the emission inventory staff on the air quality contacts list on page 1 of this booklet or visit the [Minor Source Emissions Inventory webpage](#) for helpful tools, links, resources, and answers to frequently asked questions.

Please contact the DNR or IAEAP with any questions before submitting the MSEI. If the MSEI is incomplete or incorrect calculations were used, the DNR will require additional submittals until the MSEI is complete and correct.

### Emissions Reporting

All regulated air pollutants including the seven **Criteria Pollutants (including PM<sub>2.5</sub>)**, 187 **Hazardous Air Pollutants (HAPs)**, and **Ammonia** are required to be reported in the MSEI. The definition of volatile organic compounds (VOC) can be found in Appendix A and a listing of all HAPs can be found in Appendix B. Please consult this list if you are unsure if a pollutant needs to be reported.

Emission estimates should be evaluated for all emission sources at your facility including **fugitive emissions**. However, it may not be necessary to report all of the sources or pollutants in the MSEI. Please refer to page 5 for a list of sources that are considered exempt from the minor source emissions inventory.

Actual emissions need to be reported for each emission unit. **Emissions units** may be grouped for reporting actual emissions *only* if the emission units and their processes are identical, have identical control equipment, and they exhaust to the same release point. If an emission unit has multiple processes, each process should be reported on a separate form.

### **Actual Emissions**

**Actual emissions** are the actual rate of pollutant emissions from an emission unit. Actual emissions are calculated using the emission unit's actual operating hours, production rates, and quantities of materials processed, stored, or combusted for the calendar year.

## Exemptions

The DNR considers the following items exempt from MSEI reporting at this time:

1. Any pollutant with actual emissions of less than 0.005 tons per year. When reporting emissions, pollutants only need to be rounded to the nearest one hundredth of a ton;
2. If all pollutants for an emission unit have actual emissions of less than 0.005 tons per year (rounded down to 0.00 tons), then the emission unit can be excluded from the inventory;
3. Fuel-burning equipment for indirect heating and reheating furnaces with a capacity of less than 10 million BTU per hour input per combustion unit when burning natural gas or liquefied petroleum gas;
4. Fuel-burning equipment for indirect heating with a capacity of less than 1 million BTU per hour input per combustion unit when burning untreated wood or fuel oil;
5. Fuel-burning equipment for indirect heating constructed after 10/23/13 with a capacity of less than 265,600 Btu/hr when burning untreated wood, untreated seeds or pellets, or untreated vegetative materials or burning less than 378,000 pounds/yr of the same materials;
6. Fuel-burning equipment for indirect heating constructed after 10/23/13 with a capacity of less than 50,000 Btu/hr when burning on-spec used oil or burning less than 3,600 gallons/yr of on-spec used oil;
7. Direct-fired equipment burning natural gas, propane, or liquefied propane with a capacity of less than 10 million BTU per hour input, and direct-fired equipment burning fuel oil with a capacity of less than 1 million BTU per hour input, with emissions that are attributable only to the products of combustion;
8. An internal combustion engine with a brake horsepower rating of less than 400;
9. Any generator or engine that operated less than 100 hours during the emissions year;
10. Storage tanks with a capacity of less than 19,812 gallons AND an annual throughput of less than 200,000 gallons;
11. Any container, storage tank, or vessel that contains a fluid having a *maximum true vapor pressure* of less than 0.75 psia;
12. Non-production maintenance activities, which may include brazing, soldering, or welding equipment, and surface coating operations using only hand-held aerosol spray cans;
13. *Manually operated equipment* (see definition in Appendix A on page 53) used for buffing, polishing, carving, cutting, drilling, machining, routing, sanding, sawing, scarfing, surface grinding, or turning;
14. Indoor-vented powder coating operations with filters or powder recovery systems;
15. Parking lots and employee roads used to get to and from work. However, unpaved and paved roads used to haul material and/or product on a regular basis must be included.

NOTE: Indoor-vented sources MUST be included in the inventory if they do not qualify for any other exemption. If ALL emission units at the facility meet an exemption, the facility should submit a cover letter to the DNR explaining why the emission units are exempt and why the inventory will not be submitted.

## Small Unit Exemptions

Emission units that have a small unit exemption justification document required by 567 IAC 22.1(2)“w” *do not* have to be included in the minor source emissions inventory but the exemption justification document must be attached. Such exemption justification documents shall include the following:

1. A narrative description of how the emissions from the emission unit were determined and maintained at or below the annual small unit exemption levels.
2. If applicable, a description of air pollution control equipment associated with the emission unit and a statement that the emission unit will not be operated without the control equipment operating.
3. If control equipment is used, the applicant shall maintain a copy of any report of manufacturer’s testing results of any emissions test, if available. The Iowa DNR may require a test if it believes that a test is necessary for the exemption claim.
4. A description of all production limits required for the emission unit to comply with the exemption levels.
5. Detailed calculations of emissions reflecting the use of any air pollution control devices or production or throughput limitations, or both, for the applicable emission unit.
6. Records of actual operation that demonstrate that the annual emissions from the emission unit were maintained below the exemption levels.
7. Facilities designated as major sources with respect to rules 22.4(455B) and 22.101(455B), or subject to any applicable federal requirements, shall retain all records demonstrating compliance with the exemption justification document for five years. The record retention requirements supersede any retention conditions of an individual exemption.
8. A certification from the responsible official that the emission unit has complied with the exemption levels specified in 22.1(2)“w”(1).

## Emissions Estimation Methods

Emissions must be based on the best possible method. Do not use a less preferable method if a more preferable one is available. Using a less preferable method or unacceptable methods could result in your inventory being returned for revisions.

Regardless of the method used to calculate emissions, supporting documentation must be included with the MSEI submittal. This documentation must be sufficient in order to allow DNR to evaluate the emissions calculations.

### Methods of Calculating Emissions (*in order of preference*):

1. Continuous emissions monitoring
  2. Valid stack sampling which represents maximum operating conditions
  3. Material balance
  4. EPA-approved emission factors
  5. Vendor supplied emission factors
  6. Engineering estimates based on best available process operating data
- **Continuous Emissions Monitoring** systems measure pollutant concentrations in the exhaust stack 24 hours per day. There is no better method for determining emissions, however, these systems are very expensive and most facilities do not use them.
  - A **Stack Test** measures the concentration of pollutants in the exhaust stack during the test period. Test periods can vary from a couple of hours to an entire day. Stack test data that are representative of current conditions can provide an accurate emission rate for many different processes and pollutants.
  - **Material Balance** can only be used on specific types of emission units. It is most commonly used for surface coating operations (paint booths, dip tanks, etc.). Information must first be gathered on process rates, materials used, and material properties (usually from **safety data sheets** (SDS)). By combining this information with the knowledge of the process, an estimation of actual emissions can be made.
  - **EPA-Approved Emission Factors** are the basis for many calculations. These factors represent industry-wide averages and show the relationship between emissions and a measure of production. You will need to access EPA's emission factors. The DNR will not provide you with the entire volume of emission factors directly; however, if you encounter problems finding emission factors for a source you may contact DNR for assistance. When using EPA or other emission factors, you must use the most recently approved version. Sources of emission factors are listed on page 8.
  - **Vendor Supplied Factors** may be used if a more preferred method is not available. Many manufacturers of industrial equipment provide emission information for their products. This data may be used to calculate emissions only if the manufacturer's data is based on approved stack testing and no significant changes have been made to the emission unit. Supporting documentation must be included in the submittal if vendor supplied factors are used to calculate emissions.
  - **Engineering Estimation** is allowed if a more preferred method is not available. The DNR realizes some processes exist that have no published guidance regarding the estimation of emissions. In these cases, the estimation must be the best possible assessment given the amount of data available. Supporting documentation must be submitted to show how the estimation was made.

More information about emission factors can be found [on this EPA website](#).

## Sources of Emission Factors

**WebFIRE** is the internet version of FIRE and it has replaced the software application, FIRE version 6.25, and the Microsoft Access version of the database. An internet version of FIRE allows more frequent updates and easier access. Log on to <https://cfpub.epa.gov/webfire/> to access WebFIRE.

**AP-42 COMPILATION OF AIR POLLUTANT EMISSION FACTORS** is the recommended source of air pollutant emission factors, with descriptions of activities emitting criteria and hazardous air pollutants.

**TANKS** is the model that was developed using a software that is now outdated. Because of this, the model is not reliably functional on computers using certain operating systems such as Windows Vista or Windows 7. EPA anticipates that additional problems will arise as PCs switch to other operating systems. EPA and DNR can no longer provide assistance to users of TANKS 4.09d. The model will remain on the EPA website to be used at your discretion and at your own risk. EPA recommend the use of the equations/algorithms specified in AP-42 Chapter 7 for estimating VOC emissions from storage tanks. The equations specified in AP-42 Chapter 7 (<https://www.epa.gov/ttn/chief/ap42/ch07/index.html>) can be employed with many current spreadsheet/software programs. The Tanks 4.09D software estimates VOCs and hazardous air pollutants from vertical and horizontal fixed-roof tanks, internal and external floating-roof tanks, domed external floating roof tanks and underground storage tanks. It is based on the emissions estimation procedures presented in Section 7.1 of AP-42, 5th Edition. If your facility intends to use TANKS 4.09d to estimate emissions, please provide copies of the print outs as an attachment to the emissions inventory and any other documentation used for inputs into the program.

## Tips to Avoid Common Mistakes when filling out your MSEI:

1. Use the most current reporting forms and instructions.
2. Do not use outdated or old emission factors. The most up-to-date emission factors must be used for accurate emissions calculations. If you are referencing a previous inventory, double-check all emission factors as they may have changed since the last emissions inventory submittal.
3. Form INV-6 is intended for facilities to fill out their facility-wide actual emissions for each individual air pollutant. If you are submitting using paper forms, please complete only one INV-6 form by totaling the actual emissions reported on the INV-4 Forms and entering them on INV-6. If you're reporting using the State and Local Emissions Inventory System (SLEIS), the sum of the pollutants will be totaled for you.
4. Many HAPs are also Volatile Organic Compounds (VOCs). List such pollutants as both a HAP and a VOC on Forms INV-4, and INV-6.
5. Only one Form INV-1 is required for a facility's MSEI submittal.
6. Remember to submit Form INV-2 for all points, and submit Forms INV-4 for all processes.
7. Use DNR's INV-5 Form or other tools to show all your calculations. Please include all supporting documentation which was used to estimate emissions. Supporting documentation includes but is not limited to SDS, stack test summaries and reports, AP-42 citation, mass balance calculations, and any correspondence with DNR or other air pollution control agencies.
8. If higher control efficiencies are reported than what is given in the Control Efficiency Guidance Document (Appendix C), these control efficiencies must be verified by test data from an EPA-approved method. Please include supporting documentation of the test data, which confirms the reported control efficiency.
9. Make sure PM<sub>2.5</sub> and Ammonia emissions are included where applicable on each Form INV-4. If PM<sub>10</sub> emissions are being reported, remember to also include emissions estimates for PM<sub>2.5</sub>.
10. Use correct units of measure for emission factors and annual throughput. Units of measure need to correspond between emission factors and the annual throughput.
11. Remember to fill out the operating schedule on Form INV-4.
12. Do not report total particulate matter (PM), also commonly referred to as total suspended particulate (TSP). Report only total PM<sub>10</sub> (particulate matter 10 microns or less in diameter) and total PM<sub>2.5</sub> (particulate matter 2.5 microns or less in diameter). Total PM<sub>10</sub> and PM<sub>2.5</sub> emissions are commonly referred to as primary PM<sub>10</sub> and PM<sub>2.5</sub>.
13. Remember to include the small unit exemption justification document for all emission units which meet 567 IAC 22.1(2)"w." An INV-2 and INV-4 form **does not** need to be filled out for emission units that meet small unit

exemption status. Please see page 6 for a complete list of what needs to be included in a small unit exemption justification document.

### **Submitting the MSEI to the DNR**

Submittal Deadline: May 15

A completed Minor Source Emission Inventory should be returned to the DNR electronically by using the State and Local Emissions Inventory System (SLEIS) or as a paper copy. If the facility is not required to submit the emissions inventory because they are exempt, an exemption letter should be returned to the DNR indicating the reasons they are exempt from the requirement.

**Keep a Copy** – Keep a copy of your completed MSEI. Upon review of the emissions inventory, DNR staff frequently have questions. A copy will also be useful to you when completing future MSEIs. Only mail one copy.

The emission inventory data must be submitted electronically using SLEIS or by using forms provided by DNR.

### **Paper Copy**

The forms can be obtained on the [Emissions Inventory Forms website](#). If you do not have web access, you may contact the DNR to obtain paper forms. All information must be typed due to the volume of MSEIs the DNR receives. Other formats are not accepted.

### **Confidentiality**

The DNR recognizes the need to keep certain information about facility operation confidential. If you have any questions about keeping submitted information confidential, contact Kelli Book, DNR legal staff at 515-210-3408 or at [kelli.book@dnr.iowa.gov](mailto:kelli.book@dnr.iowa.gov).

### **SDS**

If using mass balance to estimate emissions, then copies of all safety data sheets (SDS) for materials used at each emission unit during the previous calendar year must be included with the MSEI submittal. Also, include the amount of each material used for each product. SDS are needed for a complete review of the submitted MSEI. Facilities may submit a [paint spreadsheet](#) in lieu of the SDS.

## Submitting an Emissions Inventory Using SLEIS

This instruction booklet contains form specific instructions for a paper submittal of an emissions inventory starting on page 11. The forms may use different terminology from SLEIS, but the same data is required in both methods.

## Accessing SLEIS

To access [SLEIS](#), users must complete the [SLEIS Electronic Reporting Registration Form](#). Email the completed form to [sleis@dnr.iowa.gov](mailto:sleis@dnr.iowa.gov). You may also mail the form to the address in the form's upper left corner. Facilities must have a designated Facility Signatory (Responsible Official). A new Facility Signatory must submit a paper copy of the [SLEIS Electronic Subscriber Agreement Form](#) to the Iowa DNR. This form is only necessary for users who will be submitting the emissions inventory. Please visit <https://www.iowadnr.gov/Environmental-Protection/Air-Quality/eAirServices> and click on the "How Do I Access My Facility Data" link under the SLEIS menu to download the SLEIS access forms.

## SLEIS Help Features

SLEIS has four different help features that ensure data being input into the database is accurate.

1. **Help Link:** Every SLEIS page has a help link in the upper right corner. This help link is unique to each page and provides a brief description of the information that can be viewed or edited on the screen.
2. **Tip Tool:** Each data entry field has a tip tool associated with it. The tip tool is a green circle with a question mark in it and is located above the data field. It contains specific information on where to find the data or equations to calculate the required information for the associated field.
3. **Required Data Elements:** Data elements that are required fields are indicated by a red bar on the left side of the required field. Fields without a red bar are optional.
4. **Data Validation Help Text:** SLEIS has multiple data validation checks. If the data entered does not meet the validation requirements, the requirements will be shown near the data input field in red font. Pages may contain multiple tabs and all of the data on all of the tabs must meet the data validation requirements before a save can be executed for that record. Tabs with fields that do not meet the requirements will have an exclamation point. The fields that don't meet the requirements will have red help text near them.

## SLEIS Training

DNR provides multiple in-person SLEIS training sessions every year. Information on SLEIS training sessions as well as recorded sessions and video tutorials are available on the DNR's [eAirServices website](#).