|  |  |
| --- | --- |
| Minnesota Pollution Control Agency (MPCA), 520 Lafayette Road North, St. Paul, MN 55155-4194 | Emissions form  AERA-05  Air Emissions Risk Analysis (AERA)  *Doc Type: Air Emissions Risk Assessment – External Documentation* |

**Purpose:** This form describes emission rates used in an AERA. For general emissions-estimating guidance, consult Minnesota Pollution Control Agency’s (MPCA) AERA guidance found on the MPCA AERA website at <https://www.pca.state.mn.us/business-with-us/air-emissions-risk-analysis-aera> more specific guidance is available on the MPCA’s air permitting webpage <https://www.pca.state.mn.us/business-with-us/air-permits>. All AERA forms can now be submitted through the MPCA’s e-Services at <https://www.pca.state.mn.us/about-mpca/online-services>.

|  |  |
| --- | --- |
| **Contents:**  General submittal information  Emissions source summary  Operating scenario summary  Emission factor summary | Emission factors developed from stack tests  Chemicals with additional considerations  Additional emissions information |

**Instructions:** Check appropriate boxes below by clicking on them. Response areas may be expanded as needed. All AERA documents must be submitted electronically. Spreadsheets should not be submitted in pdf format. The AERA will be deemed incomplete if all requested forms and support documents are not included.

**This form is submitted as part of a:**

Protocol/workplan

Completed AERA

Facility information

|  |  |  |  |
| --- | --- | --- | --- |
| Facility name: |  | TEMPO AI number: |  |

**General submittal information** (Provide answers below).

|  |  |
| --- | --- |
| **Emission calculations provided in Excel spreadsheet(s) file name:** |  |

Do emission estimations deviate from the emission calculation instructions on the MPCA’s Air Permitting Emissions Calculation webpage <https://www.pca.state.mn.us/business-with-us/air-emissions-calculators>?

Yes  No If yes provide related emission calculation documentation (may be the same file name as above):

File name:

**Emission source summary** (See the AERA-03 Form for a summary of the source parameters used in the AERA modeling)

|  |  |  |  |
| --- | --- | --- | --- |
| **There are…** | **All are quantified in the AERA** | **Some are not quantified in the AERA** | **None are quantified in the AERA** |
| Combustion stack/vent point sources |  |  |  |
| Non-combustion stack/vent point sources |  |  |  |
| Onsite mobile source tail pipe emissions |  |  |  |
| Idling vehicle tail pipe emissions |  |  |  |
| Onsite fugitive emission sources |  |  |  |
| paved roads |  |  |  |
| unpaved roads |  |  |  |
| storage/surge piles |  |  |  |
| material handling operations |  |  |  |
| valve, tanks, equipment leaks |  |  |  |
| other, describe below |  |  |  |
| Examples of fugitive emissions may include but are not limited to traffic on paved and/or unpaved roads, stockpiles of various materials, wind erosion, and loadout. Describe any other fugitive emissions: | | | | |

|  |  |
| --- | --- |
| **Sources not quantified** | **Rationale for exclusion** |
|  | “Insignificant activities” defined in Minn. R. 7007.1300 (and its associated emissions) and only emits chemicals that are also emitted by sources/units already included in the emission inventory, and the contribution of the individual activity is less than 1% of the total emission inventory for a chemical (hourly for acute and annual for chronic).  Demonstration calculations included. File name: |
|  | Emitters of pollutants that do not have inhalation health benchmarks listed in the RASS. |
|  | Internal combustion engines associated with an emergency generator and/or fire pump as described in AERA-04 Emergency Internal Combustion Engine Certification Form. |
|  | Associated only with startup, shutdown, and/or emergency situations. |
|  | Screened out because it had total risks below risk driver levels (0.1 for non-carcinogens or 10e-06 for carcinogens) using the RASS(s) named: |
|  | Other (e.g., case by case determination on vehicle emissions): |

Operating scenario summary

The project proposer may choose to estimate unrestricted or permit limited emissions in an AERA. If restricted by a proposed limit, select one of the following.

An operating scenario of less than 8760 hrs/yr is used and is reflected in a permit limit or physical limit.

Explain:

Emission calculations include capture and control efficiencies.

Are different methods used for the emissions calculated for the proposed and pre-existing project calculations?

Explain:

Emission factor summary

Indicate which emission factors are generated using each of the sources listed below. This information may be provided in the table below or in the emissions calculation spreadsheet (file name):

| **Chemical(s), source type(s) or emission unit(s) (e.g., NO2, natural gas heaters, EU001)** | **Emission factor reference** | **Table number or specific reference identifier** | **Publication or report date** | **Rationale for selecting data source** |
| --- | --- | --- | --- | --- |
|  | Permit Limit: |  |  |  |
|  | AP-42 Natural gas emissions factors (except those with E rated emission factors based on detection limits). | 1.4-1 1.4-2 1.4-3 1.4-4 | 7/98 |  |
|  | AP-42: |  |  |  |
|  | FIRE: |  |  |  |
|  | CaTEF: |  |  |  |
|  | Material Safety Data Sheets: |  |  |  |
|  | EPA emission models  MOVES  LandGEM |  |  |  |
|  | Chemical analyses of feedstocks and products (conservation of mass calculations): |  |  |  |
|  | Trade or industry organization Emission Factor Database, reports, publications: |  |  |  |
|  | Peer-Reviewed technical literature: |  |  |  |
|  | Toxic Release Inventories: |  |  |  |
|  | Vendor provided data |  |  |  |
| Fill out table below | Facility stack tests: |  |  |  |
| Fill out table below | Similar facility stack tests: |  |  |  |
|  | Other (explain): |  |  |  |
|  |  |  |  |  |

Were any other sources of information reviewed to identify COPI, but then not used for the final emission factors?  No  Yes

If yes, list these sources of information.

Is there conflicting information between different sources?  No  Yes

If yes, explain why they were chosen:

Were additional potential sources of emissions information considered and rejected?  No  Yes

If yes, list these sources and explain why they were rejected:

Emission factors developed from stack tests

Has air toxics stack testing been done at the facility?  Yes  No

If yes list the chemicals, unit(s) or source(s) tested and test report date(s) in the table below. In addition, if stack testing results are used in the AERA, indicate (by letter) which of the following preferred calculation methods are used?

**Calculation methods**

Method A: The ProUCL recommended 95% upper confidence limit of the arithmetic mean (UCL-AM) is used for annual (tons/yr) estimates.

A copy of the ProUCL runs is included.

Method B: The **highest** measured value of stack test data is used for annual (tons/yr) estimates because there are not enough data points for ProUCL recommended 95% UCL -AM.

Method C: The **highest** measured value is used for hourly (lb/hr) estimates.

A copy of the ProUCL runs is included.

Method D: Instrument measured values are included even if below the method detection limit.

Method E: Instrument detection limits for data with no measured values are used.

Method F: One-half the instrument detection limit is used for acrolein.

Method G: If a chemical is not expected to be present but was tested for and assigned a zero for the risk assessment, justification is provided.

Method H: Other:

|  |  |  |  |
| --- | --- | --- | --- |
| **Chemical(s)** | **Emission source type or emission unit(s)** | **Test report reference including date** | **Calculation method(s) A-H** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

Chemicals with additional considerations

Which of the following apply:

Dioxins/furans estimated as individual congeners, with individual congeners/total mass ratios from submitted stack tests

Dioxins/furans estimated as Toxic Equivalents of 2,3,7,8 TCDD using the 2005 WHO potency factors

PCBs expressed as a total mass

PCBs expressed as Toxic Equivalents of 2,3,7,8 TCDD using the 2005 WHO potency factors

Aldehydes estimated as a total mass

Individual aldehydes estimated

Petroleum Hydrocarbons-Alipatic (C7-C11) estimated as a total mass

Hexavalent Chromium assumed to be equal to total Chromium

Hexavalent Chromium assumed to be 10 % of total Chromium

Hexavalent Chromium assumed to be a site specific       % of total Chromium and the stack testing used to derive this ratio was submitted or some other reference

Glycol ethers estimated as a total mass

Individual glycol ethers estimated

Individual PAHs estimated

PAHs estimated as a total mass (and will therefore be assessed as benzo(a)pyrene)

Individual Polycyclic Organic Matter chemicals estimated

Polycyclic Organic Matter estimated as a total mass

All NOx assumed to be NO2

80% of the NOx will assumed to be NO2 (based on EPA’s ambient or equilibrium ratio)

Asbestos-like fiber emission estimates given, modeled and compared to the current IRIS value

Mercury emitted above 1 lb/yr and Hg-01 form submitted

None of the above

Additional emissions information

|  |
| --- |
| Is there additional site specific uncertainty related to the emissions beyond what is captured in the emission factor development?  Yes  No  If yes, explain below: |