



Year 2008
Air Quality Division

ANNUAL AIR EMISSIONS INVENTORY QUESTIONNAIRE

Soil Vapor Extraction Units (SVEU)

The 2008 SVEU Annual Emissions Inventory Questionnaire includes 4 forms that are required to be completed & submitted to the Air Quality Division. Instructions for each form are included below. Upon completion, submit all forms along with the signature by the Responsible Official of the facility within 90 days of receipt of the letter from the Department to the address below.

FORM 1: Facility General Information

Complete all information as requested.

FORM 2: Equipment, Stack, & Location Data

- Table 1: List all information for the SVEU operating at the facility. Include the Authorization To Operate (ATO) number for all permitted equipment. Indicate, if not available.
- Table 2: List details of each stack on the equipment.
- Table 3: If the portable equipment was moved from one location to another, list the dates, the cities & counties, the latitude & longitude or address/driving directions for the portable equipment that was operated during the year 2008.

FORM 3: Emissions Calculations *Input all calculation results in the appropriate spaces provided in the form.*

- SVEU Emissions: Based from your Lab test results, input hours of operation (for the time period of test) , effluent concentration (ppm by volume), and flow rate (ft³/min). To calculate the emissions for each pollutant, take the effluent test results (ppm by vol) multiply by molecular weight for the pollutant and divide by 24.04 to get the maximum concentration (ug/L). Then take the maximum concentration and multiply by 0.0000006243, multiply the flow rate (ft³ / min), and multiply by 60. The answer you obtain will then be multiply by hours of operation for that period of time and divide by 2000. A sample of the calculations are provided on page 7.
- Burning Fuel Emissions: Based on the type of fuel used (Natural Gas or Liquid Propane), choose the appropriate table to input the equipment heat input rate (MM Btu/hr) and hours operated in the year 2008. To calculate the emissions take the heat input rate multiply by hours operated, multiply by pollutant emission factor, and divide by 2000. If you used electrical energy to operate your equipment, then you can skip this part of calculations.

FORM 4: Summary & Certification

A summarization of all the emissions by each pollutant will be listed within this form. All reports submitted to the Department should be certified true and accurate by the Responsible Official of the facility. This person is the owner or operator of the facility. **If there is a change of the Responsible Official of the facility, please notify the Department with an additional letter stating the change.**

If you have any question or have difficulty completing this form, please contact Darlene Celaya at (602) 771-7662.

Arizona Department of Environmental Quality
Attention: Darlene Celaya, Emission Inventory Team
Air Quality Division, Compliance Section 3415A-3
1110 West Washington Street
Phoenix, AZ 85007

SECTION I: *Plant Identification & Mailing Information*

Company Name: _____

Place Name: _____ Place ID # : _____

Mailing Address: _____ City: _____ State: _____

County: _____ Zip Code: _____

Phone: _____ Fax: _____

Permit # or LTF #: _____ General Permit: Yes No

SECTION II: *Emissions Inventory Contact*

Name: _____ Title: _____

Phone: _____ Fax: _____

E-mail Address: _____

SECTION III: *Confidential Request*

Pursuant to Arizona Revised Statutes §49-432 and §49-201, do you claim the Emissions Inventory data submittal confidential. Yes No

If yes include which portions of the inventory are confidential along with a brief explanation:

Table 1: Equipment Information

| | Unit #1 | Unit #2 |
|---|---------|---------|
| Equipment ID | | |
| ATO# | | |
| Energy Source - natural gas, propane, or electrical | | |
| Manufacturer Rated Capacity (ppmv) | | |
| Actual Hours Operated (hours/year) | | |

Table 2: Stack Information

| | Stack #1 | Stack #2 |
|--|----------|----------|
| Height (feet) | | |
| Diameter (feet) | | |
| Velocity (feet/second) | | |
| Combustion Temperature (F) | | |
| Average Flow Rate (actual cubic feet per minute) | | |

Table 3: Location

| Date | | City & County of Operation | Latitude | Longitude | Address or Driving Directions |
|------|----|----------------------------|----------|-----------|-------------------------------|
| From | To | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

FORM 3: EMISSIONS CALCULATIONS

YEAR 2008

Emissions from Contaminated Soil

| Sampling Results Date | Hours of Operation | Pollutant | EPA 8015 & 8021 Effluent ppm by vol | Molecular Weight | Maximum Concentration ug/L | Flow Rate ft ³ /min | Annual Emissions tons/year |
|--------------------------|--------------------|--------------|---|------------------|----------------------------------|-----------------------------------|-------------------------------|
| | | VOC | | 100 | | | |
| | | Benzene | | 78.11 | | | |
| | | Toluene | | 92.16 | | | |
| | | Ethylbenzene | | 106.16 | | | |
| | | Xylene | | 106.16 | | | |
| | | VOC | | 100 | | | |
| | | Benzene | | 78.11 | | | |
| | | Toluene | | 92.16 | | | |
| | | Ethylbenzene | | 106.16 | | | |
| | | Xylene | | 106.16 | | | |
| | | VOC | | 100 | | | |
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Example of annual emission calculations in tons/year:

$$\frac{[\text{Maximum Conc. (ug/L)}] \times [\text{Mass/Volume Conversion Number (0.00000006243)}] \times [\text{Flow Rate (ft}^3/\text{min)}] \times [\text{minute per hour (60)}] \times [\text{hours of operation (hours/year)}]}{[(2000) \text{ pounds per ton}]}$$

$$\text{Maximum Concentration} = [\text{Effluent Concentration (ppm by vol)}] \times [\text{molecular weight}/24.04]$$

*where the "molecular weight/24.04" is a conversion factor for ppm by volume to milligrams (found in AP-42 , Appendix A, "Conversion Factors for Common Air Pollution Measurements," page A-27

Emissions for Burning Fuel

Conversion Factors - 1 Therm = 100,000 BTUs. 1 MMBTU = 1,000,000 BTUs. 1HP = 2546.15 BTUs

| | FUEL - NATURAL GAS | | FUEL - PROPANE | |
|------------------------|------------------------------------|--|------------------------------------|--|
| | Max. Rated Capacity MMBtu-hour (1) | Operational Hours hours/year (2) | Max. Rated Capacity MMBtu-hour (4) | Operational Hours hours/year (5) |
| Pollutants | Emission Factor pounds/MMBtu (3) | Emissions = (1)x(2)x(3)/2000 tons/year | Emission Factor pounds/MMBtu (6) | Emissions = (4)x(5)x(6)/2000 tons/year |
| PM | 0.0075 | | 0.0066 | |
| PM10 | 0.0075 | | 0.0066 | |
| NOx | 0.0980 | | 0.2077 | |
| SOx | 0.0006 | | - | - |
| VOC | 0.0054 | | 0.0033 | |
| CO | 0.0824 | | 0.0350 | |
| Acenaphthene | 1.76E-09 | | - | - |
| Acenaphthylene | 1.76E-09 | | - | - |
| Anthracene | 2.35E-09 | | - | - |
| Arsenic | 1.96E-07 | | - | - |
| Benz(a)anthracene | 1.76E-09 | | - | - |
| Benzene | 2.06E-06 | | - | - |
| Benzo(b)fluoranthene | 1.76E-09 | | - | - |
| Benzo(g,h,i)perylene | 1.18E-09 | | - | - |
| Benzo(k)fluoranthene | 1.76E-09 | | - | - |
| Beryllium | 1.18E-08 | | - | - |
| Butane | 2.06E-03 | | 0.0022 | |
| Cadmium | 1.08E-06 | | - | - |
| Chromium | 1.37E-06 | | - | - |
| Chrysene | 1.76E-09 | | - | - |
| Dibenzo(a,h)anthracene | 1.18E-09 | | - | - |
| Dichlorobenzene | 1.18E-06 | | - | - |
| Ethane | 3.04E-03 | | - | - |
| Fluoranthene | 2.94E-09 | | - | - |
| Fluorene | 2.75E-09 | | - | - |
| Formaldehyde | 7.35E-05 | | - | - |
| Hexane | 1.76E-03 | | - | - |
| Indeno(1,2,3-cd)pyrene | 1.76E-09 | | - | - |
| Lead | 4.90E-07 | | - | - |
| 2-Methylnaphthalene | 2.35E-08 | | - | - |
| Manganese | 3.73E-07 | | - | - |
| Mercury | 2.55E-07 | | - | - |
| Methane | 2.25E-03 | | - | - |
| Molybdenum | 1.08E-06 | | - | - |
| Naphthalene | 5.98E-07 | | - | - |
| Selenium | 2.35E-08 | | - | - |
| Toluene | 3.33E-06 | | - | - |

All the emissions for each pollutant are totalled and entered in the table below.

| Pollutant | Tonnage (tons per year) |
|--|-------------------------|
| Particulate Matter (PM) | |
| Particulate Matter Less Than 10 Microns (PM10) | |
| Nitrogen Oxides (NOx) | |
| Sulfur Oxides (SOx) | |
| Volatile Organic Compounds (VOC) | |
| Carbon Monoxide (CO) | |
| Hazard Air Pollutants (HAPs) | |

Certification of Truth & Accuracy

I certify that based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete. All information not identified by me as confidential in nature shall be treated by the Arizona Department of Environmental Quality as public record.

Signature of Responsible Official:

Date:

Print Name:

Title:
