Start Time on Typical Ozone Season Day: This value is the time of day that this specific piece of equipment or process **begins** operation on a typical day during the ozone season.

End Time on Typical Ozone Season Day: This value is the time of day that this specific piece of equipment or process **ceases** operation on a typical day during the ozone season.

2. EMISSIONS CALCULATIONS

Emission Factor (pounds/unit): This value is the factor that must be provided for each pollutant released (VOC, NO_x and CO) at the emission point described. The emission factor must be the same as the factor on Form 2.0 for this point.

Overall Control Efficiency (%): Enter the overall control device efficiency for the appropriate pollutant. Section 3 of the instructions for Form 2.0, Emission Point Information, explains what is required of this entry. The overall control efficiency must be the same as on form 2.0 for this point.

Actual Emissions (pounds/day): Actual emissions are determined by multiplying the emission factor for the specific pollutant (VOC, NO_x, or CO) by the daily peak ozone season throughput and factoring out any pollutants removed by a control device. The resulting number, in pounds per day, is the actual emission for that point for the specific pollutant. The applicable formula and associated directions are discussed thoroughly in the instructions to Form 2.0, Emission Point Information. The discussion is found under the heading Emission Calculations. There is one distinction to note: Form 2.0 asks for **annual** throughput, not **daily peak ozone season** throughput.

INSTRUCTIONS
FORM 2.1 FUEL COMBUSTION WORKSHEET

This form is **REQUIRED** for all facilities with on-site combustion equipment units whose total heat capacity equals or exceeds ten million BTU per hour. Facilities with smaller combustion units should use this form when grouping these combustion units. The Maximum Hourly Design Rates (MHDR) of all units, no matter what the capacity, must be reported. The MHDR calculations, including those for smaller units, must be documented. The calculations for smaller units may be displayed on Form 2.1 or on a separate sheet of paper.

A separate Form 2.0, Emission Point Information, and Form 2.1 should be completed for **each type of fuel** used (or capable to use) with the combustion equipment at this emission point even if **no annual throughput.** A **separate** Form 2.0 and Form 2.1should also be completed for each piece of combustion equipment with a heat input capacity more than **10** million BTU per hour.

Smaller capacity BTU combustion equipment (less than 10 million BTU/hour) should be grouped together if all the equipment is within the same Source Classification Code (SCC) category. For example, two similar combustion units that both use natural gas as a fuel may be grouped.

Complete **Facility Name, FIPS County Number, Plant Number and Year of Data.**
See Form 1.0 instructions, page 1.0-1.

1) COMBUSTION EQUIPMENT INFORMATION

Point Number: This number is the unique identification number for each specific piece of combustion equipment. This identification number must match the point number entered on Form 1.1, Process Flow Diagram; Form 1.2, Summary of Emission Points and Form 2.0, Emission Point Information.

AIRS ID-Pt and Seg. No: See Form 2.0 instructions.

SCC Number: List the Source Classification Code (SCC) that identifies the type of fuel unit and/or the fuel used at this emission point. An SCC is **REQUIRED** for each emission point.

Equipment Description: Please describe the combustion equipment associated with the emission point. Examples of a combustion unit include a boiler, annealing furnace, drying oven, bake oven, burn-off oven, incinerator, after burner, catalytic incinerator or thermal oxidizer.

Year Equipment Put in Service: Enter the year the combustion equipment was installed at the facility if known.

Coal Firing Code No.: This entry is required only for coal-fired combustion equipment. Enter the number corresponding to the firing method for the combustion equipment. A firing method code list is provided in Block 1 on this form.

Maximum Design Rate: This figure is the maximum hourly heat input capacity for each piece of equipment in million BTU per hour.

Sum of Total Maximum Hourly Design Rates: This figure is the total of the Maximum Design Rates for all combustion equipment.

Combustion Equipment Use: Check the box that best applies to how the combustion equipment is being used.

Combustion Equipment Category: This entry is required only for coal-fired equipment. Check the box that best applies to how the fuel is being introduced into the combustion chamber.

2) FUEL INFORMATION

Fuel Type: Check only one box for the type of combustion equipment being used. A separate Form 2.0 and Form 2.1 must be used for each different type of fuel that is being used at this emission point.

NOTE: If refuse or trade wastes are being burned, then Block 1, Equipment Information, from Form 2.2, Incinerator Worksheet, also must be completed for this emission point.

Fuel Identifier: Describe the fuel used with the combustion equipment for this emission point. Coal users must list each grade of coal used when different grades are burned.

Annual Throughput: Specify the total amount of fuel burned during the year using the combustion equipment at this emission point. The Annual Throughput figure must be expressed in the units described below.

Annual Throughput Units: The annual throughput units that apply to the combustion equipment for this emission point will depend on the SCC used. The **Annual Throughput Units MUST** correspond to the SCC Emission Factor Unit that is being used for the combustion equipment and fuel type for this emission point. The units must be expressed in tons for coal, thousands of gallons for oil or LPG, or million cubic feet for natural gas.

NOTE TO NATURAL GAS USERS: Be sure to review the comments in the Glossary regarding MMCF and MCF.

Percent Sulfur by Weight as Received: (This entry is required **ONLY** if there is a Sulfur Flag (S) accompanying the SCC used on this point. For example, there are no flags for natural gas: do not complete this entry for that fuel. However, since there are flags for propane and coal, complete this entry for those fuels.) The value for the percentage of sulfur must be entered as the weight of the sulfur in the fuel as compared with the weight of the fuel when the facility RECEIVED it. The percentage of sulfur value for coal, oil and LPG/Propane must agree with the statement from your supplier. (The default value for the sulfur content of propane is .00002%.)

If more than one shipment of the same fuel type was received and used during the year, the percentage of sulfur must be calculated as a weighted average, using the percentage sulfur and the amount of each different fuel shipment used during the year. See the Weighted Averages section for a discussion on how to calculate a weighted average on the percent sulfur.

Percent Ash by Weight as Received: (This entry is required **ONLY** if there is an Ash Flag (A) accompanying the SCC used at this point.) The value for the percentage of ash must be entered as the weight of the ash in the fuel compared with the weight of the fuel when it was

RECEIVED by the facility. The percentage of ash value for coal and oil must agree with the statement from your supplier. If more than one shipment of the same fuel type was received and used during the year, the percentage of ash must be calculated as a weighted average, using the percentage ash and the amount of each different fuel shipment used during the year. See the Weighted Averages section for a discussion on how to calculate a weighted average on the percent ash.

Heat Content: (See the table, "Typical Parameters of Various Fuels," at the end of the instructions for this worksheet. This table lists the Heat Content of commonly used fuels.) The value entered should be calculated as the BTU value for the specific fuel multiplied by the amount of fuel in the SCC fuel unit. The fuel units used for the Heat Content of this fuel **must agree** with Annual Throughput **SCC units** used for this fuel type. The SCC unit for coal is tons, thousands of gallons for oil or LPG, and million cubic feet (MMCF) for natural gas.

Example: For bituminous coal, multiply the heating value of 13,000 BTU/lb by 2,000 to equate the heat content to the SCC unit of tons for coal. For natural gas, multiply the heating value of 1050 BTU/SCF (standard cubic foot) by 1,000,000 to match the SCC unit of million cubic feet. For propane, multiply 94,000 BTU/gallon by 1,000 to equate heat content to the SCC unit of 1,000 gallons (94,000 BTU/gal x 1,000 = 94,000,000 BTU/1,000 gallons).

Fuel Totals and Weighted Averages: Enter the value for the total Annual Throughput used during the year. The value for Percent Sulfur and/or Percent Ash should be entered as a weighted average(s) for the specific fuel type being used. Use the Calculation below to determine the Weighted Averages. The value entered for the Heat Content should be an average of all the heat contents.

Calculation of Weighted Average of the Percentage of Ash or Sulfur.

A. Multiply each individual Annual Throughput of the fuel by the corresponding Percentage of Ash or Sulfur in that fuel.
B. Total the above calculations (Throughput x Ash/Sulfur).
C. Total all the Annual Throughputs for the specified fuel.
D. Divide the total [Throughput x Ash/Sulfur] figure by the total annual throughput figure. The value obtained is the weighted average for the Ash/Sulfur percentage.

3) **Calculation of Maximum Hourly Design Rate:** Convert the Heat Content units from BTU/SCC Fuel Unit to Millions of BTU/SCC Fuel Unit by dividing the BTU figure by 1,000,000.

Example: During the heat content discussion, we noted that the heat content of propane is 94,000,000 BTU per 1,000 gallons. The following calculation converts to millions of BTU/SCC unit: 94,000,000 ÷ 1,000,000 = 94 million BTU/ 1,000 gallons.

Total Maximum Hourly Design Rate: This entry is the amount of fuel that would be used if the combustion equipment were being continuously operated at 100 percent of its rated capacity for one hour. The Maximum Hourly Design Rate should be calculated by dividing the Total Maximum Design Rate expressed in millions of BTU per hour (MM BTU/Hr) by the Heat Content expressed in millions of BTU per fuel unit (MM BTU/fuel unit).

Example: A boiler burning propane has a total maximum design rate of 12 million BTU per hour. Using the results of the above example, the maximum hourly design rate = 12 MM BTU/hr ÷ 94 MM BTU/1,000 gallons = .1277 M gallons/hr.

Example: A boiler burning natural gas fuel has a Total Maximum Design Rate of 12 million BTU per hour (12 MM BTU/hr). From the heat content table, observe that the heat content of natural gas is 1,050 BTU/cubic ft (SCF). This equates to 1,050 million BTU per million cubic feet (MMCF). The Maximum Hourly Design Rate is calculated as follows:

Maximum Hourly Design Rate
= 12 MM BTU/Hr ÷ 1,050 MM BTU/MM Cubic Feet (CF)
= 0.0114 MM CF/hour

The value 0.0114 MMCF per hour would then be entered in the total maximum hourly design rate box in Block 3 on Form 2.1.

ENTER THE FOLLOWING ON FORM 2.0, EMISSION POINT INFORMATION, that is associated with this Form 2.1.

Block 4 - The Total **Annual Throughput**, Annual Throughput **Units** and the **Maximum Hourly Design Rate** should be entered in the appropriate boxes.

Block 8 - When appropriate, the weighted average values for the **Sulfur Percent** and/or the **Ash Percent** should also be entered in the appropriate box(s).

TYPICAL PARAMETERS OF VARIOUS FUELS[a]

Type Of Fuel	Heating Value		Sulfur % (by weight)	Ash % (by weight)
	kcal	Btu		
Solid Fuels				
Bituminous Coal	7,200/kg	13,000/lb	0.6-5.4	4-20
Anthracite Coal	6,810/kg	12,300/lb	0.5-1.0	7.0-16.0
Lignite (@ 35% moisture)	3,990/kg	7,200/lb	0.7	6.2
Wood (@ 40% moisture)	2,880/kg	5,200/lb	N	1-3
Bagasse (@ 50% moisture)	2,220/kg	4,000/lb	N	1-2
Bark (@ 50% moisture)	2,492/kg	4,500/lb	N	1-3[b]
Coke, Byproduct	7,380/kg	13,300/lb	0.5-1.0	0.5-5.0
Liquid Fuels				
Residual Oil	$9.98 \times 10^6/m^3$	150,000/gal	0.5-4.0	0.05-0.1
Distillate Oil	$9.30 \times 10^6/m^3$	140,000/gal	0.2-1.0	N
Diesel	$9.12 \times 10^6/m^3$	137,000/gal	0.4	N
Gasoline	$8.62 \times 10^6/m^3$	130,000/gal	0.03-0.04	N
Kerosene	$8.32 \times 10^6/m^3$	135,000/gal	0.02-0.05	N
Liquid Petroleum Gas	$6.25 \times 10^6/m^3$	94,000/gal	N	N
Gaseous Fuels				
Natural Gas	$9{,}341/m^3$	1,050/SCF	N	N
Coke Oven Gas	$5{,}249/m^3$	590/SCF	0.5-2.0	N
Blast Furnace Gas	$890/m^3$	100/SCF	N	N

[a] N = negligible.
[b] Ash content may be considerably higher when sand, dirt, etc., are present.

INSTRUCTIONS
FORM 2.2 INCINERATOR WORKSHEET

This form is **REQUIRED** only if a facility has an incinerator at the facility site.

If the SCC Emission Factor is being used, only Block 1 on Form 2.2 needs to be completed for each specific incinerator. If SCC Emission Factors are not being used, completely fill out this document.

Form 2.2 should be used to determine the total Annual Throughput of material burned in this specific incinerator during the year. If different materials are burned in the same incinerator during the year, the total Annual Throughput should be for all materials burned. A separate Form 2.0 should be used to calculate the emissions from each incinerator. The Emission Factor(s) used to calculate the Actual Emissions for this incinerator may come from the SCC Listing or from Form 2.9, Stack Test/Continuous Emission Monitoring Worksheet.

Complete **Facility Name**, **FIPS County Number**, **Plant Number** and **Year of Data**.
See Form 1.0 Instructions, page 1.0-1.

1) EQUIPMENT INFORMATION

Point Number: This is the unique identification number for each specific incinerator. This identification must match the point number entered on Form 1.1, Process Flow Diagram; Form 1.2, Summary of Emission Points and Form 2.0, Emission Point Information.

AIRS ID-Pt and Seg. No: To be completed by the APCP.

Make/Model: Enter make/model number for the type of incinerator associated with this emission point.

Serial Number: Enter the serial number for the incinerator associated with this emission point.

Incinerator Use: Check the appropriate box for the type of industry using the incinerator. These boxes categorize the industries in which incinerators are used according to the SCC descriptions.

Equipment Type: Check the appropriate boxes for the type of operation the incinerator is performing. These boxes use SCC descriptions to categorize industries in which incinerators are used.

Number of Chambers Not Including Stack: Enter the number of chambers for your specific incinerator. The figure provided should include the primary combustion chamber, along with any secondary, tertiary or other chambers.

Secondary Chamber Temperature (Deg F): Enter the temperature of the secondary combustion chamber in degrees Fahrenheit for the gas exiting this chamber.

Maximum Hourly Design Rate: This figure is the manufacturer's design rate or the design rate obtained from a stack test for the Maximum Hourly Capacity of the incinerator. The capacity is measured as the maximum amount of waste that can be loaded (charged) into the incinerator every hour.

Units/Hour: The units for the Maximum Hourly Design Rate are the same as the units for the Annual Throughput, but they should be expressed as Throughput Units per hour.

SCC Number and Units: A SCC number may be found in the SCC Listing. The specific SCC number to use with this emission point is determined by the type of incinerator and how it is being used. The units are determined by the emission method being used at this point.

2) WASTE INFORMATION AND THROUGHPUTS

Process Waste Type: List each different type of material burned in the incinerator during the year.

Heat Content: The Heat Content value is the number of BTU released from burning each unit of waste material. For some common waste materials, the heat content figure and its units may be found in Table I. If more than one type of material is burned during the year, calculate an average heat content value.

Annual Throughput: This figure is the amount of each specific material incinerated in this incinerator during the entire year.

Units: The annual throughput units figure for incinerators is usually expressed in tons per year.

Total Annual Throughput: This figure is the total amount of all materials burned in the incinerator during the year. If the individual Annual Throughput is in pounds/year, make sure to divide the total annual throughput by 2,000 to calculate the figure in tons per year and enter that number in the **Tons/Year** box.

ENTER THE FOLLOWING ON FORM 2.0, EMISSION POINT INFORMATION:

Block 4 - Enter the Total Annual Throughput (Tons/Year);
Maximum Hourly Design Rate figure; and
Corresponding Units in the appropriate boxes.

TABLE I CLASSIFICATION OF WASTES

Waste Classification	Waste Description	BTU/Pound
Type O	A mixture of highly combustible waste, primarily paper, cardboard, wood, boxes and combustible floor sweepings; mixtures may contain up to 10% by volume of plastic bags, coated paper, laminated paper, treated corrugated cardboard, oily rags and plastic rubber scraps. Commercial and industrial sources.	8500
Type 1	A mixture of combustible waste such as paper, cardboard, woodscrap, foliage, floor sweepings and up to 20% cafeteria waste. Commercial and industrial sources.	6500
Type 2	Rubbish and garbage. Residential sources.	4300
Type 3	Animal and vegetation waste from restaurants, cafeterias, hotels, etc. Institutional, club and commercial sources.	2500
Type 4	Human and animal remains consisting of carcasses, organs and solid tissue wastes from farms, laboratories and animal pounds.	1000
Type 5	Medical waste including sharps, pathological, surgical and associated infectious waste materials.	10,000
Type 6	Department store waste.	7800
Type 7	School waste with lunch programs.	8000
Type 8	Supermarket waste.	7200
Type 9	Other wastes not described here or which have variable or unknown BTU content that must be verified.	

INSTRUCTIONS

FORM 2.3 VOC PROCESS MASS-BALANCE WORKSHEET

This is a **REQUIRED FORM** if a facility is using mass balance to calculate a volatile organic compound (VOC) emission factor. An emission factor calculated by mass balance will usually be more accurate for a specific process at your facility than using the standard U.S. Environmental Protection Agency (EPA) emission factor. You still need to associate the process with a Source Classification Code (SCC) even if you calculate your own emission factor.

A separate Form 2.0, Emission Point Information, and Form 2.3, VOC Process Mass-Balance Worksheet, should be completed for each different process that emits VOCs within your facility. Examples of VOC operations include degreasing, spray painting, adhesive application, flexographic or gravure printing, and equipment cleaning. Each VOC process will have a separate SCC and calculations need to be on separate worksheets. Additional VOC Process Mass-Balance Worksheet forms may be needed to show different VOC material types associated with the same emission point.

Please maintain a copy of the Material Safety Data Sheet (MSDS) for each of the VOC materials listed on Form 2.3.

Complete **Facility Name, FIPS County Number, Plant Number and Year of Data.**
See Form 1.0 instructions, page 1.0-1.

Point Number: This is the unique identification number for each specific VOC process. This identification must match the point number entered on Form 1.1, Process Flow Diagram, Form 1.2, Summary of Emission Points and Form 2.0, Emission Point Information.

AIRS ID-Pt and Seg No.: To be completed by the APCP.

Source Classification Code (SCC): List the code that identifies the type of process associated with this emission point.

1) TOTAL ANNUAL THROUGHPUT AND TOTAL POUNDS OF VOLATILE ORGANIC COMPOUNDS

Application Method: This application method uniquely identifies the operation or VOC process that is producing the VOC emissions for this emission point. Examples include spray, roller, dip or electrostatic.

Material Type: This box is used to uniquely identify the material being used. Examples include primers, paints, clear coats, inks, thinners and solvents. For primers, paints and inks, different colors of these materials may be grouped together into the same emission point if the percent VOC in each material is the same.

Annual Throughput (SCC Units/Yr) [A]: This figure is the total amount of a specific material type used at this emission point during the year. This figure must be expressed in the appropriate SCC units for this emission point. Material that is not used and is returned to the manufacturer as "out of specification" should not be included in this Annual Throughput figure.

Percent by Weight VOC in Material [B]: This value of the percent of VOCs in the material (by weight) should be available from the MSDS provided by the supplier for the specific material associated with this emission point. You may leave this box blank if the Pounds of VOC per Unit **[D]** has been completed for this material. If SCC unit is **tons,** then Percent by Weight of VOC would be in tons, not gallons.

Density [C]: The value for the material should be available from the MSDS provided by the supplier for the specific material associated with this emission point. If the specific gravity is given on the MSDS, multiply the specific gravity by 8.34 to obtain the density expressed in pounds of material per gallon of liquid. If the SCC unit is **tons**, then density would always be 2000 pounds.

Lbs. of VOC Per Unit [D]: The value for this material should be available from the MSDS provided by the supplier for the specific material associated with this emission point. If the Pounds of VOC per Unit figures are not known, then they can be calculated by multiplying the Percent VOC by Weight **[B]** in the material by the Density **[C]** of that material. If the SCC unit is **tons**, then Lbs. Of VOC Per Unit would be in tons, not gallons.

VOC (Pounds/Year) [E]: This figure is the total amount of VOCs released for the specific material associated with this emission point. The VOC figure can be calculated by multiplying the Annual Throughput **[A]** for each material by the Pounds of VOC per unit **[D]** for the same material.

Total Annual Throughput: This figure must be expressed in the same units as the SCC emission factor units used with the specific process for this emission point. This figure should be entered in the appropriate box in Block 4 of the Form 2.0, Emission Point Information, that is associated with this emission point.

Total VOC(Pounds/Year): This figure is the total of the VOC amounts calculated in the above boxes.

2) CALCULATION OF VOC RECOVERED

Material Shipped as Hazardous Waste: This figure is the total amount of material listed on the Hazardous Waste Manifest as having been shipped from this particular VOC process during the year. This figure should be expressed as the total pounds of waste shipped for this emission point. Waste materials that were not included in the Annual Throughput figure calculated above should not be included in the VOC calculation for this block. **Documentation must be provided for the amount of material shipped.**

Percent VOC Content of Waste: This figure is the weighted average for the VOC content of all shipments of hazardous waste shipped from this emission point. If specific test data is not available on the VOC content of the waste, an estimate for this percent VOC figure may be provided with any supporting documentation available. **Supporting documentation must be provided for the percent VOC content.**

Pounds of VOC Recovered: This figure is the amount of VOC recovered or shipped as a liquid hazardous waste from the process associated with this emission point.

3) CALCULATION OF VOC EMITTED PRIOR TO CONTROL

Calculate the **Pounds of VOC Emitted Prior to any Control** devices by taking the Total Pounds of VOC figure and subtracting the Pounds of VOC Recovered. The result of this subtraction should be the total amount of VOCs emitted from the VOC process during the year.

3) (Continued)

INTERIM POLICY AS OF FEBRUARY 11, 1999:

Emissions from inks used by Non-heatset, Offset Lithographic Printers should be adjusted by multiplying "Lbs of VOC Emitted Prior to Control" by 5%. This calculation should be noted on item [3]. The EPA method 24 may also be used to calculate a percentage in lieu of the 5% value. Calculations for determining this percentage must be submitted with the Form 2.3. Note that either the percentage calculated using EPA method 24, or the 5% value may be used, but not both.

4) BACK CALCULATION OF EMISSION FACTOR

The VOC Emission Factor should be calculated by taking the Pounds of VOCs Emitted Prior to Control Equipment and dividing by the Total Annual Throughput. (Annual Throughput must be expressed in terms of SCC units.)

Emission Factor: This figure is the value that the equation described above calculated. This Emission Factor should be entered in the VOC Emission Factor box in Block 7 on the Form 2.0, Emission Point Information, that is associated with this emission point.

Emission Factor Units: The units entered in this box should be the same as the SCC units for this emission point. Some common units for VOCs are lbs/gallon and lbs/ton.

INSTRUCTIONS

FORM 2.4 PETROLEUM LIQUID LOADING WORKSHEET

This form is **REQUIRED** only if a facility needs to calculate the volatile organic compound (VOC) emission factor for petroleum liquid loading into tank trucks, rail cars or barges.

If the Source Classification Code (SCC) emission factor is being used, Block 2, CHEMICAL INFORMATION, on Form 2.4 should be completed for each petroleum liquid loading operation. If SCC emission factors are not being used, you need to fill out this document completely.

NOTE: Tables, Figures and other attachments are not included with these instructions. Please refer to EPA Manual AP-42, Section 5 and 7, or contact the Air Pollution Control Program at (573) 751-4817.

Complete **Facility Name, FIPS County Number, Plant Number and Year of Data.**
See Form 1.0 instructions, page 1.0-1.

1) LOADING INFORMATION

Point Number: This number is the unique identification number for each specific petroleum loading station. This identification number must match the point number entered on Form 1.1, Process Flow Diagram; Form 1.2, Summary of Emission Points; and Form 2.0, Emission Point Information.

AIRS ID-Pt and Seg No.: To be completed by the APCP.

SCC Number: List the SCC that identifies the type of process/liquid associated with this emission point.

Annual Throughput of Liquid (1,000 Gallons): This figure is the amount of petroleum liquid loaded into tank trucks, rail tank cars or barges expressed in thousands of gallons per year.

Control Device Type: Describe any air pollution control device(s) used to reduce the amount of the VOCs emitted.

Control Efficiency (%): Enter how effective the control equipment is in reducing the amount of the VOCs released.

Type of Loading: Check the appropriate box to show which type of loading is used at your facility. If Other is selected, please specify the type of loading used.

2) CHEMICAL INFORMATION

Bulk Liquid Type: This is the name of a specific petroleum product that is being transferred from where it is stored into a tank truck, rail tank car or barge. If more than one type of petroleum liquid has been loaded into a tank truck, rail tank car or barge during the year from this emission point, a separate Form 2.0 must be completed to calculate emissions

for each type of liquid.

Molecular Weight of Material Loaded: Enter the molecular weight of the material transferred into a tank truck, rail tank car or barge during the year from this emission point. Table 7.1-2 and Table 7.1-3 from EPA Manual AP-42 provide the molecular weight for some petroleum liquids.

True Vapor Pressure of Bulk Liquid: Enter the true vapor pressure at the storage temperature for the material transferred into tank trucks, rail tank cars or barges. This vapor pressure should be expressed in pounds per square inch atmosphere (psia). Figure 7.1-12A and Figure 7.1-13A from EPA Manual AP-42 illustrate how the true vapor pressure for the petroleum liquid may be obtained.

Saturation Factor: This factor represents the expelled vapor's fraction approach to saturation, and it accounts for the variations observed in emission rates from the different loading methods. Table 5.2-1 from EPA Manual AP-42 lists suggested saturation factors.

Temperature of Liquid: This temperature should be entered as the average temperature of liquid in degrees Rankine. Degrees Rankine is equal to degrees Fahrenheit plus 460 degrees Fahrenheit.

3) LOADING LOSS EMISSION FACTOR

The Loading Loss Emission Factor is the pounds of VOCs that will be emitted per unit of annual throughput of the material transferred for this emission point. The loading loss emission factor for VOCs should be expressed in pounds of VOCs emitted per thousands of gallons of petroleum liquid transferred.

ENTER THE FOLLOWING ON FORM 2.0, EMISSION POINT INFORMATION:

Block 3 - Enter the **Control Efficiency percent;**
Block 4 - Enter the **Annual Throughput** of the petroleum liquid;
Block 7 - Enter the Loading Loss **emission factor** in the VOC Box.

INSTRUCTIONS

FORM 2.5 ORGANIC LIQUID STORAGE, FIXED ROOF TANK WORKSHEET

This form is **REQUIRED** if a facility **wants to calculate its own breathing and working loss emission factors** for fixed roof organic liquid storage tank(s) with a capacity greater than 250 gallons. If using Form 2.5 to calculate the VOC emissions from a storage tank, two separate Forms 2.0 should be completed, one for the breathing loss and one for the working loss from the tank.

The breathing and working loss emissions from more than one fixed tank may be grouped together under a single emission point for tanks that store the same organic chemical. If the fixed roof tanks to be grouped are not identical, a separate Form 2.5 may be needed to calculate the individual tank emissions before grouping the emissions into one emission point.

TANKS, the U.S. Environmental Protection Agency (EPA) computer software package, may also be used to calculate tank emission factors. If this method is used, attach a copy of the printout and list the tank information on a Form 2.5L. The TANKS software may be obtained by downloading the program from the EPA's Technology Transfer Network on the CHIEF Bulletin Board System at (919) 541-5285 or Internet address http://www.epa.gov/ttn/chief/tanks.html or by calling Region VII of the EPA at (913) 551-7020.

All of the information concerning the calculation of a VOC Emission Factor from fixed roof storage tanks was taken from the EPA Manual AP-42, Section 7.1. Reading this Section from AP-42 may provide a more in-depth explanation of the emission calculations for this type of equipment.

NOTE: Tables, Figures and other attachments are not included with these instructions. Please refer to EPA Manual AP-42, Section 7, or contact the Air Pollution Control Program at (573) 751-4817.

Complete the **Facility Name**, **FIPS County Number**, **Plant Number** and **Year of Data**. See Form 1.0 instructions, page 1.0-1.

1) TANK INFORMATION

Point (Tank) Identification No.: This number is the unique identification number for each specific fixed-roof storage tank. This identification notation must match the point number entered on Form 1.1, Process Flow Diagram; Form 1.2, Summary of Emission Points; and Form 2.0, Emission Point Information.

AIRS ID-Pt: This is a three-character emission point identifier assigned by APCP staff. It is used as the Point Number in the EPA's Aerometric Information Retrieval System=s Facility Subsystem database. Once this number is assigned to an emission point, it should remain constant from year to year, even if the Point ID supplied by the facility changes.

Diameter (Ft): Enter the diameter of the storage tank in feet. For horizontal tanks the effective diameter should be calculated using the formula below:

Effective Diameter = [{Tank Length} x {Actual Diameter} / 0.785] ^0.5