INSTRUCTIONS FOR FORM C1

C1 - CONTROL DEVICE (GENERAL) - Use this form to describe any control device not included on Forms C2 through C9. This form allows for the entering of general control device parameters. A complete description of your control device may include other parameters not on this form. It is important that you attach manufacturer's specification, schematics, and all other drawings necessary to describe this control device and its relationship to its emission source. **All calculations, assumptions, analysis and other information used to support this form must be included on form D6.**

CONTROL DEVICE ID NO. - Assign a unique control device ID No. for this control device. This ID No. must correspond to the ID No. used for this control device on all other forms and all other references.

CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID(S) - List all emission source IDs whose emissions are controlled by this device.

EMISSION POINT ID NO. - Enter a unique ID number for each emission point (e.g., stack, vent, etc.) associated with each emission source. Emission sources with a common emission point will have the same emission point ID No. For fugitive emissions enter "FUGITIVE".

POSITION IN SERIES OF CONTROLS - If there are several devices operating in a series indicate in what position this device is located. If the exhaust air stream goes through this unit and then through a second unit then this would be the # 1 of 2 units.

MANUFACTURER - Enter the manufacturer of the device.

MODEL NO. - Enter the model number of the device.

DESCRIBE CONTROL SYSTEM - Give a brief description of the control device. Include such information as other devices used in conjunction with this device; number of compartments, etc.

POLLUTANT(S) COLLECTED - Enter the pollutants being collected.

CORRESPONDING EFFICIENCY (%) - Enter the collection efficiency of the control device for each pollutant collected.

EFFICIENCY DETERMINATION CODE - Enter the code to represent how the efficiency was determined.

1= Calculated (Attach all calculations to Form D6).
2= Manufacturers specification (Enclose documentation).
3= Source test (Attach documentation or reference test already submitted to agency).
4= Other (describe).

BEFORE CONTROL EMISSION RATE (LB/HR) - Estimate the emissions entering the control device for each pollutant listed.

AFTER CONTROL EMISSION RATE (LB/HR) - Estimate the emissions leaving the control device for each pollutant listed.

PRESSURE DROP (IN. H_2O) MIN/MAX - Enter the minimum and maximum operating pressure drop across the device in inches H_2O during normal operation needed to maintain the desired efficiency.

INLET TEMPERATURE (F) MIN/MAX - Enter the minimum and maximum inlet temperature during normal operation.

OUTLET TEMPERATURE (F) MIN/MAX - Enter the minimum and maximum outlet temperature during normal operation.

INLET AIR FLOW RATE (ACFM) - Enter the actual air flow rate in cubic feet per minute entering the control device during normal operation.

OUTLET AIR FLOW RATE (ACFM) - Enter the actual air flow rate in cubic feet per minute exiting the control device during normal operation.

INLET AIR FLOW VELOCITY (FT/SEC) - Enter the actual air flow velocity in feet per second entering the control device during normal operation.

OUTLET AIR FLOW VELOCITY (FT/SEC) - Enter the actual air flow velocity in feet per second exiting the control device during normal operation.

INLET MOISTURE CONTENT (%) - Enter the percent moisture content of the emission stream entering the control device.

COLLECTION SURFACE AREA (FT^2) - Enter the area of pollutant collecting material in square feet.

FUEL USED - Enter the type(s) of fuel(s) used in the device.

FUEL USAGE RATE - Enter the maximum fuel usage rate on an hourly or annual basis.

DESCRIBE STARTUP PROCEDURES - Describe procedures for starting the equipment noting emissions and estimates rates where possible.

DESCRIBE MAINTENANCE PROCEDURES - Routine maintenance is one of the most important factors in maintaining continual compliance using any control device. Describe all maintenance procedures including the monitoring of pressure drops, temperature, dust removal, opacity, etc.

DESCRIBE ANY AUXILIARY MATERIALS INTRODUCED INTO THE CONTROL SYSTEM - Describe any auxiliary materials (e.g., lime, caustic acid, etc.) are introduced into the control system.

DESCRIBE ANY MONITORING DEVICES, GAUGES, TEST PORTS, ETC. - List any devices and/or gauges installed on the system (e.g., magnahelics, temperature gauges, opacity monitors, etc) that are used for demonstrating compliance with air quality standards. Describe any test ports available for inspectors to conduct measurements of temperature and pressure drop. Describe quality assurance procedures to assure all gauges are operating properly. Gauges, test ports, etc. not used for air quality purposes are not required to be described.

SHOW BY DIAGRAM THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S): - Provide a diagram of the control device and all accompanying emission sources (with ID numbers). Where possible, indicate flow rates, common manifolds, and other such information as may be necessary to understand the process.

ATTACH MANUFACTURER'S SPECIFICATIONS, SCHEMATICS, AND ALL OTHER DRAWINGS NECESSARY TO DESCRIBE THIS CONTROL DEVICE AND ITS RELATIONSHIP TO ITS EMISSION SOURCE

INSTRUCTIONS FOR FORM C2

C2 - CONTROL DEVICE (FABRIC FILTER) - A fabric filter removes dust from a gas stream by passing the stream through a porous fabric (e.g., bagfilter, baghouse, HEPA filter). Dust particles form a more or less porous cake on the surface of the fabric. It is this cake that does the majority of the filtration. **All calculations, assumptions, analysis and other information used to support this form must be included on form D6.**

CONTROL DEVICE ID NO. - Assign a unique control device ID No. for this control device. This ID No. must correspond to the ID No. used for this control device on all other forms and all other references.

CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID(S) - List all emission source IDs whose emissions are controlled by this device.

EMISSION POINT ID NO. - Enter a unique ID number for each emission point (e.g., stack, vent, etc.) associated with each emission source. Emission sources with a common emission point will have the same emission point ID No. For fugitive emissions enter "FUGITIVE".

POSITION IN SERIES OF CONTROLS - If there are several devices operating in a series indicate in what position this device is located. If the exhaust air stream goes through this unit and then through a second unit then this would be the # 1 of 2 units.

MANUFACTURER - Enter the manufacturer of the device.

MODEL NO. - Enter the model number of the device.

DESCRIBE CONTROL SYSTEM - Give a brief description of the control device. Include such information as other devices used in conjunction with this device; number of compartments, etc. *Example - This fabric filter is the second of two control devices with the first unit being a cyclone (CD1). This control system collects sanding dust from the #3 sanding room. It has 2 separate compartments each of which can be operated while the other is shut down for maintenance.*

POLLUTANT(S) COLLECTED - Enter the pollutants being collected.

CORRESPONDING EFFICIENCY (%) - Enter the collection efficiency of the control device for each pollutant collected.

EFFICIENCY DETERMINATION CODE - Enter the code to represent how the efficiency was determined.

1= Calculated (Attach all calculations to Form D6).
2= Manufacturers specification (Enclose documentation).
3= Source test (Attach documentation or reference test already submitted to agency).
4= Other (describe).

BEFORE CONTROL EMISSION RATE (LB/HR) - Estimate the emissions entering the control device for each pollutant listed.

AFTER CONTROL EMISSION RATE (LB/HR) - Estimate the emissions leaving the control device for each pollutant listed.

PRESSURE DROP (IN. H_2O) MIN/MAX - Enter the minimum and maximum operating pressure drop across the device in inches H_2O during normal operation needed to maintain the desired efficiency. A gauge indicating operating pressure must be installed and operational on this equipment at all times.

WARNING ALARM? - Indicate if a warning alarm is installed on the unit to sound an alert in the event the pressure drop is outside the allowable range.

INLET TEMPERATURE (F) MIN/MAX - Enter the minimum and maximum inlet temperature during normal operation.

OUTLET TEMPERATURE (F) MIN/MAX - Enter the minimum and maximum outlet temperature during normal operation.

INLET AIR FLOW RATE (ACFM) - Enter the actual inlet air flow rate in cubic feet per minute during normal operation.

AIR TO CLOTH RATIO - This is the ratio between the air flow rate (ACFM) listed above and the filter surface area listed in the next block (e.g., 10,000 ACFM divided by 1000 square feet of filter area would give an air to cloth ratio of 10:1).

FILTER SURFACE AREA (FT^2) - The total square feet of filter surface area. Round off to nearest whole number.

FILTER MAXIMUM OPERATING TEMPERATURE (F) - Enter the maximum operating temperature for the filter material.

FILTER MATERIAL - What is the filter material composed of. This can be obtained by contacting the supplier of the filters (e.g., fiberglass, nomex, wool, cotton, nylon, teflon, etc).

DESCRIBE CLEANING PROCEDURES - Most fabric filters have a mechanism to clean the filter media on a regular basis. The most common techniques are mechanical, reverse air, air pulse, and sonic cleaning. There are some types that require the replacement of the filter media rather than cleaning. Other parameters to include would be the frequency of cleaning, on-stream or off-stream cleaning, duration of cleaning, etc. Describe the cleaning procedures.

> **CLEANING TIME -** The time required for each cleaning cycle.
>
> **TIME BETWEEN CLEANING -** The time between cleaning cycles.

DESCRIBE MAINTENANCE PROCEDURES - Routine maintenance is one of the most important factors in maintaining continual compliance using a fabric filter. This is especially true when abrasive particulate is being collected. Describe all maintenance procedures including the monitoring of pressure drops, temperature, dust removal, opacity, etc. Describe methods used and frequency to detect leaks and holes in filter media.

DESCRIBE MOISTURE BLINDING, CHEMICAL RESISTIVITY, AND/OR SPECIAL OPERATING CONDITIONS - Describe any possible factors that would result in moisture blinding of the filter. Address the chemical resistivity of the filter if the pollutant is corrosive. Describe any special or unique operating conditions used for this filter.

DESCRIBE ANY MONITORING DEVICES, GAUGES, TEST PORTS, ETC. - List any devices and/or gauges installed on the system (e.g., magnahelics, temperature gauges, opacity monitors, etc) that are used for demonstrating compliance with air quality standards. Describe any test ports available for inspectors to conduct measurements of temperature and pressure drop. Describe quality assurance procedures to assure all gauges are operating properly. Gauges, test ports, etc. not used for air quality purposes are not required to be described.

SHOW BY DIAGRAM THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S): - Provide a diagram of the control device and all accompanying emission sources (with ID numbers). Where possible, indicate flow rates, common manifolds, and other such information as may be necessary to understand the process.

INSTRUCTIONS FOR FORM C3

C3 - CONTROL DEVICE (ELECTROSTATIC PRECIPITATOR) - An electrostatic precipitator (ESP) removes particulate matter from a gas stream by passing the gas stream through discharge electrodes and collection plates. Most particulates become charged and are collected on the plates. **All calculations, assumptions, analysis and other information used to support this form must be included on form D6.**

CONTROL DEVICE ID NO. - Assign a unique control device ID No. for this control device. This ID No. must correspond to the ID No. used for this control device on all other forms and all other references.

CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID(S) - List all emission source IDs whose emissions are controlled by this device.

EMISSION POINT ID NO. - Enter a unique ID number for each emission point (e.g., stack, vent, etc.) associated with each emission source. Emission sources with a common emission point will have the same emission point ID No. For fugitive emissions enter "FUGITIVE".

POSITION IN SERIES OF CONTROLS - If there are several devices operating in a series indicate in what position this device is located. If the exhaust air stream goes through this unit and then through a second unit then this would be the # 1 of 2 units.

MANUFACTURER - Enter the manufacturer of the device.

MODEL NO. - Enter the model number of the device.

DESCRIBE CONTROL SYSTEM - Describe type of ESP: single stage, two stage, low voltage, high voltage, hot side, cold side, other (describe), negative or positive corona. Also, list any ancillary equipment: level detectors, hopper insulation, hopper heaters, and weather enclosures.

POLLUTANT(S) COLLECTED - Enter the pollutants being collected.

CORRESPONDING EFFICIENCY (%) - Enter the collection efficiency of the control device for each pollutant collected.

EFFICIENCY DETERMINATION CODE - Enter the code to represent how the efficiency was determined.

1= Calculated (Attach all calculations to Form D6).
2= Manufacturers specification (Enclose documentation).
3= Source test (Attach documentation or reference test already submitted to agency).
4= Other (describe).

BEFORE CONTROL EMISSION RATE (LB/HR) - Estimate the emissions entering the control device for each pollutant listed.

AFTER CONTROL EMISSION RATE (LB/HR) - Estimate the emissions leaving the control device for each pollutant listed.

PRESSURE DROP (IN. H_2O) MIN/MAX - Enter the minimum and maximum operating pressure drop across the device in inches H_2O during normal operation needed to maintain the desired efficiency. A gauge indicating operating pressure must be installed and operational on this equipment at all times.

WARNING ALARM? - Indicate if a warning alarm is installed on the unit to sound an alert in the event the

pressure drop is outside the allowable range.

INLET TEMPERATURE (F) MIN/MAX - Enter the minimum and maximum inlet temperature during normal operation.

OUTLET TEMPERATURE (F) MIN/MAX - Enter the minimum and maximum outlet temperature during normal operation.

INLET AIR FLOW RATE (ACFM) - Enter the actual air flow rate in actual cubic feet per minute during normal operation.

COLLECTION PLATE AREA (FT2) - Enter total ESP collection plate surface area expressed in square feet. See manufacturers specifications.

NO. OF COMPARTMENTS - List the number of compartments and their arrangement (series or in parallel sections).

NO. OF CELLS PER COMPARTMENT - List the number of cells per compartment.

PARTICLE MIGRATION VELOCITY (FT/SEC) - Enter the average migration (drift) velocity for the collected particles.

PARTICLE DENSITY (LB/FT3) - Enter the average particle density entering the ESP.

FIELD STRENGTH (VOLTS)

> **CHARGING** - Enter the strength of the field (in volts) imparting the charge to the particles to be collected.
>
> **COLLECTING** - Enter the strength of the field (in volts) where particles are to be collected.

CORONA POWER (WATTS/1000 CFM) - List corona power (input) in watts per 1000 CFM (this information should be contained in the manufacturer specifications).

ELECTRICAL USAGE (KW/HR) - List electrical usage in kilowatts per hour.

RESISTIVITY OF POLLUTANT (OHM-CM) - List the resistivity of pollutant to be collected by the unit. Resistivity is the overall resistance to charge dissipation to the ESP collection plate.

GAS VISCOSITY (POISE) - If the gas stream is other than predominantly air, list the viscosity of the gas stream in poise.

DESCRIBE CLEANING PROCEDURES - List cleaning method(s) used.

DESCRIBE ANY MAINTENANCE PROCEDURES: - Describe maintenance procedures performed on ESP.

DESCRIBE ANY MONITORING DEVICES, GAUGES, TEST PORTS, ETC.: - List any devices and/or gauges installed on the system (e.g., primary voltage, secondary current, spark rate meter gauges, emission point temperature, opacity monitor, etc.) that are used for demonstrating compliance with air quality standards. Describe any test ports available for inspectors to conduct measurements of temperature and pressure drop. Describe quality assurance procedures to assure all gauges are operating properly. Gauges, test ports, etc. not used for air quality purposes are not required to be

described.

SHOW BY DIAGRAM THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S): - Provide a diagram of the control device and all accompanying emission sources (with ID numbers). Where possible, indicate flow rates, common manifolds, and other such information as may be necessary to understand the process.

ATTACH A DIAGRAM OF THE TOP VIEW OF THE ESP WITH DIMENSIONS (INCLUDING AT A MINIMUM THE PLATE SPACING AND WIRE SPACING AND INDICATE THE ELECTRODE TYPE)

INSTRUCTIONS FOR FORM C4

C4 - CONTROL DEVICE (THERMAL OR CATALYTIC)

A control device which operates by thermal (non-catalytic) and catalytic incineration can oxidize any hydrocarbons and/or toxic pollutants into carbon dioxide and water. High temperature and residence time must be sufficient to obtain the desired oxidation results. **All calculations, assumptions, analysis and other information used to support this form must be included on form D6.**

CONTROL DEVICE ID NO. - Assign a unique control device ID No. for this control device. This ID No. must correspond to the ID No. used for this control device on all other forms and all other references.

CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID(S) - List all emission source IDs whose emissions are controlled by this device.

EMISSION POINT ID NO. - Enter a unique ID number for each emission point (e.g., stack, vent, etc.) associated with each emission source. Emission sources with a common emission point will have the same emission point ID No. For fugitive emissions enter "FUGITIVE".

POSITION IN SERIES OF CONTROLS - If there are several devices operating in a series indicate in what position this device is located. If the exhaust air stream goes through this unit and then through a second unit then this would be the # 1 of 2 units.

MANUFACTURER - Enter the manufacturer of the device.

MODEL NO. - Enter the model number of the device.

DESCRIBE CONTROL SYSTEM - Provide a brief description of control system (e.g., Thermal incinerator which controls VOC emissions from can painting line).

POLLUTANT(S) COLLECTED - Enter the pollutants being collected.

CORRESPONDING EFFICIENCY (%) - Enter the collection efficiency of the control device for each pollutant collected.

EFFICIENCY DETERMINATION CODE - Enter the code to represent how the efficiency was determined.

1= Calculated (Attach all calculations to Form D6).
2= Manufacturers specification (Enclose documentation).
3= Source test (Attach documentation or reference test already submitted to agency).
4= Other (describe).

BEFORE CONTROL EMISSION RATE (LB/HR) - Estimate the emissions entering the control device for each pollutant listed.

AFTER CONTROL EMISSION RATE (LB/HR) - Estimate the emissions leaving the control device for each pollutant listed.

IF CATALYST USED

TYPE - Enter the type of catalyst material (e.g., palladium on ceramic honeycomb design).

CATALYST SPACE VELOCITY (1/hr) - Enter the catalyst space velocity. This is the volumetric

gas rate divided by the volume of catalyst (this should be available from the manufacturer).

PRESSURE DROP (IN. H_2O) MIN/MAX - Enter the minimum and maximum operating pressure drop across the device in inches H_2O during normal operation to maintain the desired efficiency. A gauge indicating operating pressure must be installed and operational on this equipment at all times.

INLET TEMPERATURE (F) MIN/MAX - Enter the minimum and maximum inlet temperature during normal operation.

OUTLET TEMPERATURE (F) MIN/MAX - Enter the minimum and maximum outlet temperature during normal operation.

INLET AIR FLOW RATE (ACFM) - Enter the actual inlet air flow rate in cubic feet per minute during normal operation.

RESIDENCE TIME (SECONDS) - Enter the amount of time the gas stream remains in the combustion chamber. This can be calculated by dividing the volume of the combustion chamber (cubic feet) by the actual air flow rate (cubic feet/minute) at the incinerator temperature and then multiplying this result by 60.

COMBUSTION CHAMBER VOLUME (FT^3) - Enter the volume of the combustion chamber.

COMBUSTION TEMPERATURE (F) - Enter the minimum temperature in the combustion chamber during normal operation.

% EXCESS AIR - The amount of air provided in excess of the minimum amount required for complete combustion expressed as a percentage.

INLET MOISTURE CONTENT (%) - Give the maximum % of moisture in the inlet emission stream.

FUEL USED - Enter the type(s) of fuel(s) used in the device.

TOTAL MAXIMUM FIRING RATE (MILLION BTU/HR) - Enter the total maximum firing rate for all burners based on input.

MAXIMUM ANNUAL FUEL USE - Indicate the maximum amount of fuel you propose to burn in one year. If this is less than the maximum capacity of the fuel burners then the unit will be restricted to this amount.

MAXIMUM HOURLY FUEL USE - Indicate the maximum amount of fuel you propose to burn in one hour. If this is less than the maximum capacity of the fuel burner then the unit will be restricted to this amount.

ACTUAL ANNUAL FUEL USE - Indicate the actual amount of fuel consumed in one year during normal operation.

ACTUAL HOURLY FUEL USE - Indicate the actual amount of fuel consumed in one hour during normal operation.

METHOD USED TO INCREASE MIXING - Higher destruction efficiencies are achieved by thoroughly mixing the gas stream in the combustion chamber. Describe methods used to enhance mixing (e.g., refractory baffles, baffle plates, swirl-fired burner).

DESCRIBE THE STARTUP/SHUTDOWN PROCEDURES - Describe in detail the steps taken to bring the incinerator from a cold state to maximum operation and then through shut down.

DESCRIBE ANY MAINTENANCE PROCEDURES: - Describe maintenance procedures performed on control device.

DESCRIBE ANY MONITORING DEVICES, GAUGES, TEST PORTS, ETC.: - List any devices and/or gauges installed on the system (e.g., temperature, CO monitor, O_2 monitor, opacity monitor, etc.) that are used for demonstrating compliance with air quality standards. Provide any calibration or maintenance activities and frequency. Describe quality assurance procedures to assure all gauges are operating properly. Gauges, test ports, etc. not used for air quality purposes are not required to be described.

SHOW BY DIAGRAM THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S) - Provide a diagram of the control device and all accompanying emission sources (with ID numbers). Where possible, indicate flow rates, common manifolds, and other such information as may be necessary to understand the process.

INSTRUCTIONS FOR FORM C5

C5 - CONTROL DEVICE (MECHANICAL)

Mechanical collectors, such as settling chambers, cyclones, and multicyclones, utilize gravity and inertia to separate particulates from a gas stream. **All calculations, assumptions, analysis and other information used to support this form must be included on form D6.**

CONTROL DEVICE ID NO. - Assign a unique control device ID No. for this control device. This ID No. must correspond to the ID No. used for this control device on all other forms and all other references.

CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID(S) - List all emission source IDs whose emissions are controlled by this device.

EMISSION POINT ID NO. - Enter a unique ID number for each emission point (e.g., stack, vent, etc.) associated with each emission source. Emission sources with a common emission point will have the same emission point ID No. For fugitive emissions enter "FUGITIVE".

POSITION IN SERIES OF CONTROLS - If there are several devices operating in a series indicate in what position this device is located. If the exhaust air stream goes through this unit and then through a second unit then this would be the # 1 of 2 units.

MANUFACTURER - Enter the manufacturer of the device.

MODEL NO. - Enter the model number of the device.

DESCRIBE CONTROL SYSTEM - Provide a detailed description of the control device. Include all information needed to evaluate the system that is not already included.

POLLUTANT(S) COLLECTED - Enter the pollutants being collected.

CORRESPONDING EFFICIENCY (%) - Enter the collection efficiency of the control device for each pollutant collected.

EFFICIENCY DETERMINATION CODE - Enter the code to represent how the efficiency was determined.

1= Calculated (Attach all calculations to Form D6).
2= Manufacturers specification (Enclose documentation).
3= Source test (Attach documentation or reference test already submitted to agency).
4= Other (describe).

BEFORE CONTROL EMISSION RATE (LB/HR) - Estimate the emissions entering the control device for each pollutant listed.

AFTER CONTROL EMISSION RATE (LB/HR) - Estimate the emissions leaving the control device for each pollutant listed.

PRESSURE DROP (IN. H2O) MIN/MAX - Enter the minimum and maximum operating pressure drop across the device in inches H_2O during normal operation to maintain the desired efficiency. A gauge indicating operating pressure must be installed and operational on this equipment at all times.

WARNING ALARM? - Indicate if a warning alarm is installed on the unit to sound an alert in the event the

pressure drop is outside the allowable range.

INLET TEMPERATURE (F) MIN/MAX - Enter the minimum and maximum inlet temperature during normal operation.

OUTLET TEMPERATURE (F) MIN/MAX - Enter the minimum and maximum outlet temperature during normal operation.

INLET AIR FLOW RATE (ACFM) - Enter the actual inlet air flow rate in cubic feet per minute during normal operation.

PARTICLE DENSITY (LB/FT3) - Enter the average particle density entering the control device in pounds per cubic feet.

SETTLING CHAMBER - There are two types of gravity settling chambers. The SIMPLE EXPANSION CHAMBER which is basically a long, horizontal box with inlet, outlet and collection hoppers. The gas stream enters the expansion section of the device and its velocity is reduced, thereby allowing particulate matter in the gas stream to be collected by gravity. The MULTIPLE TRAY SETTLING CHAMBER (Howard settling chamber) operates on the same principle as the simple expansion chamber, but there are several horizontal collection plates in order to shorten the settling path of the particle, thus enhancing collection efficiency. The BAFFLE CHAMBER is a variation of the settling chamber. These units have baffles within the chamber in order to impart a downward motion to the particles in the gas stream, thus collection is accomplished by inertia as well as gravity.

DIMENSIONS (TO NEAREST INCH) -

LENGTH - Length of the chamber in inches.

WIDTH - Width of the chamber in inches.

HEIGHT - Greatest distance a particle must fall to be collected. In multiple tray devices this is the distance between trays.

VELOCITY (FT/SEC) - Specify the velocity at which the particulate laden gas travels through the chamber.

NO. TRAYS - If the device is of multiple tray design, specify the number of horizontal trays.

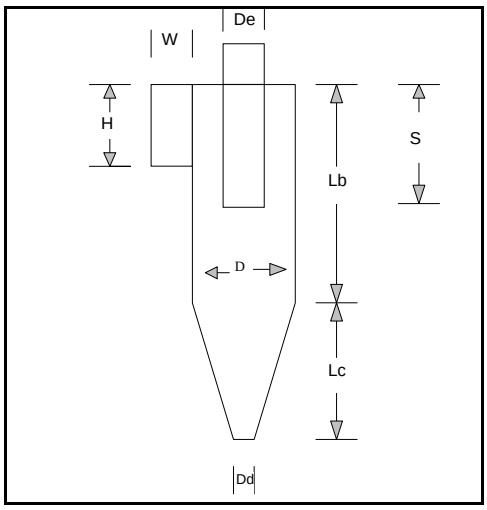
NO. BAFFLES - If the device is a baffle chamber, specify the number of baffles.

CYCLONE - An inertial separator in which the particulate laden gas stream is forced to spin in a vortex. As the gas changes direction, the inertia of the particles causes them to be separated from the gas stream and collected.

INLET VELOCITY (FT/SEC) - What is the velocity of air stream entering the cyclone.

CIRCULAR or **SQUARE** - Indicate whether the inlet dimension "H" is for a circular or square inlet.

DIMENSIONS - Provide the dimensions of the cyclone. Refer to the diagram below for a description of variables for a typical top inlet cyclone. For other types of cyclones (such as bottom inlet, axial inlet or straight-through designs) provide a diagram labeling the dimensions of the analogous parts.



IF WET
SPRAY UTILIZED - If wet spray is used inside the cyclone to enhance collection efficiency complete this section.

LIQUID USED - Specify liquid that is sprayed.
FLOW RATE - Rate of liquid application in gallons per minute.
MAKE UP RATE - Rate of replacement for liquid lost to evaporation, absorption and disposal, in gallons per minute.

MULTICYCLONE - When high efficiency and large throughput are necessary, multiple cyclones may be operated in parallel. In a multiple cyclone separator, the housing typically contains a large number of axial inlet cyclone tubes.

NO. TUBES - Number of tubes in the multicyclone.

DIAMETER OF TUBES - Diameter of tubes in inches.

IS A HOPPER ASPIRATION SYSTEM UTILIZED? - Yes or No. Hopper aspiration is when a small portion of the total gas flow is drawn off through the collection hopper which can increase collection efficiency by reducing particulate re-entrainment into the cyclone tubes.

LOUVERS - Yes or No.

DESCRIBE MAINTENANCE PROCEDURES - Provide a detailed explanation of the maintenance procedures used to ensure the unit is operating at maximum efficiency.

DESCRIBE ANY MONITORING DEVICES, GAUGES, TEST PORTS, ETC. - List any devices and/or gauges installed on the system (e.g., magnahelics, temperature gauges, opacity monitors, etc) that are used for demonstrating compliance with air quality standards. Describe any test ports available for inspectors to conduct measurements of temperature and pressure drop. Describe quality assurance procedures to assure all gauges are operating properly. Gauges, test ports, etc. not used for air quality purposes are not required to be described.

SHOW BY DIAGRAM THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S): - Provide a diagram of the control device and all accompanying emission sources (with ID numbers). Where possible, indicate flow rates, common manifolds, and other such information as may be necessary to understand the process.

INSTRUCTIONS FOR FORM C6

C6 - CONTROL DEVICE (ADSORBER)

Adsorption is a control where gaseous pollutants are extracted from gas phase and concentrated at the surface of a solid. Carbon is commonly used to adsorb volatile organic compounds from an airstream. **All calculations, assumptions, analysis and other information used to support this form must be included on form D6.**

CONTROL DEVICE ID NO. - Assign a unique control device ID No. for this control device. This ID No. must correspond to the ID No. used for this control device on all other forms and all other references.

CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID(S) - List all emission source IDs whose emissions are controlled by this device.

EMISSION POINT ID NO. - Enter a unique ID number for each emission point (e.g., stack, vent, etc.) associated with each emission source. Emission sources with a common emission point will have the same emission point ID No. For fugitive emissions enter "FUGITIVE".

POSITION IN SERIES OF CONTROLS - If there are several devices operating in a series indicate in what position this device is located. If the exhaust air stream goes through this unit and then through a second unit then this would be the # 1 of 2 units.

MANUFACTURER - Enter the manufacturer of the device.

MODEL NO. - Enter the model number of the device.

DESCRIBE CONTROL SYSTEM - Give a detailed description of the adsorber system used. Indicate whether the system is a recirculating system, a nonregenerative system, or a regenerative system; whether the system has a fixed, moving, or fluidized bed, whether it involves multiple beds, and any other relevant information. Include the gas pretreatment methods such as particulate removal, heat exchange, dehumidification, etc. List the methods for bed regeneration such as thermal, chemical, pressure swing, displacement cycle, etc. Attach a blueprint or diagram of the system along with the manufacturer's literature.

POLLUTANT(S) COLLECTED - Enter the pollutants being collected.

CORRESPONDING EFFICIENCY (%) - Enter the collection efficiency of the control device for each pollutant collected.

EFFICIENCY DETERMINATION CODE - Enter the code to represent how the efficiency was determined.

1= Calculated (Attach all calculations to Form D6).
2= Manufacturers specification (Enclose documentation).
3= Source test (Attach documentation or reference test already submitted to agency).
4= Other (describe).

BEFORE CONTROL EMISSION RATE (LB/HR) - Estimate the emissions entering the control device for each pollutant listed.

AFTER CONTROL EMISSION RATE (LB/HR) - Estimate the emissions leaving the control device for each pollutant listed.

INLET AIR FLOW RATE (ACFM) - Enter the actual air flow rate in cubic feet per minute during normal operation.

PRESSURE DROP (IN. H2O) MIN/MAX - Enter the minimum and maximum operating pressure drop across the device in inches H_2O during normal operation to maintain the desired efficiency. A gauge indicating operating pressure must be installed and operational on this equipment at all times.

WARNING ALARM? - Indicate if a warning alarm is installed on the unit to sound an alert in the event the pressure drop is outside the allowable range.

INLET TEMPERATURE (F) MIN/MAX - Enter the minimum and maximum inlet temperature during normal operation.

OUTLET TEMPERATURE (F) MIN/MAX - Enter the minimum and maximum outlet temperature during normal operation.

SIZE OF COMPARTMENTS (FT) - Specify the dimensions of the adsorber bed, either length, width, and height, or bed depth and radius in feet. The bed depth is the dimension parallel to the gas flow.

METHOD OF ADSORPTION - Indicate which method of adsorption this control device uses.

TYPE OF ADSORPTION MATERIAL - Provide the chemical composition of the bed material (e.g., powdered coal base activated carbon, granular wood base activated carbon, hydrous silicate, modified zeolite, clays, oxides, nutshell base activated carbon). Include manufacturer's literature if available.

NUMBER OF COMPARTMENTS - This is the number of compartments or beds into which the adsorber unit is divided. The gas flow can be cut off individually from these beds. Include all the beds that are in use.

REGENERATIVE METHOD - Indicate which method of regenerating the adsorption material is used by this control device.

REGENERATIVE SCHEDULE - Enter the maximum amount of time necessary to completely clean (desorption) the collecting material and the maximum amount of time necessary to saturate the material. If more than one pollutant is being collected, chose the maximum value for the above from the pollutants collected.

HOW ARE EMISSIONS CONTROLLED DURING REGENERATION? - Emission control during the cleaning process can be accomplished by several methods. Briefly discuss how emissions are controlled while the adsorption material is regenerated.

VOLATILE CONCENTRATIONS (PPMV)

> **ENTERING UNIT** - Specify the total VOC concentration of the gas stream entering the adsorber unit in the volume of VOC per million volumes of gas stream.
>
> **LEAVING UNIT** - Specify the total VOC concentration of the gas stream leaving the adsorber unit.

RELATIVE HUMIDITY OF AIR STREAM ENTERING UNIT - Specify the relative humidity of the gas stream that enters the adsorber unit.

ORIENTATION OF BEDS - Specify whether the gas flow through the adsorption beds is in the vertical or horizontal direction.

BREAKTHROUGH CAPACITY (LB. VAPOR/LB. ADSORBENT) - Provide the breakthrough capacity in pounds of vapor per pound of adsorbent. This is the capacity of the bed at which unreacted vapors begin to be exhausted.

BREAKTHROUGH ALARM? - Indicate if a warning alarm is installed on the unit to sound an alert in the event the breakthrough capacity is exceeded.

CYCLE TIME - Specify the service time of the adsorber before breakthrough (include units).

DESCRIBE MAINTENANCE PROCEDURES - Provide a detailed explanation of the maintenance procedures used to ensure the unit is operating at maximum efficiency.

DESCRIBE ANY MONITORING DEVICES, GAUGES, TEST PORTS, ETC. - List any devices and/or gauges installed on the system (e.g., inlet/outlet vapor concentrations, temperature, etc.) that are used for demonstrating compliance with air quality standards. Provide any calibration or maintenance activities and frequency. Describe quality assurance procedures to assure all gauges are operating properly. Gauges, test ports, etc. not used for air quality purposes are not required to be described.

SHOW BY DIAGRAM THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S): -Provide a diagram of the control device and all accompanying emission sources (with ID numbers). Where possible, indicate flow rates, common manifolds, and other such information as may be necessary to understand the process.

INSTRUCTIONS FOR FORM C7

C7 - CONTROL DEVICE (GASEOUS ABSORBER)

A gas absorber is a control device where one or more selected gaseous pollutants are removed by absorption by a liquid with which it is brought in contact. **All calculations, assumptions, analysis and other information used to support this form must be included on form D6.**

CONTROL DEVICE ID NO. - Assign a unique control device ID No. for this control device. This ID No. must correspond to the ID No. used for this control device on all other forms and all other references.

CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID(S) - List all emission source IDs whose emissions are controlled by this device.

EMISSION POINT ID NO. - Enter a unique ID number for each emission point (e.g., stack, vent, etc.) associated with each emission source. Emission sources with a common emission point will have the same emission point ID No. For fugitive emissions enter "FUGITIVE".

POSITION IN SERIES OF CONTROLS - If there are several devices operating in a series indicate in what position this device is located. If the exhaust air stream goes through this unit and then through a second unit then this would be the # 1 of 2 units.

MANUFACTURER - Enter the manufacturer of the device.

MODEL NO. - Enter the model number of the device.

DESCRIBE CONTROL SYSTEM - Give a detailed description of the gas absorber system used. Include information on specific nozzle type for spray towers, throat type and throat velocity for venturi scrubbers, or packing materials and packing length for packed-bed type absorbers. Also include the liquid distribution system, the mist elimination system, and any other relevant information. Attach a blueprint or diagram of the system or the manufacturer's literature.

POLLUTANT(S) COLLECTED - Enter the pollutants being collected.

CORRESPONDING EFFICIENCY (%) - Enter the collection efficiency of the control device for each pollutant collected.

EFFICIENCY DETERMINATION CODE - Enter the code to represent how the efficiency was determined.

1= Calculated (Attach all calculations to Form D6).
2= Manufacturers specification (Enclose documentation).
3= Source test (Attach documentation or reference test already submitted to agency).
4= Other (describe).

BEFORE CONTROL EMISSION RATE (LB/HR) - Estimate the emissions entering the control device for each pollutant listed.

AFTER CONTROL EMISSION RATE (LB/HR) - Estimate the emissions leaving the control device for each pollutant listed.

PRESSURE DROP (IN. H2O) MIN/MAX - Enter the minimum and maximum operating pressure drop across the device in inches H_2O during normal operation to maintain the desired efficiency. A gauge indicating operating pressure must be installed and operational on this equipment at all times.

WARNING ALARM? - Indicate if a warning alarm is installed on the unit to sound an alert in the event the pressure drop is outside the allowable range.

INLET TEMPERATURE (F) MIN/MAX - Enter the minimum and maximum inlet temperature during normal operation.

OUTLET TEMPERATURE (F) MIN/MAX - Enter the minimum and maximum outlet temperature during normal operation.

INLET AIR FLOW RATE (ACFM) - Enter the actual air flow rate in cubic feet per minute during normal operation.

TOTAL GAS PRESSURE (PSIG) - Specify the total inlet gas pressure in pounds per square inch (gauge).

GAS DEW POINT (F) - Enter the temperature at which the gas stream first changes into liquid phase.

GAS VELOCITY (FT/SEC.) - Enter the maximum gas velocity through the net column cross-sectional area.

TYPE OF SYSTEM - Specify types of gas absorbing system used (e.g., spray tower, cyclone spray chamber, packed columns, plate columns, venturi scrubber, sparging tank).

PACKED COLUMNS - Complete this only if the absorbing system is classified as a packed column system. This absorbing process is a continuous operation where the gas and liquid phases flow through the system in a continuous manner with intimate contact throughout.

> **TYPE OF PACKING USED** - Specify packing used in your packed tower (e.g., partition tricklers, pall rings, berl saddles, tellerettes).
>
> **COLUMN LENGTH (FT)** - Enter the length of the packed column.
>
> **COLUMN DIAMETER (FT) -** Enter the column diameter.

PLATE COLUMNS - Complete this only if the absorbing system is classified as a plate column system. This absorbing process is a staged operation on plates or trays where the liquid and gas are contacted in stepwise fashion in the vertical cylinders.

> **PLATE SPACING** - Enter the distance between the plates in the absorbing tower.
>
> **COLUMN LENGTH (FT)** - Enter the length of the packed column.
>
> **COLUMN DIAMETER (FT) -** Enter the column diameter.

ADDITIVE LIQUID SCRUBBING MEDIUM - Specify what kind of liquid is used. Include the name of the additives (e.g., propanol, detergents, etc).

PERCENT RECIRCULATED - If the absorber is operated with recirculating slurries, specify the percentage of the liquid returned to the system

TOTAL LIQUID INJECTION RATE (GAL/MIN) - Enter the total volumetric flow rate of the liquid.

MAKE UP RATE (GAL/MIN) - Specify the amount of new liquid that must be added to the system due to

evaporation or discharge to a disposal system.

FOR ADDITIVE (GAL/MIN) - Specify the amount of new additive(s) that must be added to the system due to evaporation or discharge to a disposal system.

DESCRIBE MAINTENANCE PROCEDURES - Provide a detailed explanation of the maintenance procedures used to ensure the unit is operating at maximum efficiency.

DESCRIBE ANY MONITORING DEVICES, GAUGES, TEST PORTS, ETC. - List any devices and/or gauges installed on the system (e.g., magnahelics, temperature gauges, opacity monitors, etc) that are used for demonstrating compliance with air quality standards. Provide any calibration or maintenance activities and frequency. Describe quality assurance procedures to assure all gauges are operating properly. Gauges, test ports, etc. not used for air quality purposes are not required to be described.

SHOW BY DIAGRAM THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S): - Provide a diagram of the control device and all accompanying emission sources (with ID numbers). Where possible, indicate flow rates, common manifolds, and other such information as may be necessary to understand the process.

INSTRUCTIONS FOR FORM C8

C8 - CONTROL DEVICE (WET SCRUBBER)

Wet scrubbers are commonly used to separate particulates (sometimes gases) from an airstream. Scrubber liquids are introduced for particle collection. The system performance depends on the particle size of pollutant being collected. **All calculations, assumptions, analysis and other information used to support this form must be included on form D6.**

CONTROL DEVICE ID NO. - Assign a unique control device ID No. for this control device. This ID No. must correspond to the ID No. used for this control device on all other forms and all other references.

CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID(S) - List all emission source IDs whose emissions are controlled by this device.

EMISSION POINT ID NO. - Enter a unique ID number for each emission point (e.g., stack, vent, etc.) associated with each emission source. Emission sources with a common emission point will have the same emission point ID No. For fugitive emissions enter "FUGITIVE".

POSITION IN SERIES OF CONTROLS - If there are several devices operating in a series indicate in what position this device is located. If the exhaust air stream goes through this unit and then through a second unit then this would be the # 1 of 2 units.

MANUFACTURER - Enter the manufacturer of the device.

MODEL NO. - Enter the model number of the device.

DESCRIBE CONTROL SYSTEM - Give a detailed description of the wet scrubber system used. Include information on specific nozzle type for spray towers, throat type and throat velocity for venturi scrubbers, or packing materials and packing length for packed-bed type scrubbers. Also include the liquid distribution system, the mist elimination system, and any other relevant information. Include manufacturer's literature.

POLLUTANT(S) COLLECTED - Enter the pollutants being collected.

CORRESPONDING EFFICIENCY (%) - Enter the collection efficiency of the control device for each pollutant collected.

EFFICIENCY DETERMINATION CODE - Enter the code to represent how the efficiency was determined.

1= Calculated (Attach all calculations to Form D6).
2= Manufacturers specification (Enclose documentation).
3= Source test (Attach documentation or reference test already submitted to agency).
4= Other (describe).

BEFORE CONTROL EMISSION RATE (LB/HR) - Estimate the emissions entering the control device for each pollutant listed.

AFTER CONTROL EMISSION RATE (LB/HR) - Estimate the emissions leaving the control device for each pollutant listed.

PRESSURE DROP (IN. H2O) MIN/MAX - Enter the minimum and maximum operating pressure drop across the device in inches H_2O during normal operation to maintain the desired efficiency. A gauge indicating operating pressure must be installed and operational on this equipment at all times.

WARNING ALARM? - Indicate if a warning alarm is installed on the unit to sound an alert in the event the pressure drop is outside the allowable range.

INLET TEMPERATURE (F) MIN/MAX - Enter the minimum and maximum inlet temperature during normal operation.

OUTLET TEMPERATURE (F) MIN/MAX - Enter the minimum and maximum outlet temperature during normal operation.

INLET AIR FLOW RATE (ACFM) - Enter the actual air flow rate in cubic feet per minute during normal operation.

MOISTURE CONTENT: INLET (%)/OUTLET(%) - Enter the percent moisture by weight of the control device's inlet and outlet air stream.

THROAT VELOCITY (FT/SEC) - Enter the velocity of the air stream at the throat (or inlet) to the scrubber.

THROAT TYPE - Is the inlet to the scrubber a fixed or variable configuration?

EMISSION STREAM MEAN PARTICLE DIAMETER (MICRONS) - Enter the average micron size of particles leaving the control device.

TYPE OF SYSTEM - Specify type of particulate scrubber system used (e.g., spray tower, cyclone spray tower, packed bed scrubber, tray-type scrubber, mechanically aided scrubber, venturi scrubber, orifice scrubber).

TYPE OF PACKING USED IF ANY - Specify packing used in your packed tower (e.g., partition tricklers, pall rings, berl saddles, tellerettes).

ADDITIVE LIQUID SCRUBBING MEDIUM - Specify what kind of liquid is used. Include the name of the additives (e.g., propanol, detergents, etc).

PERCENT RECIRCULATED - If the scrubber is operated with recirculating slurries, specify the percentage of the liquid returned to the system

TOTAL LIQUID INJECTION RATE (GAL/MIN) MIN/MAX - Specify the total minimum and maximum volumetric flow rate of the liquid.

FLOW RATE GAUGE INSTALLED? - Indicate if the control device has a gauge to indicate injection flow rate

MAKE UP RATE (GAL/MIN) - Specify the amount of new liquid that must be added to the system due to evaporation or discharge to a disposal system.

FOR ADDITIVE (GAL/MIN) - Specify the amount of new additive(s) that must be added to the system due to evaporation or discharge to a disposal system.

DESCRIBE MAINTENANCE PROCEDURES - Provide a detailed explanation of the maintenance procedures used to ensure the unit is operating at maximum efficiency.

DESCRIBE ANY MONITORING DEVICES, GAUGES, TEST PORTS, ETC. - List any devices and/or gauges installed on the system (e.g., magnahelics, temperature gauges, opacity monitors, etc) that are used for demonstrating compliance with air quality standards. Provide any calibration or maintenance

activities and frequency. Describe quality assurance procedures to assure all gauges are operating properly. Gauges, test ports, etc. not used for air quality purposes are not required to be described.

SHOW BY DIAGRAM THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S): - Provide a diagram of the control device and all accompanying emission sources (with ID numbers). Where possible, indicate flow rates, common manifolds, and other such information as may be necessary to understand the process.

INSTRUCTIONS FOR FORM C9

C9 - CONTROL DEVICE (CONDENSER)

Condensers are generally used to remove Volatile Organic Compounds (VOC's) by cooling the pollutant to below its saturation temperature and thereby effecting a phase change from VOC gas to VOC liquid. Separating the liquid from the gas removes a fraction of the VOC from the emission stream. The amount of VOC that remains in the gas stream as a vapor is a function of the temperature and the vapor-liquid equilibrium of the VOC. **All calculations, assumptions, analysis and other information used to support this form must be included on form D6.**

CONTROL DEVICE ID NO. - Assign a unique control device ID No. for this control device. This ID No. must correspond to the ID No. used for this control device on all other forms and all other references.

CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID(S) - List all emission source IDs whose emissions are controlled by this device.

EMISSION POINT ID NO. - Enter a unique ID number for each emission point (e.g., stack, vent, etc.) associated with each emission source. Emission sources with a common emission point will have the same emission point ID No. For fugitive emissions enter "FUGITIVE".

POSITION IN SERIES OF CONTROLS - If there are several devices operating in a series indicate in what position this device is located. If the exhaust air stream goes through this unit and then through a second unit then this would be the # 1 of 2 units.

MANUFACTURER - Enter the manufacturer of the device.

MODEL NO. - Enter the model number of the device.

DESCRIBE CONTROL SYSTEM - Give a brief description of the control device. Include such information as other devices used in conjunction with this device; number of compartments, etc.

POLLUTANT(S) COLLECTED - Enter the pollutants being collected.

CORRESPONDING EFFICIENCY (%) - Enter the collection efficiency of the control device for each pollutant collected.

EFFICIENCY DETERMINATION CODE - Enter the code to represent how the efficiency was determined.

1= Calculated (Attach all calculations to Form D6).
2= Manufacturers specification (Enclose documentation).
3= Source test (Attach documentation or reference test already submitted to agency).
4= Other (describe).

BEFORE CONTROL CONCENTRATION (PPMV) - Estimate the concentration in ppmv for each pollutant entering the control device.

AFTER CONTROL CONCENTRATION (PPMV) - Estimate the concentration in ppmv for each pollutant exiting the control device.

EMISSION STREAM FLOW RATE (CFM) - Enter the flow rate in cubic feet per minute of the emission stream exiting the condenser.

EMISSION STREAM TEMPERATURE (F) - Enter the temperature in degrees Fahrenheit of the emission stream exiting the condenser.

MOISTURE CONTENT OF EMISSION STREAM (%) - Enter the percent moisture of the emission stream exiting the condenser.

TEMPERATURE OF CONDENSATION (F) - Enter the temperature in degrees Fahrenheit of the condensed pollutant VOC.

COOLANT USED - Enter the type of coolant used to lower the pollutant emission stream to its saturation point.

TEMPERATURE OF INLET COOLANT (F) - Enter the temperature in degrees Fahrenheit of the coolant entering the condenser.

COOLANT FLOW RATE (LB/HR) - Enter the flow rate in pounds per hour of the coolant.

REFRIGERATION CAPACITY (TONS) - Enter the capacity of the condenser in standard ton rating.

CONDENSER SURFACE AREA (FT2) - Enter the total surface area in square feet available for condensation of the pollutant.

SPECIFIC HEAT OF POLLUTANT COLLECTED (BTU/LB-MOLE ^{o}F) - Enter the specific heat of the pollutant.

HEAT OF VAPORIZATION OF COLLECTED POLLUTANT (BTU/LB-MOLE) - Enter the heat of vaporization of the pollutant.

DESCRIBE MAINTENANCE PROCEDURES - Describe all maintenance procedures including methods used and frequency to detect leaks and holes.

DESCRIBE ANY MONITORING DEVICES, GAUGES, TEST PORTS, ETC.: - List any devices and/or gauges installed on the system (e.g., magnahelics, temperature gauges, opacity monitors, etc) that are used for demonstrating compliance with air quality standards. Describe any test ports available for inspectors to conduct measurements of temperature and pressure drop. Describe quality assurance procedures to assure all gauges are operating properly. Gauges, test ports, etc. not used for air quality purposes are not required to be described.

SHOW BY DIAGRAM THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S): -Provide a diagram of the control device and all accompanying emission sources (with ID numbers). Where possible, indicate flow rates, common manifolds, and other such information as may be necessary to understand the process.

INSTRUCTIONS FOR FORM D1

D1 - PRODUCT ANALYSIS WORKSHEET (VOC EMISSIONS)

Form D1 must be completed for each product use as requested in other parts of the permit application package. The product must be evaluated **AS APPLIED**. For example, a product is used as delivered from the supplier; is sometimes reduced with toluene before use; and is sometimes mixed with a catalyst before use. For this example, the products as applied would be considered three separate products and a D1 must be completed for each. **All calculations, assumptions, analysis and other information used to support this form must be included on form D6.**

Most of the information requested on Form D1 may be found in the product's Manufacturer's Safety Data Sheet (MSDS) which is available from the manufacturer or supplier. Keep in mind that the MSDS rarely includes a breakdown of all constituents therefore the MSDS cannot be substituted for form D1.

When constituents such as thinners or catalysts are added to the product the resulting mixture may have physical characteristics which differ from those listed for the product in the MSDS.

PRODUCT NAME, PRODUCT NO., MANUFACTURER, SUPPLIER - Identify the product used by trade name, number and manufacturer. If the product is not purchased directly from the manufacturer, identify the supplier.

COATING ID NO. - Assign a unique number to each product analysis. It must begin with a V followed by a unique number.

LIST EMISSION SOURCE ID NO(S) WHERE PRODUCT IS USED - Identify by emission source ID the emission sources where the product is used.

DESCRIPTION OF USE - Describe briefly how the product is used (e.g., surface coating of metal furniture; blanketwash in offset lithographic printing process). If the product is used as an additive for other products, identify those products and the emission source IDs in which the products are used (e.g., reducer for Flat Black Enamel (V12) and PGP Green Enamel (V14), both used in emission sources ES3, ES4, and ES5).

PRODUCT DENSITY - Weight (in pounds) of one gallon of product.

VOLATILE DENSITY IN PRODUCT - Weight (in pounds) of volatile portion of product. Exclude water and exempt VOCs as listed in 15A NCAC 2D .0901(28).

LB. VOC/GAL. SOLID - Some standards have the emission unit expressed in LB. VOC/GAL. SOLID. Complete this ONLY if this type of standard is applicable to this coating.

> **APPLIED -** This would be entered if the standard was described as "lb. VOC/gal. solid applied" to the product being coated. In this case the % overspray would not be considered.
>
> **SUPPLIED TO APPLICATOR -** This would be entered if the standard was described as "lb. VOC/gal. solid" supplied to applicator. The % overspray would not be considered.

KG. VOC/LITER SOLID - Some standards have the emission unit expressed in KG. VOC/GAL. SOLID. Complete this ONLY if this type of standard is applicable to this coating.

> **APPLIED -** This would be entered if the standard was described as "lb. VOC/gal. solid applied" to the product being coated. In this case the % overspray would not be considered.

SUPPLIED TO APPLICATOR - This would be entered if the standard was described as "lb. VOC/gal. solid" supplied to applicator. The % overspray would not be considered.

% BY WEIGHT - Percent by weight of solids, volatiles and water in the product. Treat exempt VOC's as water.

% BY VOLUME - Percent by volume of solids, volatiles and water in the product. Treat exempt VOC's as water.

PRODUCT BREAKDOWN OF CONSTITUENTS - This is always as applied.

VOC CONSTITUENTS - This is a breakdown of all volatile organic compounds in the product AS APPLIED. Any VOCs (thinners, catalysts, etc.) added to the product before or during use must be included.

CAS NO. - List the Chemical Abstract Service Number for each constituent. If listing an additive with more than one constituent by trade name, enter "N/A" if there is no CAS NO.

% BW OF VOLATILES IN PRODUCT - Percent by weight of each volatile constituent in the volatile portion of the product. The aggregate percentage of all the volatiles must total 100%.

% BV OF VOLATILES IN PRODUCT - Percent by volume of each volatile constituent in the volatile portion of the product. Do not include solids, water and exempt VOCs in this volatile portion of the product. The aggregate percentage of all the volatiles must total 100%.

REACTIVITY (CIRCLE ONE) - Classify each constituent according to the following:

R1 - hydrocarbons, alcohols, aldehydes, esters, ethers or ketones, having an olefinic or cyclo-olefinic type of unsaturation except perchlorethylene;

R2 - aromatic hydrocarbons with eight (8) or more carbon atoms to the molecule except ethylbenzene;

R3 - ethylbenzene, ketones having branched hydrocarbon structure, trichloroethylene or toluene;

NR - all others VOCs.

If a constituent may be classified by its structure into more than one of the above groups, it must be considered to be a member of the group with the highest reactivity (R1 is most reactive. R3 is least reactive. NR is non-reactive.)

E - the VOC is exempt.

REACTIVE/NONREACTIVE - First, total the volume percent for each class (R1, R2, and R3) and the combine total for all classes. The product is considered to be photochemically reactive if the volatile portion of the product is composed of constituents in excess of the following (% by volume) (do not include exempt VOC's or water):

constituents classifiable as R1: five percent (5%)
constituents classifiable as R2: eight percent (8%)
constituents classifiable as R3: twenty percent (20%)
any combination of constituents classifiable as R1, R2 or R3: twenty percent (20%)

If none of the above percentages are exceeded, the product is nonreactive.

If the total reactive product emissions from the plant exceed 40 pounds per day (see FORM D5), describe the control methods employed for meeting compliance with 15A NCAC 2D .0518 in the comments section of this form.

COMMENTS: - Provide any comments regarding the use of the product, such as what operating conditions this particular formulation of the product is used.

INSTRUCTIONS FOR FORM D2-1

D2-1 - TOXIC AIR POLLUTANT EMISSIONS SUMMARY

This form should only be completed for:

(1) New Facilities (Ref: 15A NCAC 2H .0610(b)(1)). A form D2-1 should be completed for each toxic air pollutant (TAP), as specified in 15A NCAC 2H .0610(h), emission source at a new facility. At a minimum, items (7), (8), and (9) on form D2-2 should be completed for each toxic air pollutant. OR

(2) Facilities with Incinerators and New or Modified Emission Sources at Existing Facilities (Ref: 15A NCAC 2H .0610(b)(3) & (5)). Initially, a form D2-1 should be completed for only the new or modified TAP emission sources (i.e., the new incinerator or those emission sources that qualify as a modification under 2H .0610(a)(8)). Once these forms have been completed, the netting worksheet (form D2-2) should be completed for each toxic air pollutant emitted by the new or modified sources. If there is a net increase in a TAP (form D2-2(6)), a form D2-1 shall be completed for all emission sources at the existing facility that emit that TAP.

All calculations, assumptions, analysis and other information used to support this form must be included on form D6.

EMISSION SOURCE ID - Enter the unique emission source ID emitting the pollutants to be listed on this form.

SOURCE DESCRIPTION - Briefly describe the function of this source as it relates to the emission of toxic air pollutants.

CONTROL DEVICE(S) - Describe all control devices associated with this source.

ID NO(s) - List the Identification numbers of all control devices associated with this source. Each device ID must correspond to all other references on other forms to this source.

TOXIC AIR POLLUTANT (TAP) - List each TAP emitted from this source.

TOXIC AIR POLLUTANT NO. - For each pollutant, identify its toxic air pollutant number as specified in 15A NCAC 2H .0610(h).

REQUESTED MAXIMUM EMISSIONS - The requested maximum emission rates must have the same units as those in the 15A NCAC 2H .0610(h). For example, the emission standards for ammonia is a pounds per 15 minutes rate, therefore, requested emission rates for ammonia must be in lb/15 min.

EMISSION POINT ID NO. - Enter a unique ID number for each emission point (e.g., stack, vent, etc.) associated with each emission source. Emission sources with a common emission point will have the same emission point ID No. For fugitive emissions enter "FUGITIVE".

EMISSION FACTOR TYPE - Enter one of the following numbers corresponding to the type of emission factor used in the calculations (Form D-6 must be used to show calculations):

1= Emissions calculated based on source test or other emissions measurements.

2= Emissions calculated based on material balance using engineering knowledge of the process.
3= Emissions calculated based on AP-42 or EPA 450/2-90-011 or other EPA emission factor.
4= Emissions calculated by engineering judgement. This factor must be approved by the agency prior to use.
5= Emissions calculated based on a state or local agency emission factor.

MODELING PARAMETERS - This section should be completed **ONLY** if air dispersion modeling is required for one or more of the toxic air pollutants emitted from this source.

EMISSION POINT ID NO. - Enter a unique ID number for each emission point (e.g., stack, vent, etc.) associated with each emission source. Emission sources with a common emission point will have the same emission point ID No. For fugitive emissions enter "FUGITIVE".

EXHAUST TEMPERATURE (F) - Indicate the exit temperature of the exhaust gas in degrees Fahrenheit.

EMISSION POINT DIAMETER (FT) - List the stack internal diameter in feet.

EMISSION POINT HEIGHT (FT) - List the stack height in feet.

EXIT VELOCITY (FT/SEC) - List the stack gas exit velocity in feet per second.

RAIN CAP - Indicate whether or not the stack is fitted with a rain cap.

INSTRUCTIONS FOR FORM D2-2

D2-2 - TOXIC AIR POLLUTANT NETTING WORKSHEET AND FACILITY-WIDE EMISSIONS SUMMARY

This form is used as a netting analysis worksheet and as a facility-wide emissions summary for each toxic air pollutant (TAP). Therefore, one form D2-2 should be completed for each TAP. Items (1) through (6) need only be completed if the applicant is attempting to avoid a toxics evaluation by demonstrating that the proposed modification will not result in a net increase in toxic air pollutant emissions (Ref: 15A NCAC 2H .0610(b)(6)). Items (7), (8), and (9) must be completed if a toxics evaluation is required. **All calculations, assumptions, analysis and other information used to support this form must be included on form D6.**

TOXIC AIR POLLUTANT - List the TAP that will be addressed by this form.

EMISSION SOURCE ID NOS. - List the ID Nos. of the sources that emit this TAP.

(1) MODIFICATION INCREASES - Calculate the total TAP increases from all the proposed modifications (Form D-6 must be used to show calculations).

(2) MODIFICATION DECREASES - Calculate the total TAP decreases from the proposed modification (Form D-6 must be used to show calculations).

(3) NET CHANGE FROM MODIFICATION - Subtract (2) from (1) to determine the net change in TAP emissions as a result of the proposed modifications.

> If this number is zero (0) or negative (-), there is no net increase in TAP emissions from the proposed modification and no further toxics evaluation is required (i.e., items (4) through (9) should not be completed for this TAP).
>
> If this number is positive (+), there is a net increase in emissions of this TAP and further review is necessary. Items (4) through (6) should be completed if the applicant is attempting to avoid a toxics evaluation by demonstrating that the proposed modification will not result in a net overall increase in toxic air pollutant emissions (Ref: 15A NCAC 2H .0610(b)(6)). Otherwise, go directly to items (7), (8), and (9).

(4) CREDITABLE INCREASE - Calculate the total creditable TAP increases. Regulation 15A NCAC 2H .0610 should be reviewed for guidance on determining creditable increases. Provide documentation on a separate page. Contact the Air Permits Branch at (919) 733-3340 for further guidance.

(5) CREDITABLE DECREASE - Calculate the total creditable TAP decreases. Regulation 15A NCAC 2H .0610 should be reviewed for guidance on determining creditable decreases. Provide documentation on a separate page. Contact the Air Permits Branch at (919) 733-3340 for further guidance.

(6) NET OVERALL CHANGE - Subtract (5) from the sum of (3) and (4) to determine the net overall change.

> If this number is negative (-), there is no net overall increase in emissions of this TAP and no further toxics evaluation is required (i.e., items (7), (8), and (9) should not be completed for this TAP).
>
> If this number is positive (+), there is a net overall increase in emissions of this TAP and further review is necessary. Items (7), (8), and (9) should be completed to determine whether an air

dispersion modeling analysis is required.

(7) TOTAL FACILITY EMISSIONS - If a facility-wide evaluation is required for this TAP, a form D2-1 is required to be completed for each emission source of this TAP. The total facility-wide emissions of this TAP are calculated by summing the emissions from each emission source for which a form D2-1 was completed.

(8) 2H .0610(h) Level - The emission level for each pollutant is found in 15A NCAC 2H .0610(h).

(9) IS AN AIR DISPERSION MODELING ANALYSIS REQUIRED FOR THIS TAP? Air dispersion modeling is required if the total facility-wide emission level (7) is greater than the 2H .0610(h) level (8). If this modeling analysis is required, complete stack parameters section of form D2-1 for each emission source that emits this TAP. Review the modeling plan requirements.

MODELING PLAN REQUIREMENTS -

Air toxic modeling requirements are contained in Title 15A NCAC 2D .1100 and 2H .0610. Applicants submitting an air dispersion modeling analysis must first submit a modeling plan. The plan should be officially approved prior to the submittal of the modeling analysis. Contact the Air Quality Analysis Unit (AQAU) at (919) 733-3340 for further modeling guidance. The modeling plan should include the following information:

1) a diagram of the plant site, including locations of all existing and proposed stacks and associated building;

2) a list of on-site building dimensions (height, width, and length);

3) a diagram showing property boundaries, including a scale, key, and a North indicator;

4) the location of the site on a United State Geological Survey (USGS) map;

5) calculation of Good Engineering Practice Stack Height for each stack;

6) discuss all aspects of the project not accounted for in a simple flat terrain model. These include cavity calculations, impact on rolling and complex terrain, building wake affects, and urban/rural considerations;

7) discuss reason for model selections;

8) discuss meteorological data to be used; and

9) any other pertinent information.

INSTRUCTIONS FOR FORM D2-3

D2-3 - TOXIC AIR POLLUTANT EMISSIONS SUMMARY (SIC CALLS)

This form should only be completed for:

(1) SIC Calls for Existing Facilities and Existing Facilities Subject to MACT (Ref: 15A NCAC 2H .0610(b)(3) & (4)). A form D2-3 should be completed for each toxic air pollutant (TAP) emission source at a facility subject to paragraphs (3) and (4) of 15A NCAC 2H .0610(b).

All calculations, assumptions, analysis and other information used to support this form must be included on form D6.

EMISSION SOURCE ID - Enter the unique emission source ID emitting the pollutants to be listed on this form.

SOURCE DESCRIPTION - Briefly describe the function of this source as it relates to the emission of toxic air pollutants.

IS THIS SOURCE SUBJECT TO MACT? - If it is believed that this source is, or will be at a future date, subject to a Maximum Achievable Control Technology (MACT) standard, provide documentation to substantiate this claim (e.g., within the appropriate SIC code, size or production threshold levels, etc.).

SCHEDULED MACT PROMULGATION DATE - List the date by which this MACT standard is scheduled to be promulgated.

CONTROL DEVICE(S) - Describe all control devices associated with this source.

ID NO(s) - List the Identification numbers of all control devices associated with this source. Each device ID must correspond to all other references on other forms to this source.

TOXIC AIR POLLUTANT (TAP) - List each TAP emitted from this source.

TAP NO. - For each pollutant, identify its toxic air pollutant number as specified in 15A NCAC 2H .0610(h).

REQUESTED MAXIMUM EMISSIONS - The requested maximum emission rates must have the same units as those in 15A NCAC 2H .0610(h). For example, the emission standards for ammonia is a pounds per 15 minutes rate, therefore, requested emission rates for ammonia must be in lb/15 min.

EMISSION POINT ID NO. - Enter a unique ID number for each emission point (e.g., stack, vent, etc.) associated with each emission source. Emission sources with a common emission point will have the same emission point ID No. For fugitive emissions enter "FUGITIVE".

EMISSION FACTOR TYPE - Enter one of the following numbers corresponding to the type of emission factor used in the calculations:

1= Emissions calculated based on source test or other emissions measurements.
2= Emissions calculated based on material balance using engineering knowledge of the process.

3= Emissions calculated based on AP-42 or EPA 450/2-90-011 or other EPA emission factor.
4= Emissions calculated by engineering judgement. This factor must be approved by the agency prior to use.
5= Emissions calculated based on a state or local agency emission factor.

MODELING PARAMETERS - This section should be completed **ONLY** if air dispersion modeling is required for one or more of the TAPs emitted from this source.

EMISSION POINT ID NO. - Enter a unique ID number for each emission point (e.g., stack, vent, etc.) associated with each emission source. Emission sources with a common emission point will have the same emission point ID No. For fugitive emissions enter "FUGITIVE".

EXHAUST TEMPERATURE (F) - Indicate the exit temperature of the exhaust gas in degrees Fahrenheit.

EMISSION POINT DIAMETER (FT) - List the stack internal diameter in feet.

EMISSION POINT HEIGHT (FT) - List the stack height in feet.

EXIT VELOCITY (FT/SEC) - List the stack gas exit velocity in feet per second.

RAIN CAP - Indicate whether or not the stack is fitted with a rain cap.

INSTRUCTIONS FOR FORM D2-4

D2-4 - TOXIC AIR POLLUTANT SIC CALLS FOR EXISTING FACILITIES

In accordance with 15A NCAC 2H .0610(b)(3), the owner or operator of an existing facility shall have 180 days to apply for a permit or permit modification for the emissions of toxic air pollutants (TAPs) after receiving written notification from the Director that one or more emission sources at the existing facility fall within a specified Standard Industrial Classification (SIC) code call. This worksheet will identify those TAPs that are required to be evaluated when an SIC call is made. **All calculations, assumptions, analysis and other information used to support this form must be included on form D6.**

(1) HAS A FORM D2-3 BEEN COMPLETED FOR EACH TOXIC AIR POLLUTANT EMISSION SOURCE? - The first step in this process is to complete a form D2-1 (with the exception of the modeling parameters section) for each TAP emission source.

(2) IF AN EMISSION SOURCE WILL BE SUBJECT TO A MACT ANY TIME IN THE FUTURE, HAS A LIST (ON A SEPARATE SHEET OF PAPER) OF ALL THE POLLUTANTS EMITTED FROM ALL MACT SOURCES BEEN INCLUDED? - On a separate sheet, list all TAPs emitted from all MACT sources (both current and future MACTs). These toxic air pollutants are not required to be evaluated for compliance with 2D .1100 until the last MACT at the facility is promulgated.

(3) HAS A LIST (ON A SEPARATE SHEET OF PAPER) OF NON-MACT POLLUTANTS EMITTED BY NON-MACT SOURCES THAT DO NOT EMIT ANY MACT POLLUTANTS BEEN INCLUDED? - On a separate sheet, list all TAPs emitted by those sources that (a) are not, and will not, be subject to a MACT standard and (b) do not emit TAPs emitted by a source that is, or will be, subject to a MACT standard (i.e., the TAPs listed above in item (2)). These TAPs are required to be evaluated for compliance with 2D .1100. Therefore, item (4) must be completed for each of these TAPs.

(4) TOTAL FACILITY EMISSIONS - List the TAP, the actual total facility emissions, and the modeling exemption levels found in 15A NCAC 2H .0610(h) for each TAP listed in (3) above. If the actual total facility emissions are above the 2H .0610(h) levels, an air dispersion modeling analysis is required.

Complete the modeling parameters section of form D2-3 for each source that emits a TAP for which an air dispersion modeling analysis is required.

MODELING PLAN REQUIREMENTS -

Air toxic modeling requirements are contained in Title 15A NCAC 2D .1100 and 2H .0610. Applicants submitting an air dispersion modeling analysis must first submit a modeling plan. The plan should be officially approved prior to the submittal of the modeling analysis. Contact the Air Quality Analysis Unit (AQAU) at (919) 733-3340 for further modeling guidance. The modeling plan should include the following information:

1) a diagram of the plant site, including locations of all existing and proposed stacks and associated building;

2) a list of on-site building dimensions (height, width, and length);

3) a diagram showing property boundaries, including a scale, key, and a North indicator;

4) the location of the site on a United State Geological Survey (USGS) map;

5) calculation of Good Engineering Practice Stack Height for each stack;

6) discuss all aspects of the project not accounted for in a simple flat terrain model. These include cavity calculations, impact on rolling and complex terrain, building wake affects, and urban/rural considerations;

7) discuss reason for model selections;

8) discuss meteorological data to be used; and

9) any other pertinent information.

INSTRUCTIONS FOR FORM D3-1

D3-1 - SPECIFIC EMISSION SOURCE (EMISSION INFORMATION)

NOTE - Do not include the toxic air pollutant emissions regulated only by 15A NCAC 2H .0610(h) (the N.C. Air Toxics Regulation). Such toxic air pollutant emissions should be included in form D2-1. However, pollutants regulated or listed as hazardous air pollutants in Section 112(b) of the federal Clean Air Act should be included on this form.

This form is used to list emissions of all of the regulated pollutants for each of the emission sources identified in Section B. A separate form D3-1 must be completed for each emission source. Title V facilities must complete a form D3-1 for each activity that is deemed insignificant due to the size or production levels listed in 15A NCAC 2Q .0102(b)(2). This form and its attachments will be used for calculating actual and potential hourly and annual emissions. **All calculations, assumptions, analysis and other information used to support this form must be included on form D6.**

EMISSION SOURCE DESCRIPTION - Complete this section for each emission source described on Form B.

EMISSION SOURCE ID NO. - Enter a unique emission source ID number for each emission source for which application is made. Large groups of similar or co-located fugitive emission sources may be grouped together and be assigned a single ID No. (e.g., valves, pumps, compressors, stockpiles = ID No. F195). The choice of ID numbers is at the discretion of the applicant. It is recommended that each emission source ID No. start with ES___, control device ID No. CD___, and emission point ID No. EP___.

IS THIS SOURCE A FUGITIVE SOURCE? NO/YES - Form D3 must also be completed for each fugitive source designated on Form A3, A4, or E3.

ALTERNATIVE OPERATING SCENARIO (AOS) NO.: If this is an alternative operating scenario rather than the primary operating scenario, specify the AOS number you assigned to this alternative operating scenario on form A5.

POLLUTANT - In addition to the criteria pollutants, enter every regulated air pollutant being emitted from this emission source (one pollutant per line).

EMISSION FACTOR TYPE - Enter one of the following numbers corresponding to the type of emission factor used in the calculations:

1= Emissions calculated based on source test or other emissions measurements.
2= Emissions calculated based on material balance using engineering knowledge of the process.
3= Emissions calculated based on AP-42 or EPA 450/2-90-011 or other EPA emission factor.
4= Emissions calculated by engineering judgement. This factor must be approved by the agency prior to use.
5= Emissions calculated based on a state or local agency emission factor.

LBS/HR POTENTIAL - Calculate the potential emissions of each pollutant from this emission source based on the emission factor used for each pollutant.

EXAMPLE: The AP-42 emission factor for emissions of SO_2 from distillate oil is 142S lbs/10^3 gal. of oil burned (where S = % sulfur in the fuel). Assume that the oil has a .5% sulfur content, a 33 million Btu/hour boiler is the emissions source, one (1) gallon of distillate oil has a heating value of 145,000 Btu, and 15A NCAC 2D .0516 is the applicable standard at 2.3 lb/million Btu. The actual operating hours for this plant are 12 hours/day, 5 days/week, 50 weeks/year. There are no hourly or annual fuel restrictions and there are no operating hour limits. When calculating the potential emissions, it is assumed that the boiler will be operated 24 hours per day for 365 days per year at the maximum heat input. The estimated potential SO_2 emissions are:

$$\frac{33MMBtu}{hour} x \frac{1gal}{145{,}000MMBtu} x \frac{142(.5)lbs}{1000gal} = \frac{16.16lbs}{hour}$$

LBS/HR ACTUAL. - Calculate the actual emissions of each pollutant from this emission source based on the emission factor used for each pollutant. If the above boiler is usually operated at 90% of the maximum heat input, the actual emissions would be 14.54 lbs/hr.

LBS/YR POTENTIAL - Calculate the potential emissions of each pollutant from this emission source based on the emission factor used for each pollutant.

Using the above example and assuming the boiler normally operates at full capacity:

$$\frac{16.16lbs}{hour} x \frac{8760hours}{year} = \frac{141{,}562lbs}{year}$$

LBS/YR ACTUAL. - Calculate the actual emissions of each pollutant from this emission source based on the emission factor used for each pollutant.

Using the above example and assuming the boiler normally operates at 75% capacity:

$$\frac{16.16lbs}{hour} x .75 x \frac{12hours}{day} x \frac{5days}{week} x \frac{50weeks}{year} = \frac{36{,}360lbs}{year}$$

Or, if there is a permitted fuel restriction of 1.4 million gallons of distillate NO.2 oil per year, then the potential emissions would be:

$$\frac{1{,}400{,}000gallons}{1year} x \frac{145{,}000Btu}{1gallon} x \frac{16.16lbs}{hour} x \frac{1hour}{33MMBtu} = \frac{99{,}408Lbs}{year}$$

COMMENTS - Use additional pages if needed.

INSTRUCTIONS FOR FORM D3-2

D3-2 - SPECIFIC EMISSION SOURCE (REGULATION ANALYSIS)

This form is to be used by non-Title V and Title V facilities to list all regulated pollutants, emission and operating limits, and applicable regulations for each pollutant for each emission source. **All calculations, assumptions, analysis and other information used to support this form must be included on form D6.**

EMISSION SOURCE DESCRIPTION - Describe the emission source for which this form applies.

EMISSION SOURCE ID NO. - This form must be completed for each emission source listed on Form A3, A4, or E3.

ALTERNATIVE OPERATING SCENARIO (AOS) NO.: If this is an alternative operating scenario rather than the primary operating scenario, specify the AOS number you assigned to this alternative operating scenario on form A5.

REGULATED POLLUTANT - List all regulated pollutants for which this source is to be permitted.

EMISSION AND OPERATING LIMITS - Indicate all applicable regulatory emission limitations and operating restrictions, including work practice standards to be permitted for this pollutant (e.g. lbs/million Btu, lbs/hr, raw material input rate, etc.).

APPLICABLE REGULATION - List the regulation limiting the emission and operating limits of this pollutant. All specific information that is necessary to determine applicability and compliance with all applicable State requirements and Federal requirements of the Clean Air Act shall be included. Any proposed exemptions from otherwise applicable requirements should be identified on this form. The applicable regulations to be listed here can generally be found in:

(a) 15A NCAC Subchapters 2D and 2Q. The majority of the applicable regulations will be found in these Subchapters.

(b) Section 111 or 112 of the federal Clean Air Act (with the exception of the risk management plan regulation under Section 112(r)).

(c) Section 129 of the federal Clean Air Act for solid waste incineration.

(d) Sections 183(e), 183(f), or 328 of the federal Clean Air Act.

(e) Section 504(b) or 114(a)(3) of the federal Clean Air Act.

(f) Part C of Title I of the federal Clean Air Act (national ambient air quality standards, increment standards, or visibility requirements) as applicable to temporary sources permitted pursuant to 504(e) of the federal Clean Air Act.

COMMENTS - Use additional pages if needed.

INSTRUCTIONS FOR FORM D3-3

D3-3 - SPECIFIC EMISSION SOURCE (REDUCTION AND RECYCLING ACTIVITIES)

This form may be used for fulfilling the requirements of North Carolina General Statute 143-215.108(g) which states that a source reduction and recycling description must be filed for:

(a) each air quality payment of an annual permit fee,
(b) any application for a new permit, or
(c) any modification of an existing permit.

If a source reduction and recycling description is required, this form should be completed for each emission source for which there was a source reduction or recycling activity.

EMISSION SOURCE DESCRIPTION: Describe the emission source for which this form applies.

EMISSION SOURCE ID NO.: Use the same emission source ID No(s) used on forms A3, A4, or E3.

REGULATED POLLUTANT: Identify the regulated pollutants emitted from this emission source.

ONGOING SOURCE REDUCTION ACTIVITIES (ENTER CODES): From the attached list of source reduction and recycling codes, chose the code that most accurately identifies the current source reduction and recycling activities being utilized for the emission of this pollutant from this emission source.

QUANTITY EMITTED BEFORE REDUCTION (LBS/YR): Quantify the amount of this pollutant emitted before the current source reduction and recycling activities were utilized.

QUANTITY EMITTED AFTER REDUCTION (LBS/YR): Quantify the amount of this pollutant emitted after the utilization of the current source reduction and recycling activities.

PLANNED SOURCE REDUCTION ACTIVITIES (ENTER CODES): From the attached list of source reduction and recycling codes, chose the code that most accurately identifies the planned source reduction and recycling activities being utilized for the emission of this pollutant from this emission source.

COMMENTS - Use additional pages if needed.

SOURCE REDUCTION AND RECYCLING ACTIVITY CODES

RECYCLING ACTIVITIES

Code		Code	
W01	On-site beneficial use/reuse.	W02	Off-site beneficial use/reuse.

SOURCE REDUCTION ACTIVITIES

Code	Good Operating Practices	Code	Spill and Leak Prevention
W11	Began to segregate types of hazardous waste to make them more amenable to recycling.	W31	Improved storage or stacking procedures
W12	Began to segregate (stopped combining) hazardous waste from non-hazardous waste (Note: for purposes of hazardous waste from non-hazardous waste reporting, reduces volume of hazardous waste, but does not reduce total waste volume)	W32	Improved procedures for loading, unloading, and transfer operations
W13	Improved maintenance scheduling, recordkeeping, or procedures	W33	Installed overflow alarms or automatic shut-off valves
W14	Changed production schedule to minimize equipment and feedstock changeovers	W34	Installed secondary containment
W19	Other changes in operating practices (Specify in Comments)	W35	Installed vapor recovery systems
Code	**Inventory Control**	W36	Implemented inspection or monitoring program of potential spill or leak sources
W21	Instituted procedures to ensure that materials do not stay in inventory beyond shelf-life	W39	Other (Specify in Comments)
W22	Began to test outdated material--continue to use if still effective	**Code**	**Raw Material Modifications**
W23	Eliminated shelf-life requirements for stable materials	W41	Increased purity of raw materials
W24	Instituted better labeling procedures	W42	Substituted raw materials
W25	Instituted clearinghouse to exchange materials that would otherwise be discarded	W49	Other (Specify in Comments)
W29	Other (Specify in Comments)		
Code	**Process Modifications**	W68	Improved rinse equipment operation

W51	Instituted closed-loop recycling	W71	Other (Specify in Comments)
W52	Modified equipment, layout, or piping	**Code**	**Surface preparation and finishing**
W53	Changed process catalyst	W72	Modified spray systems or equipment
W54	Instituted better controls on operating conditions (flow rate, temperature, pressure, residence time)	W73	Substituted coating materials used
W55	Changed from small volume containers to bulk containers to minimize discarding of empty containers	W74	Improved application techniques
W58	Other (Specify in Comments)	W75	Changed from spray to other system
Code	**Cleaning and Degreasing**	W78	Other (Specify in Comments)
W59	Modified stripping/cleaning equipment	**Code**	**Product Modifications**
W60	Changed to mechanical stripping/cleaning devices (from solvents or other materials)	W81	Changed product specifications
W61	Changed to aqueous cleaners (from solvents or other materials)	W82	Modified design or composition
W62	Reduced the number of solvents used, to make waste more amenable to recycling	W83	Modified packaging
W63	Modified containment procedures for cleaning units	W89	Other (Specify in Comments)
W64	Improved draining procedures	**Code**	**Other Source Reduction Activity**
W65	Redesigned parts racks to reduce dragout	W99	Specify in Comments
W66	Modified or installed rinse systems		
W67	Improved rinse equipment design		

INSTRUCTIONS FOR FORM D4

D4 - EMISSION POINT SUMMARY

This form will be used to describe all of the emission points designated on forms A3, A4, and E3. Emission point parameters are needed for air dispersion modeling purposes, for determining operating parameters, and to help in determining the capacity of the equipment when making additional construction requests. Any information related to stack height regulations pursuant to 15A NCAC 2D .0533 and section 123 of the Clean Air Act must also be submitted.

EMISSION POINT ID NO. - Enter a unique ID number for each emission point (e.g., stack, vent, etc.) associated with each emission source. Emission sources with a common emission point will have the same emission point ID No. For fugitive emissions enter "FUGITIVE".

EMISSION POINT HEIGHT (FT) - Enter the height (feet) of this emission point from base (ground level at area below emission point) to the top of the emission point.

EQUIVALENT DIAM. (FT) - Enter the inside diameter of the emission point at its exit point. If the emission point is not round enter the equivalent diameter using the following equation:

2 x L x W / (L+W) where L is the length and W is the width

TEMP.(F) - Enter temperature of the emission point gas in Fahrenheit.

VELOCITY (FT/SEC) - Enter the velocity in feet per second of the emission point gas emitted from the emission point.

FLOW RATE (ACFM) - Enter flow rate of the emission point gases in actual cubic feet per minute.

EMISSION POINT DIRECTION - Enter one of the following:

V= Vertical emission point

H= Horizontal emission point

D= Downturned emission point

RAIN CAP? - Is there a rain cap or other type of obstruction at the emission point opening? Yes or no.

The following formulas may be helpful in completing this section:

Flow rate (ACFM) = Velocity (ft/sec) x 3.14 x (Equivalent Diameter/2)^2

Velocity (ft/sec) = flow rate (ACFM) / (3.14 x (Equivalent Diameter/2)^2

COMMENTS - Use additional pages if needed.

INSTRUCTIONS FOR FORM D5

D5 - FACILITY EMISSIONS SUMMARY

This form is used to total the emissions of all regulated air pollutants from all emission sources at this facility in order to evaluate annual emissions for applicability to state and federal regulations.

When determining the facility-wide potential emissions for Title V applicability purposes, fugitive emissions are required to be included if: (1) the fugitive emissions consist of criteria pollutants and the facility belongs to one of the 26 stationary source categories listed in 40 CFR 70.2, or (2) the fugitive emissions are from stationary source categories regulated by a standard promulgated under Section 111 (NSPS) or 112 (NESHAP, including Maximum Achievable Control Technology (MACT)) of the federal Clean Air Act, but only with respect to those air pollutants that have been regulated for that category.

Emissions from sources exempted from permitting because of category (15A NCAC 2Q .0102(b)(1)) are not required to be included when determining the facility-wide potential emissions for Title V applicability purposes. However, potential emissions from emission sources exempted from permitting because of size or production rate (15A NCAC 2Q .0102(b)(2)) must be included when determining the facility-wide potential emissions for Title V applicability purposes.

All calculations, assumptions, analysis and other information used to support this form must be included on form D6.

POLLUTANT - Bring forward all regulated pollutants from the D3-1 forms and enter them on this form.
CAS NUMBER - Bring forward the CAS No. for each regulated air pollutant. This is the Chemical Abstract Service Registry Number assigned to each constituent by the American Chemical Society.

ANNUAL EMISSIONS IN LBS/YR

> **ACTUAL** - For each pollutant total all of the calculated actual lbs/year for all of the emission sources entered on Form D3-1 and enter the sum here.
>
> **POTENTIAL** - For each pollutant total all of the calculated potential lbs/year for all of the emission sources entered on Form D3-1 and insert the sum here.

TOTAL FACILITY FIRING RATE FOR FOSSIL AND WOOD-FIRED BURNERS - Enter the total Btu/hr firing rate for all fossil and wood-fired burners at the facility.

TOTAL REACTIVE VOC's FROM THE FACILITY: Enter the total lbs/day emissions of all photochemically reactive VOC's from all emission sources. The standard is either:

(a) 40 lbs/day of photochemically reactive VOC emissions,
(b) an overall control efficiency of at least 85%, or
(c) a control technology as specified in 15A NCAC 2D .0518 (e) or (f).

COMMENTS - Use additional pages if needed.