

Instructions for Supplemental Permit Application Form AIR POLLUTION CONTROL EQUIPMENT

(Instructions for completing DEP-AIR-APP-210)

All applicants for a permit for a stationary source, as defined in Section 22a-174-1 of the Regulations of Connecticut State Agencies (RCSA), must complete the appropriate supplemental application forms to provide information to quantify the emissions from each source or point of emissions which makes up that stationary source.

This supplemental application form must be completed to provide the details of air pollution control equipment used by *each* unit for which you are submitting an application for. Section I is a summary sheet where you are to list all units for which you are submitting an application for and their associated control equipment. In Section II, you must complete the appropriate subsection for each distinct piece of control equipment you utilize. You may reproduce the pages of the form as necessary. Complete each item as appropriate. If a particular item does not apply to your situation mark it N/A (not applicable). If additional space is needed to answer a question stated in the application, attach separate sheet(s) as necessary, clearly identifying the applicant name, form name and item number, and unit number. *Include supporting documentation with this form (e.g., stack test data, manufacturer's guarantee, etc.). Please reference all attachments.*

Note: The data provided in these forms (such as maximum anticipated fuel usage, maximum operating hours, etc.) will be used to define the operating limits in your permit.

Section I: Summary Sheet

1. *Unit Number* - Identify the reference or unit number assigned to the unit which is vented to air pollution control equipment. Use the same numbering system that was used in completing Part I: Application and Source Type of the form *Permit Application for New Source Review Stationary Sources of Air Pollution* (DEP-AIR-APP-200). Please use a consistent reference number for each unit throughout the application package. Enter the number in the unit number column (1).
2. *Unit Description* - Briefly describe the unit that is vented to the air pollution control equipment.
3. *Control Equipment Number* - Assign a reference number to *each* distinct piece of control equipment that correlates with the unit number assigned to the unit which is

vented to the distinct piece of control equipment. Base this reference number on the same numbering system that was used in completing Part I: Application and Source Type of the form *Permit Application for New Source Review Stationary Sources of Air Pollution* (DEP-AIR-APP-200). For example, if the unit number assigned to a particular unit is U1, the air pollution control equipment number should be C1. If there is more than one piece of control equipment for a particular unit then assign reference numbers such as C1a and C1b, etc., and use separate rows to identify each distinct piece of equipment. If more than one unit uses the same piece of control equipment, then assign a number to the piece of control equipment that correlates with each unit number. For example, if unit numbers assigned were U1, U2, U3, then assign a reference number to the control equipment such as C1-2-3. Please use a consistent reference number for each distinct piece of

control equipment throughout the application package. Enter the number in the control equipment number column (3). See the sample process flow diagram included in the **AI**nstructions for Completing the Permit Application for New Source Review Stationary Sources of Air Pollution@ (DEP-AIR-INST-200) for an example of how to assign reference numbers to each unit. If a unit has additional control equipment in series, use separate rows to identify the additional control equipment under this column.

4. *Type of Control Equipment* - Describe the control equipment (e.g., scrubber, fabric filter, etc.). If a unit has *additional* control equipment in series, use separate rows to describe the additional control equipment under this column.
5. *Overall Control Efficiency* - Indicate the overall control efficiency by weight as a percentage of pollutants *captured* and removed by the control equipment (as guaranteed by the manufacturer). This percentage is obtained by multiplying the control equipment's control efficiency by its collection efficiency.
6. *Pollutant(s) Controlled* - List the pollutant(s) controlled by the control equipment (e.g., VOC, PM₁₀, etc.).
7. *Basis* - *Briefly* describe the basis for the information supplied in columns (5). *Include supporting documentation with this form (e.g., stack test data, manufacturer's guarantee, etc.). Please reference all attachments.*
8. *Stack Number* - Assign a reference number to each stack that correlates with the unit number assigned to *the* unit which uses the stack. Base this reference number on the same numbering system that was used in completing Part I: Application and Source Type of the form *Permit Application for New Source Review Stationary Sources of*

Air Pollution (DEP-AIR-APP-200). For example if the unit number assigned to a particular unit is U1, the stack number should be S1. If there is more than one stack for a particular unit then assign reference numbers such as S1a and S1b, etc. If more than one unit uses the same stack, then assign a number to the stack that correlates with each unit number. For example, if unit numbers assigned were U1, U2, U3, then assign a reference number to the stack such as S1-2-3. Please use a consistent reference number for each stack throughout the application package. Enter the number in the stack number column (8). See the sample process flow diagram included in the **AI**nstructions for Completing the Permit Application for New Source Review Stationary Sources of Air Pollution@ (DEP-AIR-INST-200) for an example of how to assign reference numbers to each unit.

Section II: Specific Control Equipment

Section II consists of ten subsections, each of which captures the required information for specific types of control equipment: adsorption device; afterburner; condenser; electrostatic precipitator; filter; cyclone; scrubber; mist eliminator; other type of control for degreasing equipment; and a generic other type of control equipment. You must complete the appropriate section for each distinct piece of control equipment you utilize. You may reproduce the pages of the form as necessary.

In each subsection, the first four items are essentially the same. Instructions are included here for those items for all control equipment types.

- 1a. *Designated Reference Number* - Identify the appropriate reference number assigned to each piece of control equipment in Section I. Please use a consistent reference number for each piece of control equipment throughout the application package.

1b. *Designated Reference Number* - Identify the appropriate reference number assigned to each unit which *uses* the distinct piece of control equipment. Use the same numbering system that was used in completing Part I: Application and Source Type of the form *Permit Application for New Source Review Stationary Sources of Air Pollution* (DEP-AIR-APP-200) and Section I of this form. Please use a consistent reference number for each unit throughout the application package.

2. *Manufacturer* - Indicate the name of the equipment's manufacturer.

3. *Model Name and Serial Number* - List the model name (or model number) and serial number of the control equipment, if available.

4. *Construction Date* - List each equipment's actual or anticipated construction date.

Adsorption Device

Note: In each subsection, the first four items are essentially the same. Instructions are included at the beginning of Section II instructions for those items for all control equipment types.

Information for items 5-15 can be obtained from the adsorption device manufacturer.

5. *Adsorbent* - Identify the adsorbent material. Indicate if the adsorbent is activated charcoal, and specify the type, granular or powdered. If other than activated charcoal, list the adsorbent material used.

6. *Number of Beds* - List the quantity of adsorbent beds contained in the device.

7. *Dimensions of Bed* - For *each* adsorbent *bed* list: the thickness of the bed in inches; and the cross-sectional area of the bed in square inches. If additional space is needed to answer this item, attach a separate sheet as necessary, clearly identifying the applicant name, form name, item number, and unit number.

8. *Inlet Gas Temperature* - List the maximum design inlet temperature in °F or °C.

9. *Design Pressure Drop Across Unit* - List the minimum design pressure drop across the entire unit (all of the beds) in inches water for design efficiency.

10. *Type of Regeneration* - Indicate how the adsorbent beds are regenerated. If the adsorbent beds are regenerated by a method other than those listed, specify the method of regeneration on the line marked "Other".

11. *Method of Regeneration* - Indicate the regeneration process. If the process is other than those listed, specify the regeneration process on the line marked "Other". Also describe the procedures used to ensure that emissions from the regeneration process are treated or minimized.

12. *Maximum Operation Time Before Regeneration* Indicate the maximum amount of time (e.g., in minutes, *hours* or days) that any individual adsorbent bed will be in continuous operation controlling the emission stream before it is brought off-line for regeneration.

13. *Equipped with a Break-Through Detector?* Check yes or no *indicating* whether the adsorber is equipped with a break-through detector.

14a. *Control Efficiency of Adsorber* - Indicate the weight percentage of pollutants adsorbed (as guaranteed by the manufacturer). If there is more than one pollutant in the exhaust gas, specify the manufacturer's guaranteed efficiency for each pollutant.

14b. *Collection Efficiency of Adsorber* - Indicate the *weight* percentage of pollutants collected or captured from the source *before being sent to the adsorber*. If there is more than one pollutant in the exhaust gas, specify the manufacturer's guaranteed efficiency for each pollutant.

15. *Pollutants Controlled* - List the pollutants controlled by the adsorber (e.g., VOC, PM₁₀, etc.).

Afterburner

Note: In each subsection, the first four items are essentially the same. Instructions are included at the beginning of Section II instructions for those items for all control equipment types. Information for items 5-20 can be obtained from the afterburner manufacturer.

5. *Type of Afterburner* - Indicate the type of afterburner by checking thermal or catalytic. If other, specify type.
6. *Combustion Chamber Dimensions* - Indicate the length of the combustion chamber in inches and the cross-sectional area of the combustion chamber in square inches.
7. *Inlet Gas Temperature* - List the anticipated inlet gas temperature of the waste stream in °F or °C.
8. *Operating Temperature of Chamber* - List the operating temperature of the combustion chamber in °F or °C for design control efficiency.
9. *Type of Auxiliary Fuel* - List the type of auxiliary fuel to be used (e.g., gas, #2 oil), and the fuel's higher heating value and measurement units (e.g., BTU per gallon).
- 10a-c. *% Sulfur, Ash and Nitrogen* - For the auxiliary fuel, list the fuel's maximum sulfur, nitrogen, and ash contents by percent weight on a dry basis. These can be obtained from your fuel dealer. Note: The legal maximum limit for fuel sulfur content in Connecticut is 0.3% for No. 2 heating oil and No. 2 off-road diesel fuel, and 1% for all other heating fuels. Lower percentages may be required if adverse ambient impacts are predicted, BACT requirements are not met, a hazardous air pollutant violation exists, or if an emission standard cannot be met.

- 11a. *Maximum Auxiliary Fuel Usage - Hourly* - Indicate the maximum design fuel firing rate on an hourly basis and specify the measurement units (e.g., gallons/hour). This information is a function of the afterburner's maximum design heat input and the fuel's heating value. If unknown, this information can be obtained from the manufacturer or your fuel dealer.
- 11b. *Maximum Auxiliary Fuel Usage - Annually* - Estimate the maximum anticipated annual fuel usage rates and specify the measurement units (e.g., MMcf/year).
12. *Number of Burners Per Afterburner* - List the quantity of burners for this afterburner, and the maximum design heat input per burner in BTU per hour.
13. *Catalyst Used?* - Check yes or no indicating whether the afterburner contains a catalyst. If yes, indicate the type of catalyst used (e.g., platinum, palladium, etc.).
14. *Catalyst Sampling Interval* - Indicate the manufacturer's recommended catalyst sampling interval.
15. *Heat Exchanger Used?* - Check yes or no indicating whether the afterburner contains a heat exchanger. If yes, indicate the type of heat exchanger used and the percent heat recovery (e.g., recuperative heat exchanger with 70% heat recovery).
16. *Gas Flow Rate* - Indicate the maximum design gas flow rate through the afterburner in standard cubic feet per minute.
17. *Combustion Chamber Design Residence Time* - Indicate the combustion chamber design residence time in seconds. This is the exhaust flow rate divided by the chamber volume.
18. *Moisture Content of Exhaust Gas* - Give the anticipated weight percentage of moisture content of the exhaust gas.

19a. *Control Efficiency of Afterburner* - Indicate the *weight percentage of pollutants removed by the afterburner* (as guaranteed by the manufacturer). If there is *more than one pollutant* in the exhaust gas, specify the manufacturer's guaranteed efficiency for each pollutant.

19b. *Collection Efficiency of Afterburner* - Indicate the *weight percentage of pollutants collected or captured from the source before being sent to the afterburner*. If there is more than one pollutant in the exhaust gas, specify the manufacturer's guaranteed efficiency for each pollutant.

20. *Pollutant(s) Controlled* - List the pollutant(s) *controlled* by the afterburner (e.g., VOC, PM₁₀, etc.).

Condenser

Note: In each subsection, the first four items are essentially the same. Instructions are included at the beginning of Section II instructions for those items for all control equipment types. Information for items 5-11 can be obtained from the condenser manufacturer.

5. *Heat Exchange Area* - Indicate the amount of *condenser* surface heat exchange area in square feet.
6. *Coolant Flow Rate* - Identify the coolant and its flow *rate*. If water is the coolant, list the flow rate in gallons per minute. If air is the coolant, list the flow rate in standard cubic feet per minute (at 68 °F). If the coolant is neither air nor water, specify the coolant type on the line marked "Other", and the coolant flow rate in appropriate measurement units on the line marked "Flow Rate".
7. *Gas Flow Rate* - List the pollutant gas flow rate in *standard* cubic feet per minute (at 68 °F).

8. *Coolant Temperature* - Indicate the coolant temperature in °F at both the condenser inlet ("In") and outlet ("Out").

9. *Gas Temperature* - Indicate the pollutant gas temperature in °F at both the condenser inlet ("In") and outlet ("Out").

10a. *Control Efficiency of Condenser* - Indicate the *weight percentage of pollutants removed by the condenser* (as guaranteed by the manufacturer). If there is more than one pollutant in the exhaust gas, specify the manufacturer's guaranteed efficiency for each pollutant.

10b. *Collection Efficiency of Condenser* - Indicate the *weight percentage of pollutants collected or captured from the source before being sent to the condenser*. If there is more than one pollutant in the exhaust gas, specify the manufacturer's guaranteed efficiency for each pollutant.

11. *Pollutant(s) Controlled* - List the pollutant(s) controlled by the condenser (e.g., VOC, PM₁₀, etc.).

Electrostatic Precipitator

Note: In each subsection, the first four items are essentially the same. Instructions are included at the beginning of Section II instructions for those items for all control equipment types. Information for items 5-12 can be obtained from the electrostatic precipitator manufacturer.

5. *Collecting Electrode Area* - Indicate the collecting electrode surface area in square feet.
6. *Gas Flow Rate* - Indicate the exhaust gas flow rate through the *electrostatic* precipitator in standard cubic feet per minute.
7. *Voltage Across the Precipitator Plates* - Indicate the voltage across the precipitator plates.

8. *Resistivity of Pollutants* - Indicate the maximum resistivity in ohms of the pollutants.
9. *Number of Fields in the Precipitator* - List the total number of fields in the precipitator.
10. *Grain Loading* - Indicate the maximum design inlet and outlet grain loading in grains per standard cubic feet of air flow corrected to 68 °F.
- 11a. *Control Efficiency of Electrostatic Precipitator* - Indicate the weight percentage of pollutants removed by the electrostatic precipitator (as guaranteed by the manufacturer).
- 11b. *Collection Efficiency of Electrostatic Precipitator* - Indicate the weight percentage of pollutants collected or captured from the source *before being sent to the electrostatic precipitator*.
12. *Pollutants Controlled* - List the pollutant(s) controlled by the electrostatic precipitator (e.g., VOC, PM₁₀, etc.).

Filter

Note: In each subsection, the first four items are essentially the same. Instructions are included at the beginning of Section II instructions for those items for all control equipment types.

Information for items 5-15 can be obtained from the filter manufacturer.

5. *Filtering Material* - Identify the filter material (e.g., *cotton*, Orlon acrylic, etc.).
6. *Air to Cloth Ratio* - Indicate the air to cloth ratio in square feet.
7. *Cleaning Method* - Indicate the filter cleaning method. If the cleaning method is other than those listed, specify the cleaning method on the line marked "Other".
8. *Gas Cooling Method* - Indicate the method to cool the gas stream prior to its entering the filter, if applicable. If the gas is cooled via ductwork, also indicate the length in feet and diameter in inches of the ductwork. If the cooling method is other than those listed, specify the cooling method on the line marked "Other".
9. *Gas Flow Rate (From Source)* - Indicate the *exhaust* gas flow rate from the filter unit outlet in standard cubic feet per minute (at 68 °F).
10. *Cooling Gas Flow Rate* - Indicate the cooling gas *flow* rate. If the cooling gas is air, list the bleed-in flow rate in standard cubic feet per minute (at 68 °F). If water is used as a coolant, list the flow rate in gallons per minute.
11. *Inlet Gas Condition* - Identify the temperature and dew point in °F of the inlet gas entering the filter.
12. *Grain Loading* - Indicate the maximum design inlet *and* outlet grain loading in grains per standard cubic feet of air flow corrected to 68 °F.
13. *Design Pressure Drop Across Unit* - List the minimum design pressure drop across the filter in inches water for design efficiency.
- 14a. *Control Efficiency of Filter* - List the weight percentage of pollutants removed by the filter (as guaranteed by the manufacturer).
- 14b. *Collection Efficiency of Filter* - Indicate the weight percentage of pollutants collected or captured from the source *before being sent to the filter*.
15. *Pollutant(s) Controlled* - List the *pollutant(s)* controlled by the filter (e.g., VOC, PM₁₀, etc.).

Cyclone

Note: In each subsection, the first four items are essentially the same. Instructions are included at the beginning of Section II instructions for those items for all control equipment types. Information for items 5-11 can be obtained from the cyclone manufacturer.

5. *Type of Cyclone* - Indicate the type of cyclone.
6. *Number of Cyclones* - If the system contains multiple cyclones, indicate the total quantity of cyclones.
7. *Gas Flow Rate* - Indicate the pollutant gas flow rate in standard cubic feet per minute through the cyclone (at 68 °F).
8. *Grain Loading* - Indicate the maximum design inlet *and* outlet grain loading in grains per standard cubic feet of air flow corrected to 68 °F.
9. *Design Pressure Drop Across Unit* - Indicate the design pressure drop from the cyclone inlet to its outlet.
- 10a. *Control Efficiency of Cyclone* - List the weight *percentage* of pollutants removed by the cyclone (as guaranteed by the manufacturer).
- 10b. *Collection Efficiency of Cyclone* - Indicate the weight percentage of pollutants collected or captured from the source *before being sent to the cyclone*.
11. *Pollutant(s) Controlled* - List the pollutant(s) controlled *by* the cyclone (e.g., VOC, PM₁₀, etc.).

Scrubber

Note: In each subsection, the first four items are essentially the same. Instructions are included at the beginning of Section II instructions for those items for all control equipment types. Information for items 5-15 can be obtained from the scrubber unit manufacturer.

5. *Type of Scrubber* - Identify the type of scrubber used. If the device is a packed scrubber, also identify the packing material, the size of the packing material, and the total packed height in inches. If the device is a spray scrubber, list the total number of nozzles in the scrubber and the individual nozzle pressure in pounds per square inch gauge. If additional space is needed to answer this item, attach a separate sheet as necessary, clearly identifying the applicant name, form name, item number, and unit number. If the type of scrubber is other than those listed, specify the type on the line marked **AOther@** *and* attach a description and sketch of the scrubber with dimensions.
6. *Design Pressure Drop Across the Scrubber* - List the *design* pressure drop, in inches of water, across the scrubber for design efficiency.
7. *Type of Flow* - Indicate the type of flow within the scrubber.
8. *Scrubber Geometry* - Indicate both the length of the *scrubber* (in the direction of gas flow) in feet, and the cross-sectional area of the scrubber in square feet.
9. *Chemical Composition of Scrubbing Liquid* - *Indicate* the chemical composition of the scrubbing liquid (e.g., caustic water).
- 10a,b. *Scrubbing Liquid Flow Rate and Fresh Liquid Make-Up Rate* - Indicate the scrubbing liquid flow rate in gallons per minute in the scrubber, and the scrubber make-up liquid flow rate in gallons per minute. Make-up flow rate refers to the amount of scrubber solution which must be replenished due to losses in the system.
11. *Scrubber Liquid Recirculated?* - Indicate whether the scrubber liquid is used in one pass or is *recirculated*.

12. *Gas Flow Rate* - Indicate the pollutant gas flow rate in standard cubic feet per minute through the scrubber (at 68 °F).
13. *Inlet Gas Temperature* - Indicate the pollutant gas *temperature* in °F at the inlet to the scrubber.
- 14a. *Control Efficiency of Scrubber* - List the weight *percentage* of pollutants removed by the scrubber (as guaranteed by the manufacturer). If there is more than one pollutant in the exhaust gas, specify the manufacturer's guaranteed efficiency for each pollutant.
- 14b. *Collection Efficiency of Scrubber* - Indicate the weight percentage of pollutants collected or captured from the source *before being sent to the scrubber*. If there is *more than one* pollutant in the exhaust gas, specify the manufacturer's guaranteed efficiency for each pollutant.
15. *Pollutant(s) Controlled* - List the *pollutant(s) controlled* by the scrubber (e.g., VOC, PM₁₀, etc.).

Mist Eliminators

Note: In each subsection, the first four items are essentially the same. Instructions are included at the beginning of Section II instructions for those items for all control equipment types.

Information for items 5-8 can be obtained from the unit manufacturer.

5. *Face Velocity* - Indicate the face velocity in feet per second *and* identify the installation configuration.
6. *Design Pressure Drop Across Mist Eliminator* - Indicate the design pressure drop in inches water for design efficiency.
- 7a. *Control Efficiency of Mist Eliminator* - Indicate the weight percentage of pollutants removed by the mist eliminator (as guaranteed by the manufacturer) at 1, 5, and 10 millimeters of mercury.

- 7b. *Collection Efficiency of Mist Eliminator* - Indicate the weight percentage of pollutants collected or captured from the source *before being sent to the mist eliminator*.
8. *Pollutant(s) Controlled* - List the pollutant(s) *controlled* by the mist eliminator (e.g., VOC, PM₁₀, etc.).

Other Control Devices for Degreasing Equipment

If the control equipment is not an integral part of the degreasing equipment, complete items #1-5.

5. *Method of Controls* - Indicate the method of controls used. If other, specify type.
- 6a. *Control Efficiency* - Indicate the weight *percentage* of pollutant removed by the control device (as guaranteed by the manufacturer).
- 6b. *Collection Efficiency* - Indicate the weight *percentage* of pollutants collected or captured from the source *before being sent to the control device*.
7. *Pollutant(s) Controlled* - List the pollutant(s) controlled by the control device (e.g., VOC, PM₁₀, etc.).

Other Type of Control Equipment

This part is to be used only if the pollution control unit is not classified in one of the above categories.

Note: In each subsection, the first four items are essentially the same. Instructions are included at the beginning of Section II instructions for those items for all control equipment types.

Information for item 5-7 can be obtained from the pollution control unit manufacturer.

5. *Generic Name* - Indicate the generic name by which *the* pollution control method is known (e.g., countercurrent packed column absorption).

- 6a. *Control Efficiency* - Indicate the weight *percentage* of pollutant removed by the control device (as guaranteed by the manufacturer).
- 6b. *Collection Efficiency* - Indicate the weight *percentage* of pollutants collected or captured from the source *before being sent to the control device*.
7. *Pollutant(s) Controlled* - List the pollutant(s) controlled by the control device (e.g., VOC, PM₁₀, etc.).