Instructions for Attachment E210
AIR POLLUTION CONTROL EQUIPMENT
Supplemental Application Form

(Instructions for Completing DEEP-NSR-APP-210)

All applications for a permit to construct and operate a stationary source shall include the information listed in Regulations of Connecticut State Agencies (RCSA) section 22a-174-3a(c). This supplemental application form shall be completed for any air pollution control equipment associated with such stationary source.

Complete this form to provide the air pollution control equipment information for all units that are part of this application package. Complete each item as appropriate. If a specific item does not apply to your situation indicate 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 Part number, and unit number.

Note: The data provided in these forms will be used to define the operating limits in your permit.

Questions? Visit the Air Permitting web page or contact the Air Permitting Engineer of the Day at 860-424-4152 (between 8:30 AM and 4:30 PM, Monday through Friday).

Applicant Name: Provide the applicant name as previously indicated on the *Permit Application for Stationary Sources of Air Pollution* form (DEEP-NSR-APP-200).

Unit Number(s): Provide the unit number(s) of the subject unit(s) as previously assigned on the *Permit Application for Stationary Sources of Air Pollution* form (DEEP-NSR-APP-200). Please use a consistent reference number for each unit throughout the application package.

Part I: Summary Sheet

Complete this section for each unit one at a time to ensure that all air pollution control equipment for each unit is properly grouped with such unit.

Air pollution control equipment includes add on controls such as a scrubber and integral equipment such as a low NO_x burner.

Units not utilizing air pollution control equipment are to be listed, with the unit description, and N/A in the *Control Equipment No.* column.

The numbering system to be used is based on the unit number assigned to each unit on the *Permit Application for Stationary Sources of Air Pollution* form (DEEP-NSR-APP-200), using "U" to indicate the unit, "C" to indicate control equipment and "S" to indicate a stack. For example, U1 utilizes C1 and uses S1.

If there is more than one piece of control equipment for a particular unit then assign reference numbers such as C1a and C1b, etc., 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.

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 numbering system throughout the application package.

Unit Number - Provide the unit number of the first unit. Complete all of the information requested in this section for the first unit before moving on to the second unit.

Unit Description - Provide a brief description of the subject unit.

Control Equipment Number - Provide a reference number for *each* distinct piece of control equipment that correlates with the unit using a separate row to identify each distinct piece of control equipment.

Type of Control Equipment - Provide a brief description of the subject control equipment (e.g., scrubber, fabric filter, etc,). using separate rows to describe each piece of control equipment.

Overall Control Efficiency - Provide the overall control efficiency by weight as a percentage of pollutants captured and removed by each distinct piece of control equipment as guaranteed by the manufacturer. This percentage is obtained by multiplying the control equipment's control efficiency by its collection efficiency.

Pollutant(s) Controlled - List the pollutant(s) controlled by the subject control equipment (e.g., VOC, PM_{10}, etc.).

Basis - Briefly describe the basis for the information supplied for the control equipment. *Submit supporting documentation (e.g., stack test data, manufacturer's guarantee, etc.) as Attachment E210(Control Equipment No.).*

Stack Number - Provide a reference number for each stack that correlates with the unit.
Once the above information is listed for a unit, complete the same steps for the next unit until all units are completed.

If more space is needed check the appropriate box and attach additional sheets providing the required information.

Part II: Specific Control Equipment

Part II consists of multiple subparts, each of which captures the required information for specific types of control equipment: adsorption device; afterburner; condenser; electrostatic precipitator; filter; cyclone; mist eliminator; scrubber; other type of control for degreasing equipment; and other type of control equipment.

Complete the appropriate section for each distinct piece of control equipment proposed. You may reproduce the pages of the form as necessary.

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

Control Equipment Number- Provide the control equipment number as indicated in Part I.

Unit Number of Unit which uses Control Equipment- Provide the unit number as indicated in Part I for the unit which *uses* the distinct piece of control equipment.

Manufacturer and Model Number - Provide the manufacturer and model number of the equipment. This information can be obtained from the equipment manufacturer.

Construction Date - Provide the actual or anticipated construction date of the control equipment.

1. Adsorption Device

Adsorbent - Indicate if the adsorbent material is activated charcoal, and specify the type; granular or powdered. If other, specify the adsorbent material used.

Number of Beds - Provide the number of adsorbent beds contained in the device.

Dimensions of Beds - For *each* adsorbent *bed* - list the thickness of the bed in inches and the cross-sectional area of the bed in square inches. If more space is needed check the appropriate box and attach additional sheets providing the required information.

Inlet Gas Temperature - Provide the maximum design inlet temperature in ^{o}F.

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

Gas Flow Rate - Provide the maximum design gas flow rate through the adsorber in standard cubic feet per minute.

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.

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

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 emissions stream before it is brought off-line for regeneration.

Is Adsorber Equipped with a Break-Through Detector? - Indicate if the adsorber is equipped with a break-through detector.

Pollutant(s) Controlled - List the pollutants controlled by the adsorber (e.g., VOC, HAP (specify), etc).

Collection Efficiency(s) of Adsorber – Provide 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.

Control Efficiency(s) of Adsorber - Provide 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.

Overall Control Efficiency(s) – Provide the overall control efficiency by weight as a percentage of pollutants captured and removed by the adsorber as guaranteed by the manufacturer. This percentage is obtained by multiplying the control equipment's control efficiency by its collection efficiency.

2. Afterburner

Type of Afterburner - Indicate the type of afterburner. If other, specify type.

Combustion Chamber Dimensions - Provide the length of the combustion chamber in inches and the cross-sectional area of the combustion chamber in square inches.

Inlet Gas Temperature - Provide the anticipated inlet gas temperature of the waste stream in ^{o}F.

Operating Temperature Range of Chamber - Provide the operating temperature range of the combustion chamber in ^{o}F for design control efficiency.

Auxiliary Fuel Information

Fuel Type - Provide the type of auxiliary fuel to be used (e.g., natural gas, No. 2 oil).

% Sulfur by Weight - For each auxiliary fuel, provide the fuel's maximum percent sulfur by weight on a dry basis. These can be obtained from your fuel dealer.

Higher Heating Value - Provide the fuel's higher heating value in BTU.

Maximum Hourly Firing Rate - Provide the *maximum* design fuel firing rate on an hourly basis. 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.

Maximum Annual Fuel Usage – Provide the maximum anticipated annual fuel usage rates.

Units - Provide the unit of measure used for the subject fuel, gallons or cubic feet.

Number of Burners - Provide the number of burners for this afterburner.

Burner Maximum Heat Input – Provide the maximum design heat input per burner in BTU per hour.

Catalyst Used - Indicate if the afterburner contains a catalyst.

Catalyst Type – Provide the type of catalyst being used (e.g., platinum, palladium, etc.), if applicable.

Catalyst Sampling Interval - Provide the manufacturer's recommended catalyst sampling interval including units, if applicable.

Heat Exchanger Used - Indicate if the afterburner contains a heat exchanger.

Type of Heat Exchanger - Provide the type of heat exchanger used, if applicable.

Heat Recovery - Provide the percent heat recovery of the heat exchanger (e.g., recuperative heat exchanger with 70% heat recovery), if applicable.

Reagent Used – Provide the reagent used in the afterburner, if applicable (e.g., ammonia)

Gas Flow Rate - Provide the maximum design gas flow rate through the afterburner in standard cubic feet per minute.

Combustion Chamber Design Residence Time - Provide the minimum combustion chamber design residence time in seconds. This is the exhaust flow rate divided by the chamber volume.

Moisture Content of Exhaust Gas - Provide the anticipated weight percentage of moisture content of the exhaust gas.

Heat Recovery - Provide heat recovery percent of the afterburner.

Pollutant(s) Controlled - List the pollutant(s) controlled by the afterburner (e.g., VOC, NOx, CO, etc.).

Collection Efficiency(s) of Afterburner – Provide 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.

Control Efficiency(s) of Afterburner - Provide 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.

Overall Control Efficiency(s) – Provide the overall control efficiency by weight as a percentage of pollutants captured and removed by the afterburner as guaranteed by the manufacturer. This percentage is obtained by multiplying the control equipment's control efficiency by its collection efficiency.

3. Condenser

Heat Exchange Area - Provide the condenser surface heat exchange area in square feet.

Coolant Flow Rate - Indicate the coolant and provide 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 corrected to 68 ^{o}F. If the coolant is neither air nor water, specify the coolant type and the coolant flow rate with appropriate measurement units.

Gas Flow Rate - Provide the gas flow rate to the condenser in standard cubic feet per minute corrected to 68 ^{o}F.

Coolant Temperature - Provide the coolant temperature at both the condenser inlet and outlet in ^{o}F.

Gas Temperature - Provide the gas temperature at both the condenser inlet and outlet in ^{o}F.

Pollutant(s) Controlled - List the pollutant(s) controlled by the condenser (e.g., VOC, HAP (specify), etc.).

Collection Efficiency(s) of Condenser - Provide 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.

Control Efficiency(s) of Condenser - Provide 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.

Overall Control Efficiency(s) – Provide the overall control efficiency by weight as a percentage of pollutants captured and removed by the condenser as guaranteed by the manufacturer. This percentage is obtained by multiplying the control equipment's control efficiency by its collection efficiency.

4. Electrostatic Precipitator

Collecting Electrode Area - Provide the collecting electrode surface area in square feet.

Gas Flow Rate - Provide the gas flow rate through the electrostatic precipitator in standard cubic feet per minute.

Voltage Across the Precipitator Plates - Provide the voltage across the precipitator plates in kilovolts.

Resistivity of Pollutants - Provide the maximum resistivity of the pollutants in ohms.

Number of Fields in the Precipitator - Provide the total number of fields in the precipitator.

Grain Loading - Provide the maximum design inlet and outlet grain loading in grains per standard cubic feet of air flow corrected to 68 ^{o}F.

Pollutant(s) Controlled - List the pollutant(s) controlled by the electrostatic precipitator (e.g., PM_{10}, etc.).

Collection Efficiency(s) of Electrostatic Precipitator – Provide the weight percentage of pollutants collected or captured from the source before being sent to the electrostatic precipitator.

Control Efficiency(s) of Electrostatic Precipitator - Provide the weight percentage of pollutants removed by the electrostatic precipitator as guaranteed by the manufacturer.

Overall Control Efficiency(s) – Provide the overall control efficiency by weight as a percentage of pollutants captured and removed by the electrostatic precipitator as guaranteed by the manufacturer. This percentage is obtained by multiplying the control equipment's control efficiency by its collection efficiency.

5. Filter

Filtering Material - Provide the filter material type (e.g., cotton, Orlon acrylic, etc.).

Air to Cloth Ratio - Provide the air to cloth ratio in square feet.

Net Cloth Area - Provide the net cloth area in square feet.

Number of Bags – If bags are used, provide the number of bags.

Cleaning Method - Indicate the filter cleaning method. If the cleaning method is other than those listed, specify the cleaning method.

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.

Cooling Medium Flow Rate - Indicate the cooling medium flow rate. If the cooling medium is air, list the bleed-in flow rate in standard cubic feet per minute corrected to 68 ^{o}F. If the cooling medium is water, list the flow rate in gallons per minute.

Exhaust Gas Flow Rate - Provide the exhaust gas flow rate from the filter unit outlet in standard cubic feet per minute corrected to 68 ^{o}F.

Inlet Gas Temperature - Provide the temperature of the inlet gas entering the filter in ^{o}F.

Inlet Gas Dew Point - Provide the dew point of the inlet gas entering the filter in ^{o}F.

Grain Loading - Provide the maximum design inlet *and* outlet grain loading in grains per standard cubic feet of air flow corrected to 68 ^{o}F.

Design Pressure Drop Across Unit - Provide the minimum design pressure drop across the filter in inches of water for design efficiency.

Operating Pressure Drop Range Across Unit - Provide the expected operating pressure drop range across the filter in inches of water to meet the operational limitations.

Pollutant(s) Controlled - List the pollutant(s) controlled by the filter (e.g., PM_{10}, etc.)

Collection Efficiency of Filter - Provide the weight percentage of pollutants collected or captured from the source before being sent to the filter.

Control Efficiency of Filter - Provide the weight percentage of pollutants removed by the filter as guaranteed by the manufacturer.

Overall Control Efficiency – Provide the overall control efficiency by weight as a percentage of pollutants captured and removed by the filter as guaranteed by the manufacturer. This percentage is obtained by multiplying the control equipment's control efficiency by its collection efficiency.

6. Cyclone

Type of Cyclone - Indicate the type of cyclone. If the system contains multiple cyclones, provide the total number of cyclones.

Gas Flow Rate - Provide the gas flow rate through the cyclone corrected to 68 ^{o}F in

standard cubic feet per minute.

Grain Loading - Provide the maximum design inlet and outlet grain loading in grains per standard cubic feet of air flow corrected to 68 ^{o}F.

Design Pressure Drop Across Unit - Provide the design pressure drop from the cyclone inlet to its outlet in inches of water for design efficiency.

Pollutant(s) Controlled - List the pollutant(s) controlled by the cyclone (e.g., PM_{10}, etc.).

Collection Efficiency(s) of Cyclone - Provide the weight percentage of pollutants collected or captured from the source before being sent to the cyclone. If there is more than one pollutant in the exhaust gas, specify the manufacturer's guaranteed efficiency for each pollutant.

Control Efficiency(s) of Cyclone - Provide the weight percentage of pollutant(s) removed by the cyclone 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.

Overall Control Efficiency(s) – Provide the overall control efficiency by weight as a percentage of pollutants captured and removed by the cyclone as guaranteed by the manufacturer. This percentage is obtained by multiplying the control equipment's control efficiency by its collection efficiency.

7. Mist Eliminators

Face Velocity - Provide the face velocity in feet per second and indicate the installation configuration.

Design Pressure Drop Range Across Unit - Provide the design pressure drop range across the mist eliminator in inches of water for design efficiency.

Flow Rate – Provide the gas flow rate in standard cubic feet per minute.

Pollutant(s) Controlled - List the pollutant(s) controlled by the mist eliminator (e.g., PM_{10}, etc.).

Collection Efficiency(s) of Mist Eliminator - Provide the weight percentage of pollutants collected or captured from the source before being sent to the mist eliminator.

Control Efficiencies of Mist Eliminator - Provide the weight percentage of pollutants removed by the mist eliminator as guaranteed by the manufacturer at 1, 5, and 10 millimeters of mercury.

Overall Control Efficiency – Provide the overall control efficiency by weight as a percentage of pollutants captured and removed by the mist eliminator as guaranteed by the manufacturer. This percentage is obtained by multiplying the control equipment's control efficiency by its collection efficiency.

8. Scrubber

Type of Scrubber - Indicate the type of scrubber used.

> *Packed scrubber*, also provide the packing material, the size of the packing material, and the total packed height in inches.
>
> *Spray scrubber*, provide the total number of nozzles in the scrubber and the individual nozzle pressure in pounds per square inch gauge.
>
> *Other*, if the type of scrubber is other than those listed, specify the type.

Design Pressure Drop Range Across Unit - Provide the design pressure drop range across the scrubber in inches of water for design efficiency.

Type of Flow - Indicate the type of flow within the scrubber.

Scrubber Geometry - Provide both the length of the scrubber (in the direction of gas flow) in feet, and the cross-sectional area of the scrubber in square inches.

Chemical Composition of Scrubbing Liquid - Provide the chemical composition of the scrubbing liquid (e.g., caustic water).

Scrubbing Liquid/Reagent Flow Rate - Provide the scrubbing liquid/reagent flow rate in the scrubber in gallons per minute.

Fresh Liquid Make-Up Rate - Provide the scrubber fresh liquid make-up 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.

Scrubber Liquid/Reagent Circulation - Indicate whether the scrubber liquid/reagent is used in one pass or is recirculated.

Scrubber Liquid/Reagent pH - Provide the scrubber liquid/reagent pH.

Gas Flow Rate - Provide the gas flow rate through the scrubber corrected to 68 ^{o}F in standard cubic feet per minute.

Inlet Gas Temperature - Provide the pollutant gas temperature at the inlet to the scrubber in ^{o}F.

Design Outlet Grain Loading - Provide the design outlet grain loading in gr/dscf.

Pollutant(s) Controlled - List the pollutant(s) controlled by the scrubber (e.g., VOC, HAP (specify), etc.).

Collection Efficiency of Scrubber - Provide 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.

Control Efficiency of Scrubber - Provide 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.

Overall Control Efficiency – Provide the overall control efficiency by weight as a percentage of pollutants captured and removed by the scrubber as guaranteed by the manufacturer. This percentage is obtained by multiplying the control equipment's control efficiency by its collection efficiency.

9. Other Control Equipment for Degreasing Equipment

If the control equipment is not an integral part of the degreasing equipment, please complete this section.

Name of Control Equipment – Provide the name by which the control equipment is commonly known (e.g., countercurrent packed column absorption).

Method of Control - Indicate the method of control used. If other, specify type.

Pollutant(s) Controlled - List the pollutant(s) controlled by the control equipment (e.g., VOC, HAP (specify), etc.).

Collection Efficiency(s) of Control Equipment - Provide the weight percentage of pollutants collected or captured from the source before being sent to the control equipment. If there is more than one pollutant in the exhaust gas, specify the manufacturer's guaranteed efficiency for each pollutant.

Control Efficiency(s) of Control Equipment - Provide the weight percentage of pollutant removed by the control equipment 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.

Overall Control Efficiency – Provide 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.

10. Other Type of Control Equipment

This part is to be used only if the control equipment is not classified in one of the previous categories.

Name of Control Equipment - Provide the name by which the control equipment is commonly known (e.g., countercurrent packed column absorption).

Pollutant(s) Controlled - List the pollutant(s) controlled by the control equipment (e.g., VOC, CO, NO_x, PM_{10}, etc.)

Collection Efficiency(s) of Control Equipment - Provide the weight percentage of pollutants collected or captured from the source before being sent to the control equipment.

Control Efficiency(s) of Control Equipment - Provide the weight percentage of pollutant removed by the control equipment as guaranteed by the manufacturer.

Overall Control Efficiency – Provide 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.

Part III: Attachments

This section offers a checklist of all the attachments necessary to complete this application. All listed Attachments are **REQUIRED**.

Check the appropriate box by each attachment being submitted as verification that all applicable attachments have been submitted. Please label all attachments as referenced in the permit application form and these instructions and be sure to include the name of the applicant as indicated on the application form.

Attachment E210: Manufacturer Information, REQUIRED

Submit supporting documentation for each piece of air pollution control equipment listed in Part I of this form, e.g., stack test data, manufacturer's guarantees, etc.

Label each document in this Attachment referencing the applicable air pollution control equipment number as indicated in Part I of this form using this format: Attachment E210(Control Equipment No.).