

# CONTROL DEVICE (THERMAL OR CATALYTIC INCINERATOR)

## Instructions for Form C4

*Form C4 should be completed for all thermal or catalytic incinerator control devices. Make as many copies of the form as necessary. Attach all calculations and assumptions used in determining the numbers entered on this form.*

**CONTROL DEVICE ID NO.** - Enter the ID No. for the control device.

**EMISSION POINT ID NO.** - Enter the ID No. for the emission point (e.g. stack, vent, etc.) associated with this control device.

**EMISSION SOURCE ID NO.** - Enter the ID No(s). for the emission source(s) being controlled.

**MANUFACTURER** - Enter the manufacturer of the control device. Attach Manufacturer's specifications if available.

**MODEL NO.** - Enter the model number of the control device as defined by the manufacturer. If the control device was custom-designed, a PE seal may be required pursuant to MCAPCO 1.5233 – "Applications Requiring Professional Engineer Seal".

**PRIMARY OPERATING SCENARIO** - Select this scenario if information is being entered for the conditions under which the emission source/control device operates or will operate for the majority of the time. This scenario should be the same as the primary operating scenario identified on the B forms.

**ALTERNATIVE OPERATING SCENARIO** - Select this scenario if information is being entered for any secondary conditions under which the emission source/control device operates or will operate. Include the Alternative Operating Scenario ID No.(AOS#). (The AOS# should be a unique ID No. for each alternative operating scenario.) These scenarios were identified on the B forms.

**DESCRIBE CONTROL DEVICE AND OPERATING SCENARIO** - Provide information about the control device. If the form is being completed for the primary operating scenario, describe the way the control device operates or will operate for the majority of the time. If the form is being completed for an alternative operating scenario, describe the secondary conditions under which the control device will be operating. Include capacities (i.e. size, volume, flow rate).

**TYPE OF INCINERATION** - Indicate the type of incineration method (ie. afterburner, regenerative thermal oxidation, recuperative thermal oxidation, or catalytic oxidation).

**SERIES OR PARALLEL CONFIGURATION-** If the control device operates in series or in parallel with other devices, enter the position of the control device, number of units in the configuration, and ID No(s). of the other control devices.

**POLLUTANTS BEING CONTROLLED-** For each pollutant being controlled by the control device, list the percent efficiency achieved, the actual and potential emission rates before control (lb/hr), and the actual and potential emission rates after control (lb/hr). Provide backup documentation which explains how the efficiency and emission rates were determined.

**DESIGN PARAMETERS-** List all parameters used to design/size the control device including, but not limited to those parameters already listed on the form. Indicate the actual and potential operating values for each parameter.

**OPERATING PARAMETER INDICATOR RANGES** - List all ranges that the facility will use as an indication of proper operation. Indicate whether or not there is an alarm or interlock system associated with the operating parameter by writing yes or no in the "Alarm?" or "Interlock?" columns. An example of an indicator range would be a baghouse that operates properly between the pressure drop range of 3 to 8 inches of water column. Any reading below 3 inches of water or above 8 inches of water may indicate a problem with the filter. A facility should be prepared to inspect and perform corrective action on a control device that is operating outside of the proper operation ranges listed here.

**DESCRIBE FUEL BURNING EQUIPMENT** - If fuel is consumed by the control device, describe the fuel burning equipment (i.e. dryer, oven, heater).

**MAXIMUM RATED INPUT (million Btu/hour)** - Enter the maximum designed firing rate of the fuel burning equipment.

**DIRECT-FIRED OR INDIRECT-FIRED** - Select Direct-Fired if the material being heated comes in contact with and/or adds substance to the products of combustion. Select Indirect-Fired if the material being heated is not contacted by and adds no substance to the products of combustion.

**FUEL TYPE** - Enter type of fuel used for both startup and operation.

**ACTUAL ANNUAL FUEL USAGE & UNITS** - Enter the actual amount of fuel consumed during normal operation of the control device as well as the associated unit of measurement.

**Btu CONTENT** - Enter the heat content of both the startup and operating fuel(s) expressed as Btu/unit (i.e. Btu/gallon, Btu/lb). Specify the unit.

**% SULFUR** - Enter the sulfur content of both the startup and operating fuel(s) expressed as a percentage.

**% ASH** - Enter the ash content of both the startup and operating fuel(s) expressed as a percentage.

*Note: Attach a Fuel Supplier Certification for the above information.*

**MATERIALS ENTERING PROCESS**- Describe any auxiliary materials introduced into the control system. Include actual and potential usage rates and associated units of measure.

**CONTROL DEVICE USAGE AND REASON FOR USE** - If the control device is not used continuously, describe when the device would not be in use. Indicate if the control device is an integral part of the process. Indicate whether the control device was installed to control air pollution or for another reason. Indicate if the control device was required to be installed by an air pollution regulation.

**COMMENTS**- Provide any comments that would be helpful in understanding the information presented on this form.

**SECTION C**

**C4**

# CONTROL DEVICE (THERMAL OR CATALYTIC INCINERATOR)

CONTROL DEVICE ID NO.:	EMISSION POINT ID NO.:	EMISSION SOURCE ID NO(S). BEING CONTROLLED:
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MANUFACTURER: (Attach manufacturer's specifications if available)	MODEL NO.:
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IS THE CONTROL DEVICE PART OF: <input type="checkbox"/> A PRIMARY OPERATING SCENARIO?	<input type="checkbox"/> AN ALTERNATIVE OPERATING SCENARIO?
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DESCRIBE CONTROL DEVICE AND OPERATING SCENARIO:	AOS #:
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Attach flow diagram if the control device is in series and/or in parallel with other control devices.

TYPE:  AFTERBURNER     REGENERATIVE THERMAL OXIDATION     RECUPERATIVE THERMAL OXIDATION     CATALYTIC OXIDATION

IF THE CONTROL DEVICE IS IN SERIES WITH OTHER CONTROLS:	POSITION IN SERIES:	NO. OF UNITS IN SERIES:	OTHER CONTROL DEVICE ID NOS. IN SERIES:
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IF THE CONTROL DEVICE IS IN PARALLEL W/ OTHER CONTROLS:	NO. OF UNITS IN PARALLEL:	OTHER CONTROL DEVICE ID NOS. IN PARALLEL:
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POLLUTANT (S) CONTROLLED:	_____	_____	_____	_____	_____
% EFFICIENCY (Attach documentation):	_____ %	_____ %	_____ %	_____ %	_____ %
	ACTUAL    POTENTIAL	ACTUAL    POTENTIAL	ACTUAL    POTENTIAL	ACTUAL    POTENTIAL	ACTUAL    POTENTIAL
BEFORE CONTROL EMISSION RATE (LB/HR):	_____	_____	_____	_____	_____
AFTER CONTROL EMISSION RATE (LB/HR):	_____	_____	_____	_____	_____

NAME THE PARAMETERS USED TO DESIGN THE CONTROL DEVICE (e.g. Inlet and Outlet Flowrates, Inlet and Outlet Temperatures, Moisture Content)

PARAMETER	POTENTIAL VALUES (unit)	ACTUAL VALUES (unit)
Pressure drop		
ACFM		
Percent excess air		
Residence time		
Moisture content entering combustion chamber		
Combustion chamber volume (ft <sup>3</sup> )		
If catalytic: catalyst type		
If catalytic: space velocity (1/hour)		
If catalytic: catalyst design life		
If catalytic: temperature entering catalyst bed		
If catalytic: catalyst bed volume (ft <sup>3</sup> )		
If catalytic: substances that will poison bed		

PROVIDE RANGES OF VALUES OF PARAMETERS THAT WILL BE USED BY THE FACILITY TO ENSURE PROPER OPERATION (e.g.P Drop=3.0-8.0" H<sub>2</sub>O)

PARAMETER	ACTUAL OPERATING RANGE (unit)	MONITORING FREQUENCY	ALARM?	INTERLOCK?
Pressure drop				
Temp entering combustion chamber				
Temp leaving combustion chamber				
If catalytic: T entering catalyst bed				

