



Kansas Department of Health and Environment – Bureau of Air
1000 SW Jackson, Suite 310, Topeka, Kansas 66612
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Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters 40 CFR Part 63, Subpart DDDDD

Introduction

This is a guidance document for operators of boilers or process heaters at industrial, commercial and institutional facilities considered major sources of hazardous air pollutants. The boiler/process heater may burn natural gas, coal, oil, biomass, or other solid and liquid non-waste materials. The document is a quick overview of requirements of the “5D rule.” Each boiler/process heater should be evaluated separately for these requirements. In Tables A and B that follow, Tables 1 through 13 refer to those in the regulations. Consult the regulations’ citations and tables for more details. Also, see section §63.7491 of the regulation for a list of units not covered by this rule such as hot water heaters [specifically defined as having a capacity of no more than 120 gallons, or a heat-input capacity of 1.6 million BTU/hr or less (not generating steam) heated by gaseous fuel, liquid fuel or biomass].

These instructions will help with navigating Tables A and B that follow:

1. Determine which table (A or B) applies to the boiler/process heater. If the boiler/process heater was constructed or reconstructed on or before June 4, 2010, it would be considered an “existing” boiler. Refer to Table A. If after June 4, 2010, it would be considered a “new” boiler. Refer to Table B.
2. What is the heat-input capacity of the boiler/process heater? This is most likely stamped on a metal plate on the boiler. Once found, look in the first column (heat-input capacity) of the table chosen in step 1. Look for the row that fits your boiler capacity. Note the first row (any size) will apply to all boilers/process heaters, in addition to one of the other three rows below it.
3. In the second column (subcategory), looking at the first row, if the units are limited-use or are equipped with a continuous oxygen trim system, tune-up requirements might be less stringent (dependent on heat-input capacity). Keeping in mind fuel type used by the boiler/process heater and heat-input capacity of the equipment being evaluated, select the applicable row.
4. Follow the applicable heat-input capacity and subcategory row combination that meets the boiler/process heater being evaluated. Following the row to the right, details of the requirements will be found in the regulation citations.

Additional references to help with compliance of the 5D rule are available at www.sbeap.org/agrules/boilers. If you have questions or need help with environmental compliance, including air permits, don’t hesitate to contact the Kansas Small Business Environmental Assistance Program at 800-578-8898 or sbeap@ksu.edu. This is a free and confidential program located at Kansas State University.

Other boiler regulations

In addition to possibly being subject to federal national emission standards for hazardous air pollutants, or NESHAP, as outlined in Table A and Table B of this document, boilers could be subject to federal new source performance standards, or NSPS, as well as Kansas Air Quality Act standards. See the last page.



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TABLE A — Existing Boilers and Process Heaters - commenced construction or reconstruction on or before 6-4-10; compliance deadline = 1-31-16 ¹				
Heat-input capacity	Subcategory ²	Requirements Tables 2 and 3	Notification and Report Submission	Other Requirements
Any size	All units (except limited-use)	One-time energy assessment and initial tune-up	<ul style="list-style-type: none"> Initial notification due 5-31-13 Assessment & tune-up due 1-31-16 Notification of compliance status due w/in 60 days after completing compliance demonstrations 	<ul style="list-style-type: none"> Continuous compliance §63.7540 Reporting requirements Table 9 General provisions Table 10 Records §63.7555
	Limited-use units	Tune-up initially and every 5 yrs		
	Units w/continuous oxygen trim system			
≥10 MMBtu/hr (Large)	All units (except Gas 1 or metal process furnaces)	<ul style="list-style-type: none"> Numeric emission limits³ for Hg, CO, filterable PM (or total selected metals), HCl, alternate CO CEMS limit, §63.7500 Annual tune-up (serves as work practice standard for dioxin/furan emissions) 	<ul style="list-style-type: none"> Notification of intent due 60 days before performance test Notification of compliance status due w/in 60 days after completing performance tests and compliance demonstrations Demonstrate initial compliance with emission limits by 7-29-16 1st report due 1-31-17 Subsequent semi-annual reports due 7-31 and 1-31 	<ul style="list-style-type: none"> Initial compliance §63.7530 <ul style="list-style-type: none"> -Stack testing §63.7520 and Table 5, -Fuel analysis §63.7521 & Table 6 , -Establish operating limits §63.7520 & Table 7 -Continuous monitoring systems §63.7540 & Table 8 May need site-specific monitoring plan §63.7505(d) Emission averaging §63.7522 Alternate emission limits Table 11, 12, & 13 Monitoring, installation, operation, & maintenance §63.7525
	Gas 1 or metal process furnaces	Annual tune-up (serves as work practice for all regulated emissions)	<ul style="list-style-type: none"> 1st report due 1-31-17 Subsequent annual reports due 1-31 	
<10 MMBtu/hr (Small)	Heavy liquid, and solid fuel-fired units (coal and biomass) and if gas 1, gas 2 (other), and light liquid are >5MMBtu/hr	Tune-up initially and every 2 yrs	<ul style="list-style-type: none"> 1st report due 1-31-17 Subsequent biennial reports due 1-31 	<ul style="list-style-type: none"> See other requirements for all units (above) Notification of alternative fuel use due within 48 hours of declared natural gas curtailment or supply interruption
≤5 MMBtu/hr	Gas 1, gas 2 (other), and light liquid	Tune-up initially and every 5 yrs	<ul style="list-style-type: none"> 1st report due 1-31-17 Subsequent 5-yr reports due 1-31 	

¹Existing area sources that become major sources must comply within 3 years from the date it becomes a major source.

²If fuel switch or physical change caused the unit to change subcategory, provide notice within 30 days.

³If subject to numeric emission limits then must comply with specific startup and shutdown requirements (Table 3) and certain operating limits (Table 4).



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TABLE B — New Boilers and Process Heaters - commenced construction or reconstruction after 6-4-10; compliance deadline = 4-1-13 or upon startup ¹				
Heat-input capacity	Subcategory ²	Requirements Tables 1 and 3	Notification and Report Submission §63.7545, §63.7550 & Table 9	Other Requirements
Any size	All units (except limited-use)	No additional requirement from applicable row below	<ul style="list-style-type: none"> Initial notification due 5-31-13 or w/in 15 days after startup, if startup on or after 1-31-13 Notification of compliance status due w/in 60 days after completing compliance demonstrations 	<ul style="list-style-type: none"> Continuous compliance §63.7540 Reporting requirements Table 9 General provisions Table 10 Records §63.7555
	Limited-use units	Tune-up every 5 years §63.7540		
	Units w/continuous oxygen trim system			
≥10 MMBtu/hr (Large)	All units (except Gas 1 or metal process furnaces)	<ul style="list-style-type: none"> Numeric emission limits³ for Hg, CO, filterable PM (or total selected metals), HCl, alternate CO CEMS limit, §63.7500 Annual tune-up (serves as work practice standard for dioxin/furan emissions) 	<ul style="list-style-type: none"> Notification of intent due 60 days before performance test Notification of compliance status due w/in 60 days after completing performance tests and compliance demonstrations Demonstrate initial compliance with emission limits by 7-30-13 or w/in 180 days after start-up 1st report due 1-31 or 7-31 Subsequent semi-annual reports due 7-31 and 1-31 	<ul style="list-style-type: none"> Initial compliance §63.7530 <ul style="list-style-type: none"> -Stack testing §63.7520 and Table 5, -Fuel analysis §63.7521 & Table 6 , -Establish operating limits §63.7520 & Table 7 -Continuous monitoring systems §63.7540 & Table 8 May need site-specific monitoring plan §63.7505(d) Emission averaging §63.7522 Alternate emission limits Tables 11, 12, & 13 Monitoring, installation, operation, & maintenance §63.7525
	Gas 1 or metal process furnaces	Annual tune-up (serves as work practice for all regulated emissions)	<ul style="list-style-type: none"> 1st report due 1-31 at least one year after compliance date Subsequent annual reports due 1-31 	
<10 MMBtu/hr (Small)	Heavy liquid, and solid fuel-fired units (coal and biomass) and if gas 1, gas 2 (other), and light liquid are >5MMBtu/hr	Tune-up every 2 years	<ul style="list-style-type: none"> 1st report due 1-31 at least two years after compliance date Subsequent biennial reports due 1-31 	<ul style="list-style-type: none"> See other requirements for all units (above) Notification of alternative fuel use due within 48 hours of declared natural gas curtailment or supply interruption
≤5 MMBtu/hr	Gas 1, gas 2 (other), and light liquid	Tune-up every 5 years	<ul style="list-style-type: none"> 1st report due 1-31 at least five years after compliance date Subsequent 5-yr reports due 1-31 	

¹Existing area sources that become major sources must comply within 3 years from the date it becomes a major source.

²If fuel switch or physical change caused the unit to change subcategory, provide notice within 30 days.

³If subject to numeric emission limits then must comply with specific startup and shutdown requirements (Table 3) and certain operating limits (Table 4); also, alternative emission limits exist for boilers constructed or reconstructed between 6-4-10 and 5-20-11 (Table 11), between 5-20-11 and 12-23-11 (Table 12) and between 12-23-11 and 4-1-13 (Table 13).



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NSPS

Boilers installed or modified after June 9, 1989, with a heat-input capacity greater than or equal to 10 million BTU/hr (10MMBTU/hr) but less than or equal to 100 MMBTU/hr, are subject to the NSPS regulation at [40 CFR Part 60, Subpart Dc](#). Details about this rule are found in a guidance document listed as “[Boiler Guidance Doc-NSPS Subpart Dc](#),” on the Bureau of Air [Permitting technical guidance and information page](#). If you operate or are installing a boiler with heat-input capacity greater than 100 MMBTU/hr, and you need help with figuring out your requirements, contact KDHE at 785-296-6024 or SBEAP at 800-578-8898, or refer to [40 CFR Part 60, Subpart Db](#).

Kansas Air Quality Act standards

If you are going to modify existing equipment or install new equipment, you may need a construction approval or a construction permit from KDHE, even if your boiler is smaller than 10 MMBTU/hr. This type of permit looks specifically at the increase in emissions from new or modified equipment. For boilers with <100MMBTU/hr input capacity, the tables below show whether the owner of a new or modified boiler needs to apply for a construction approval or a construction permit, based on input capacity. For example, if a natural gas boiler’s input capacity is 70 MMBTU/hr, then before that boiler is installed, the owner needs to apply to KDHE for a construction approval. If it burns diesel fuel, a construction permit is needed.

Boiler/process heater (<100MMBTU/hr input) needs construction *approval* if...

...it burns...	...and its size is...	
	MMBTU/hr	HP (at 80% eff)
Wood-fired – uncontrolled	> 3.5 and < 8.6	> 85 and < 205
Residual oil #5 or #6	> 3.8 and < 17.3	> 90 and < 415
Distillate oil #1 or #2, or diesel fuel	> 14.6 and < 64.0	> 350 and < 1530
Natural gas – uncontrolled	> 10 and < 93.2	> 510 and < 2230
Natural gas – low-NOx burners	≥ 10 and < 100	≥ 240 and < 2390

Boiler/process heater (<100MMBTU/hr input) needs construction *permit* if...

...it burns...	...and its size is...	
	MMBTU/hr	HP (at 80% eff)
Wood-fired – uncontrolled	≥ 8.6	≥ 205
Residual oil #5 or #6	≥ 17.3	≥ 415
Distillate oil #1 or #2, or diesel fuel	≥ 64.0	≥ 1530
Natural gas – uncontrolled	≥ 93.2	≥ 2230
Natural gas – low-NOx burners	100	2390

Permit application forms

Whether a boiler is subject to NSPS or the Kansas Air Quality Act, the same application form is used. It is available at www.kdheks.gov/air-permit/download.html under the subheading “Construction Permit Application.” Be sure to include Equipment Form 6-1.0 (*Indirect Heating Unit – Boiler*) with the application. It is found under the same subheading and is available at www.kdheks.gov/air-permit/process equip_desc.html.

Potential to emit (PTE) calculator

To calculate PTE for a specific boiler, use the calculator at www.sbeap.org/tools/potential-to-emit-calculators.