GENERAL PROFILE OF BOILER DATA FOR REPORTING YEAR 2024

Facility Name

Address

Contact

Date   **Phone**

No. of boiler stacks	
No. of functioning boilers	
No. of boilers added since Reporting Year 2023	
No. of boilers permanently retired since Reporting Year 2023	
No. of boilers connected via a breeching to 1 stack	
No. of boilers connected via another breeching to another stack	
No. of boilers using 1 fuel	
No. of boilers using 2 fuels	
No. of boilers using 3 fuels	
Other boilers (specify)	

Emission Factors for boilers typically installed in RI are listed on the back side of this page. These factors can be used to estimate your air releases. Air pollution control equipment, if any, would reduce your emissions according to its efficiency. The "S" beside the Emission Factor for SOx indicates that you must multiply the Emission Factor by the % sulfur in the fuel burned.
For example, for #2 oil with a sulfur content of 0.3%, the emission factor becomes 144(.3) = 43.2 pounds SOx/1000 gallons of fuel oil burned.

The emission factors provided on the back of this page were published in AP-42, Chapters 1.3 and 1.4 in the February , 1998 revision.

NOx emission factors were calculated based on average New England fuel bound nitrogen in residual oil as per guidance developed by NESCAUM (New England States for Coordinated Air Use Management.) The estimated emission rate from this nitrogen content is 0.5 Lb/MMBtu or 75 lb/1000 gallons of fuel burned. If your facility has analyses specific to its fuel oil supplies, the following equation may be used to determine the emission factor for #6 fuel oil NOx emissions: lb NOx/1000 gallons = 20.54+104.39(N).

Emission Factors are also available for other fuels such as waste oil, coal, wood, solid waste, etc. Please call for them if needed.

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          Air Pollution Inventory, Office of Air Resources   Air Pollution Inventory Form F2, page 1
          235 Promenade Street, Providence, RI 02908-5767

Means that these emission factors and SCC Code(s) were applicable for estimating emissions from your facility

Classif./Fuel/Boiler info.	SCC Code	Total PM	SOx	NOx	VOC	CO	PM2.5 PRI*	PM10PRI*	NH3	Units "pounds per
Utility companies (SIC 4911)										
#6 oil, normal firing	1-01-004-01	9.19(S)+4.72	162.7(S)	75	0.76	5	6.407	8.791	0.8	1000 gallons
Nat. Gas/over 100 MMBtu/	1-01-006-01	7.6	0.6	280	5.50	84	7.6	1.9	3.2	Million cubic feet
Industrial Boilers (SIC 2000 - 3999)										
#6 oil/> 100 MMBtu/Hr	1-02-004-01	9.19(S)+4.72	162.7(S)	75	0.28	5	8.46	10.68	0.8	1000 gallons
#6 oil/< 100 MMBtu/Hr	1-02-004-02	9.19(S)+4.72	159(S)	75	0.28	5	8.46	10.68	0.8	1000 gallons
#4 oil/> 100 MMBTU/Hr	1-02-005-04	Emission factors fall between those for #6 and #2 fuel oil								
#4 oil/<100MMBTU/Hr	1-02-005-04	check your analysis								
#2 oil/> 100MMBTU/Hr	1-02-005-01	3.3	144(S)	24	0.20	5	0.25	1	0.8	1000 gallons
#2 oil/<100MMBTU/Hr	1-02-005-02	3.3	144(S)	20	0.20	5	0.25	1	0.8	1000 gallons
Nat. Gas/> 100 MMBtu/Hr	1-02-006-01	7.6	0.6	280	5.5	84	--	--	3.2	Million cubic feet
Nat. Gas/< 100 MMBtu/Hr	1-02-006-02	7.6	0.6	100	5.5	84	--	--	3.2	Million cubic feet
Nat. Gas/< .3 MMBtu/Hr	NA	7.6	0.6	94	5.5	40	--	--	3.2	Million cubic feet
Propane (LPG)	1-02-010-02	0.6	0 .1(S)	19	0.5	3.2	--	--		1000 gallons
Commercial/Institutional Boilers (SIC 4000-4899, 4920-9999)										
#6 oil/> 100 MMBtu/Hr	1-03-004-01	9.19(S)+4.72	162.7(S)	75	1.13	5	4.36	9.2	0.8	1000 gallons
#6 oil/< 100 MMBtu/Hr	1-03-004-01	9.19(S)+4.72	159(S)	75	1.13	5	4.36	9.2	0.8	1000 gallons
#4 oil/> 100 MMBTU/Hr	1-03-005-04	Emission factor fall between those for #6 and #2 fuel oil								
#4 oil/<100MMBTU/Hr	1-03-005-04	check your analysis								
#2 oi/l> 100MMBTU/Hr	1-03-005-01	3.3	144(S)	24	0.34	5	0.83	1.08	0.8	1000 gallons
#2 oil/<100MMBTU/Hr	1-03-005-01	3.3	144(S)	20	0.34	5	0.83	1.08	0.8	1000 gallons
Residential furnace	NA	1.7	144(S)	18	0.713	5	0.83	1.08	0.8	1000 gallons
Nat. Gas/> 100 MMBtu/Hr	1-03-006-01	7.6	0.6	280	5.5	84	--	--	0.49	Million cubic feet
Nat. Gas/<100 MMBtu/Hr	1-03-006-03	7.6	0.6	100	5.5	84	--	--	0.49	Million cubic feet
Nat. Gas/< .3 MMBtu/Hr	NA	7.6	0.6	94	5.5	40	--	--	0.49	Million cubic feet
Propane (LPG)	1-03-010-03	0.4	0.1(S)	14	0.5	1.9	--	--		1000 gallons

Note: If stack test or CEM data are available they should be used in lieu of these factors. Please attach a copy of the stack test results or note if CEM data were used. Additional emission factors are available for controlled burners.

HAP emissions will be calculated for your facility using AP-42 factors.
*PM10 Primary and PM25 Primary factors assume 1% sulfur in fuel

Please contact the Office for assistance at DEM.AirInventory@dem.ri.gov or 401-222-2808

STACK INFORMATION FOR BOILERS

Facility Name		**Contact Name**	**Phone**

This form has enough space to record data for up to 3 stacks and 3 boilers with 2 fuels a piece. You may photocopy this page to report additional equipment. For boilers using other fuels, RIDEM will supply a different form on request. If the information on this form has not changed since 2023 Form F2, page 2 may be copied and submitted for RY24. If one stack handles emissions from multiple boilers, report stack data only once. Show clearly which boilers are associated with each stack.

Attach summarized EPA Methods 1-7 stack test results if witnessed & approved.

‰ Necessary elements are checked. Others are for verifying emissions estimates.

Stack number			
‰ Stack height above ground (ft.)			
‰ Stack diameter (ft.)			
Stack exit temp (F)			
Stack exhaust gas flow rate (acfm)			
Smoke alarm/opacity monitor?	‰ Yes ‰ No	‰ Yes ‰ No	‰ Yes ‰ No
NOx CEM?	‰ Yes ‰ No	‰ Yes ‰ No	‰ Yes ‰ No
NOx control w/ ammonia or urea?	‰ ammonia ‰ urea	‰ ammonia ‰ urea	‰ ammonia ‰ urea
Boiler number (what you call it)			
RI DEM Approval No.			
Installation date (year)			
Boiler brand			
‰ Input: MMBtu/Hr	MMBtu/hr	MMBtu/hr	MMBtu/hr
Flue Gas Recirculation?	‰ Yes ‰ No	‰ Yes ‰ No	‰ Yes ‰ No
Burner installation date (year)			
Low NOx burner?	‰ Yes ‰ No	‰ Yes ‰ No	‰ Yes ‰ No
‰ Fuel type	# _____ oil natural gas	# _____ oil natural gas	# _____ oil natural gas
‰ Oil sulfur limit (%)			
Normal firing rate			
Maximum firing rate			

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EXAMPLE

STACK INFORMATION FOR BOILERS

XYZ Company	xxxxxxxxxx	111-1111
Facility Name	**Contact Name**	**Phone**

This form has enough space to record data for up to 3 stacks and 3 boilers with 2 fuels apiece. You may photocopy this page to report additional equipment. For boilers using other fuels, RIDEM will supply a different form on request. If the information on this form has not changed since 2023 Form F2, page 2 may be copied and submitted for 2024. If one stack handles emissions from multiple boilers, report stack data only once. Show clearly which boilers are associated with each stack.

Attach summarized EPA Methods 1-7 stack test results if witnessed & approved.

‰ Necessary elements are checked. Others are for verifying emissions estimates.

Stack number	1								
Stack height above ground (ft.)	135								
Stack diameter (ft.)	3								
Stack exit temp (F)	450								
Stack exhaust gas flow rate (acfm)	1500								
Smoke alarm/opacity monitor?	‰ Yes	‰ No	‰ Yes	‰ No	‰ Yes	‰ No			
NOx CEM?	‰ Yes	‰ No	‰ Yes	‰ No	‰ Yes	‰ No			
NOx control w/ ammonia or urea?	‰ ammonia	‰ urea	‰ ammonia	‰ urea	‰ ammonia	‰ urea			
Boiler number (what you call it)	1		2						
RI DEM Approval No.	na		123						
Installation date (year)	1966		May 1981						
Boiler brand	B&W		Cleaver Brooks						
Input: MMBtu/Hr	33 MMBtu/hr		18 MMBtu/hr		MMBtu/hr				
Flue Gas Recirculation?	‰ Yes	‰ No	‰ Yes	‰ No	‰ Yes	‰ No			
Burner installation date (year)	1983								
Low NOx burner?	‰ Yes	‰ No	‰ Yes	‰ No	‰ Yes	‰ No			
Fuel type	# 6 oil	natural gas	# 6 oil	natural gas	# oil	natural gas			
Oil sulfur limit (%)	1	▓	1	▓					
Normal firing rate	82 gph	12,300 cu.ft/hr	45 gph						
Maximum firing rate	220 gph	33,000cu.ft/hr	120 gph						

Approximate Conversions

Boiler Horsepower	x .0419	= MMBtu/hr (input)
1000 lb steam/hr	x 1	= MMbtu/hr
max. gph #2 oil	x .140	= MMBtu/hr
max gph #4 or #6 oil	x .150	= MMBtu/hr
gph #2 oil x 140	x 140	=ft3/hr natural gas
gph #4 or #6 oil	x 150	=ft3/hr natural gas

Facility Name		Contact Name		Phone

<<<<<<<< REPORT ONLY ONE FUEL PER COLUMN >>>>>>>>

Boiler No.					
RIDEM Approval No.					
Boiler Fuel Type					
Units (gal, cubic ft.)					
Month	Fuel burned		Fuel burned		Fuel burned	
Jan 2024						
Feb 2024						
March 2024						
April 2024						
May 2024						
Quarterly Total		%		%		%
		No. of days		**No. of days**		**No. of days**
Jun 2024						
Jul 2024						
Aug 2024						
Quarterly Total		%		%		%
Sep 2024						
Oct 2024						
Nov 2024						
Quarterly Total		%		%		%
Dec 2024						
Dec+Jan+Feb (2024)		%		%		%
Total Annual Total		**100 %**		**100 %**		**100 %**

Total boiler fuel usage by fuel type for facility. Write units (gal., MMCF (million cu. ft.), MCF (thousand cu. ft.), CCF (hundred cubic feet)			
#6 _____ % Sulfur		Natural Gas	
#4 _____ % Sulfur		Liquid Propane	
#2 _____ % Sulfur		Other:_____	
For #4 fuel burners only, please report blend and attach analysis: _____ %S (max.) __ % #2 _____ % #6			