AP42 Section:	9.12.1
Background Chapter	4
Reference:	28
Title:	Air Emissions Investigation Report, Miller Brewing Company, Fulton, New York, RTP Environmental Associates, Inc., Westbury, New York, February, 1994.

D. Emission Data/Mass Flux Rates/Emission Factors

Test ID	Parameter	Units	Values reported			
			Run 1	Run 2	Run 3	Run 4
1	Stack temperature	Deg F	142	134.5	112.7	
BREW KETTLE	Moisture	%				
	Oxygen	%				
	Process time	min	193	193	193	
	Volumetric flow, actual	acfm	16982	16599	13498	
	Sample volume	liters	79.3	74	70.3	
	Sample volume	ft^3	2.80	2.61	2.48	
	Isokinetic variation	%	NA	NA	NA	
Circle: Production or feed rate Capacity:		1000 bbl	1.1	1.1	1.1	
	Pollutant concentrations:					
	VOC as n-hexane	mg	0.034	0.064	0.015	
	VOC as toluene	ug/ml	5.2	0	0	
	VOC as methane**	mg/cf	0.0812	0.0273	0.00673	
	VOC as propane***	mg/cf	0.0746	0.0251	0.0062	
	Pollutant mass flux rates:					
	VOC as methane	lb	0.587	0.193	0.039	
	VOC as propane	lb	0.539	0.177	0.036	
	Emission factors:					AVERAGE
	VOC as methane	lb/1000 bbl	0.53	0.18	0.035	0.25
	VOC as propane	lb/1000 bbl	0.49	0.16	0.032	0.23

**Includes both VOC as n-hexane and VOC as toluene converted to a methane basis

mg/cf = ((VOC as n-hexane, mg)*6*16/86.18+(VOC as toluene, ug/ml)*10^-3*30*7*16/92.14)/(sample volume)

***Includes both VOC as n-hexane and VOC as toluene converted to a propane basis

mg/cf = ((VOC as n-hexane, mg)*6/86*44/3+(VOC as toluene, ug/ml)*10^-3*30*7/92*44/3)/(sample volume)

Test ID	Parameter	Units	Values reported			
			Run 1	Run 2	Run 3	Run 4
2	Stack temperature	Deg F				
LAUTER TUN	Moisture	%				
	Oxygen	%				
	Process time	min	103	108	110	
	Volumetric flow, actual	acfm	1216	826	1180	
	Sample volume	liters	134.1	103.2	119.2	
	Sample volume	ft^3	4.74	3.64	4.21	
	Isokinetic variation	%	NA	NA	NA	
Circle: Production or feed rate Capacity:		1000 bbl	1.1	1.1	1.1	
	Pollutant concentrations:					
	VOC as n-hexane	mg	0.11	0.059	0.12	
	VOC as toluene	ug/ml	0	0	0	
	VOC as methane**	mg/cf	0.0259	0.0180	0.03176	
	VOC as propane***	mg/cf	0.0238	0.0166	0.0292	
	Pollutant mass flux rates:					
	VOC as methane	lb	0.00714	0.00355	0.00909	
	VOC as propane	lb	0.00656	0.00326	0.00835	
	Emission factors:					AVERAGE
	VOC as methane	lb/1000 bbl	0.0065	0.0032	0.0083	0.0060
	VOC as propane	lb/1000 bbl	0.0060	0.0030	0.0076	0.0055

**Includes both VOC as n-hexane and VOC as toluene converted to a methane basis

***Includes both VOC as n-hexane and VOC as toluene converted to a propane basis

mg/cf = ((VOC as n-hexane, mg)*6/86*44/3+(VOC as toluene, ug/ml)*10^-3*30*7/92*44/3)/(sample volume)

Test ID	Parameter	Units	Values reported			
			Run 1	Run 2	Run 3	Run 4
3	Stack temperature	Deg F				
MASH TUN	Moisture	%				
	Oxygen	%				
	Process time	min	94	94	94	
	Volumetric flow, actual	acfm	149	331	240	
	Sample volume	liters	44.1	41	39.1	
	Sample volume	ft^3	1.56	1.45	1.38	
	Isokinetic variation	%	NA	NA	NA	
Circle: Production or feed rate Capacity:		1000 bbl	1.1	1.1	1.1	
	Pollutant concentrations:					
	VOC as n-hexane	mg	2.1	1.9	1.2	
	VOC as toluene	ug/ml	0	0	0	
	VOC as methane**	mg/cf	1.50	1.46	0.968	
	VOC as propane***	mg/cf	1.38	1.34	0.889	
	Pollutant mass flux rates:					
	VOC as methane	lb	0.0464	0.100	0.0481	
	VOC as propane	lb	0.0426	0.0921	0.0442	
	Emission factors:					AVERAGE
	VOC as methane	lb/1000 bbl	0.042	0.091	0.044	0.059
	VOC as propane	lb/1000 bbl	0.039	0.084	0.040	0.054

**Includes both VOC as n-hexane and VOC as toluene converted to a methane basis

***Includes both VOC as n-hexane and VOC as toluene converted to a propane basis

mg/cf = ((VOC as n-hexane, mg)*6/86*44/3+(VOC as toluene, ug/ml)*10^-3*30*7/92*44/3)/(sample volume)

Test ID	Parameter	Units	Values reported			
			Run 1	Run 2	Run 3	Run 4
4	Stack temperature	Deg F				
CEREAL COOKER	Moisture	%				
	Oxygen	%				
	Process time	min	45	45	44	
	Volumetric flow, actual	acfm	1507	1507	1507	
	Sample volume	liters	172.1	176.9	172.1	
	Sample volume	ft^3	6.08	6.25	6.08	
	Isokinetic variation	%	NA	NA	NA	
Circle: Production or feed rate Capacity:		1000 bbl	1.1	1.1	1.1	
	Pollutant concentrations:					
	VOC as n-hexane	mg	0.14	0.18	0.35	
	VOC as toluene	ug/ml	9.8	0	0	
	VOC as methane**	mg/cf	0.084	0.032	0.064	
	VOC as propane***	mg/cf	0.078	0.029	0.059	
	Pollutant mass flux rates:					
	VOC as methane	lb	0.0126	0.00480	0.00938	
	VOC as propane	lb	0.0116	0.00441	0.00861	
	Emission factors:					AVERAGE
	VOC as methane	lb/1000 bbl	0.011	0.0044	0.0085	0.0081
	VOC as propane	lb/1000 bbl	0.011	0.0040	0.0078	0.0075

**Includes both VOC as n-hexane and VOC as toluene converted to a methane basis

***Includes both VOC as n-hexane and VOC as toluene converted to a propane basis

mg/cf = ((VOC as n-hexane, mg)*6/86*44/3+(VOC as toluene, ug/ml)*10^-3*30*7/92*44/3)/(sample volume)

MILLER BREWING COMPANY EMISSIONS DATA--REFERENCE 28

Test ID	Parameter	Units	Values reported							
			Run 1	Run 2	Run 3	Run 4	Run 5	Run 6	Run 7	
5	Stack temperature	Deg F								
CARBON	Moisture	%								
BED	Oxygen	%								
REGEN.	Process time	min	2160	2160	2160	2160	2160	2160	2160	
	Volumetric flow, actual	acfm	360	360	360	353	360	265	461	
	Sample volume	liters	4.1	4.3	6.8	7.2	7.4	7.5	7.6	
	Isokinetic variation	%	NA	NA	NA	NA	NA	NA	NA	
Circle: Production or feed rate Capacity:		1000 bbl	18.1	18.1	18.1	18.1	18.1	18.1	18.1	
	Pollutant concentrations:									
	Ethanol	mg	0.069	0.081	0.052	0.081	0.09	0.094	0.092	
	Ethanol	mg/l	0.0168	0.0188	0.0076	0.0113	0.0122	0.0125	0.0121	
	Pollutant mass flux rates:									
	Ethanol	lb	0.8170	0.9144	0.3712	0.5355	0.5904	0.4479	0.7525	
	Emission factors:									AVERAGE
	Ethanol	lb/1000 bbl	0.045	0.051	0.021	0.030	0.033	0.025	0.042	0.035