

APPENDIX 4.15 Derivation of Industrial Emission Rates

Emission Factors for Fuel Combustion				Remark		
Max. Fuel Sulphur Content	=	0.005% w/w		Fuel sulphur content of ULSD at $\leq 0.005\%$ w/w		
Density of ULSD at 15°C	=	0.845 kg/L		EN 590 Diesel Fuel Requirements		
Unit Conversion (g to lb)	=	453.592 g/lb				
Unit Conversion (L to gal)	=	3.78541 L/gal				
Fuel Emission Factors:						
SO ₂	=	0.05 g/kg fuel		by mass balance		
	=	<u>0.04225</u> g/L				
PM	=	2 lb/kgal		USEPA AP-42 5th Ed Vol. I Section 1.3 - "Fuel Oil Combustion", Table 1.3-1 and 1.3-6 : Emission Factors for uncontrolled Industrial Boilers firing distillate oil		
	=	<u>0.2397</u> g/L				
RSP	=	1 lb/kgal				
	=	<u>0.1198</u> g/L				
FSP	=	0.25 lb/kgal				
	=	<u>0.0300</u> g/L				
NO _x	=	20 lb/kgal		0.017629673		
	=	<u>2.3965</u> g/L				
SO ₂	≤	0.864 g/L		Requirements of Air Pollution Control (Fuel Restriction) Amendment Regulation		
Total RSP	≤	0.12 g/L				
NO _x and NO ₂	≤	2.4 g/L				
Derivation of Emission Rate for Chimney S1						
Type of Fuel	=	Diesel		The fuel threshold (25L/hr) stipulated in CAP 311A Air Pollution Control (Furnaces, Ovens and Chimneys) (Installation and Alteration) Regulations.		
Fuel consumption	=	25.0 L/h				
Unmitigated Total Emission Rate (g/s)	=	<u>0.0003</u>	<u>0.0017</u>	<u>0.0008</u>	<u>0.0002</u>	<u>0.0166</u>
Wood Emission Factors:						
SO ₂	=	0.4 lb/ton _{wood}		USEPA AP-42 5th Ed Vol. I Section 1.3 - "Fuel Oil Combustion", Table 1.3-1 and 1.3-6 : Emission Factors for uncontrolled Industrial Boilers firing distillate oil		
	=	<u>0.2</u> kg/Mg _{wood}				
RSP	=	30.6 lb/ton _{wood}				
	=	<u>15.3</u> kg/Mg _{wood}				
NO _x	=	2.8 lb/ton _{wood}				
	=	<u>1.4</u> kg/Mg _{wood}				
Derivation of Emission Rate for Chimney S2						
Type of Fuel	=	Wood				
Wood Consumption per stove	=	1.5 pallets/hr				
Weight per wood pallet	=	20.0 kg/pallet				
Total Wood Consumption	=	30 kg _{wood} /hr				
Unmitigated Total Emission Rate (g/s)	=	<u>0.0017</u>	-	<u>0.1275</u>	<u>0.1275</u>	<u>0.0117</u>