MODULE	INDUSTRIAL PROCESSES		
SUBMODULE	CEMENT PRODUCTION		
WORKSHEET	2-1		
SHEET	1 OF 2 CO_2 EMISSIONS		
	STEP 1		
A Quantity of Clinker or Cement Produced (t)	B Emission Factor (t CO_2/t clinker or cement produced)	C CO_2 Emitted (t)	D CO_2 Emitted (Gg)
		C = (A x B)	D = C/10^3

MODULE	INDUSTRIAL PROCESSES		
SUBMODULE	CEMENT PRODUCTION		
WORKSHEET	2-1		
SHEET	2 OF 2 SO_2 EMISSIONS		
	STEP 2		
A Quantity of Cement Produced (t)	B Emission Factor (kg SO_2 /t cement produced)	C SO_2 Emitted (kg)	D SO_2 Emitted (Gg)
		C = (A x B)	D = C/10^6

MODULE	**INDUSTRIAL PROCESSES**
SUBMODULE	**PRODUCTION OF LIME**
WORKSHEET	**2-2**
SHEET	**1 OF 1 CO_2 EMISSIONS**

Lime Type	A Quantity of Lime Produced (t)	B Emission Factor (t CO_2/t quicklime or dolomitic lime produced)	C CO_2 Emitted (t)	D CO_2 Emitted (Gg)
			C = (A x B)	D = C/10^3
Quicklime				
Dolomitic Lime				
			Total (Gg):	

MODULE	**INDUSTRIAL PROCESSES**
SUBMODULE	**LIMESTONE AND DOLOMITE USE**
WORKSHEET	**2-3**
SHEET	**1 OF 1 CO_2 EMISSIONS**

Material Type	A Quantity of Limestone or Dolomite Used (t)	B Emission Factor (kg CO_2/t limestone or dolomite used)	C CO_2 Emitted (kg)	D CO_2 Emitted (Gg)
			C = (A x B)	D = C/10^6
Limestone				
Dolomite				
			Total (Gg):	

MODULE	INDUSTRIAL PROCESSES		
SUBMODULE	SODA ASH PRODUCTION AND USE		
WORKSHEET	2-4		
SHEET	1 OF 2 SODA ASH PRODUCTION- CO_2 - EMISSIONS		
STEP 1			
A Quantity of Trona Utilised (t)	B Emission Factor (t CO_2/t trona utilised)	C CO_2 Emitted (t)	D CO_2 Emitted (Gg)
		C = (A x B)	D = C/10^3

MODULE	INDUSTRIAL PROCESSES		
SUBMODULE	SODA ASH PRODUCTION AND USE		
WORKSHEET	2-4		
SHEET	2 OF 2 SODA ASH USE - CO_2 EMISSIONS		
STEP 2			
A Quantity of Soda Ash Used (t)	B Emission Factor (kg CO_2/t soda ash used)	C CO_2 Emitted (kg)	D CO_2 Emitted (Gg)
		C = (A x B)	D = C/10^6

MODULE	INDUSTRIAL PROCESSES			
SUBMODULE	PRODUCTION AND USE OF MISCELLANEOUS MINERAL PRODUCTS			
WORKSHEET	2-5			
SHEET	1 OF 5 ASPHALT ROOFING PRODUCTION - NMVOC EMISSIONS			
STEP 1				
Process Type	A Quantity of Asphalt Roofing Produced (t)	B Emission Factor (kg NMVOC /t asphalt roofing produced)	C NMVOC Emitted (kg)	D NMVOC Emitted (Gg)
			C = (A x B)	D = C/10^6
Saturation Process				
Blowing Process				
			Total (Gg):	

MODULE	INDUSTRIAL PROCESSES		
SUBMODULE	PRODUCTION AND USE OF MISCELLANEOUS MINERAL PRODUCTS		
WORKSHEET	2-5		
SHEET	2 OF 5 ASPHALT ROOFING PRODUCTION - CO EMISSIONS		
STEP 2			
A Quantity of Asphalt Roofing Produced (t)	B Emission Factor (kg CO /t asphalt roofing produced)	C CO Emitted (kg)	D CO Emitted (Gg)
		C = (A x B)	D = C/10^6

MODULE	INDUSTRIAL PROCESSES			
SUBMODULE	PRODUCTION AND USE OF MISCELLANEOUS MINERAL PRODUCTS			
WORKSHEET	2-5			
SHEET	3 OF 5 ROAD PAVING WITH ASPHALT- NMVOC EMISSIONS			
STEP 3				
Emission Source	A Quantity of Road Paving Material Used (t)	B Emission Factor (kg NMVOC/t road paving material used)	C NMVOC Emitted (kg)	D NMVOC Emitted (Gg)
			C = (A x B)	D = C/10^6
Asphalt Plant				
Road Surface				
			Total (Gg):	

MODULE	INDUSTRIAL PROCESSES			
SUBMODULE	PRODUCTION AND USE OF MISCELLANEOUS MINERAL PRODUCTS			
WORKSHEET	2-5			
SHEET	4 OF 5 PRODUCTION OF OTHER MINERAL PRODUCTS - GLASS PRODUCTION - NMVOC EMISSIONS			
STEP 4				
Glass Type	A Quantity of Glass Produced (t)	B Emission Factor (kg NMVOC/t glass produced)	C NMVOC Emitted (kg)	D NMVOC Emitted (Gg)
			C = (A x B)	D = C/10^6
Container Glass				
Flat Glass				
			Total (Gg):	

MODULE	INDUSTRIAL PROCESSES		
SUBMODULE	PRODUCTION AND USE OF MISCELLANEOUS MINERAL PRODUCTS		
WORKSHEET	2-5		
SHEET	5 OF 5 PRODUCTION OF OTHER MINERAL PRODUCTS - CONCRETE PUMICE STONE - SO_2 EMISSIONS		
STEP 5			
A Quantity of Concrete Pumice Stone Produced (t)	B Emission Factor (kg SO_2/t concrete pumice stone produced)	C SO_2 Emitted (kg)	D SO_2 Emitted (Gg)
		C = (A x B)	D = C/10^6

MODULE	INDUSTRIAL PROCESSES			
SUBMODULE	AMMONIA PRODUCTION			
WORKSHEET	2-6			
SHEET	1 OF 3 TIER 1a - CO_2 EMISSIONS			
STEP 1				
A Amount of Gas Consumed (m^3)	B Carbon Content of Gas (kg/m^3)	C Conversion Ratio	D CO_2 Emitted (kg)	E CO_2 Emitted (Gg)
		44/12	$D = (A \times B \times C)$	$E = D/10^6$

MODULE	INDUSTRIAL PROCESSES		
SUBMODULE	AMMONIA PRODUCTION		
WORKSHEET	2-6		
SHEET	2 OF 3 TIER 1b - CO_2 EMISSIONS		
STEP 2			
A Amount of Ammonia Produced (t)	B Emission Factor (t CO_2/t ammonia produced)	C CO_2 Emitted (t)	D CO_2 Emitted (Gg)
		$C = (A \times B)$	$D = C/10^3$

MODULE	INDUSTRIAL PROCESSES		
SUBMODULE	AMMONIA PRODUCTION		
WORKSHEET	2-6		
SHEET	3 OF 3 NMVOC, CO AND SO_2 EMISSIONS		
STEP 3			
A Amount of Ammonia Produced (t)	B Emission Factor (kg pollutant/ t ammonia produced)	C Pollutant Emitted (kg)	D Pollutant Emitted (Gg)
		$C = (A \times B)$	$D = C/10^6$
	NMVOC		*NMVOC*
	CO		*CO*
	SO_2		*SO_2*

MODULE	**INDUSTRIAL PROCESSES**
SUBMODULE	**NITRIC ACID PRODUCTION**
WORKSHEET	**2-7**
SHEET	**1 OF 1 N_2O AND NO_x EMISSIONS**

A Amount of Nitric Acid Produced (t)	B Emission Factor (kg pollutant/t nitric acid produced)	C Pollutant Emitted (kg)	D Pollutant Emitted (Gg)
		C = (A × B)	D = C/10^6
	N_2O		N_2O
	NO_x		NO_x

MODULE	**INDUSTRIAL PROCESSES**
SUBMODULE	**ADIPIC ACID PRODUCTION**
WORKSHEET	**2-8**
SHEET	**1 OF 1 N_2O, NO_x, NMVOC AND CO EMISSIONS**

A Amount of Adipic Acid Produced (t)	B Emission Factor (kg pollutant / t adipic acid produced)	C Pollutant Emitted (kg)	D Pollutant Emitted (Gg)
		C = (A × B)	D = C/10^6
	N_2O		*N_2O*
	NO_x		*NO_x*
	NMVOC		*NMVOC*
	CO		*CO*

MODULE	INDUSTRIAL PROCESSES
SUBMODULE	CARBIDE PRODUCTION
WORKSHEET	2-9
SHEET	1 OF 4 SILICON CARBIDE PRODUCTION - CO_2 EMISSIONS

STEP 1				
A Consumption Of Coke (t)	B Carbon Content in Coke (%)	C Carbon Input Sequestered In Product (%)	D CO_2 Emitted (t)	E CO_2 Emitted (Gg)
			$D = A \times B (100-C) \times 3.67 \times 10^{-4}$	$E = D/10^3$

MODULE	INDUSTRIAL PROCESSES
SUBMODULE	CARBIDE PRODUCTION
WORKSHEET	2-9
SHEET	2 OF 4 SILICON CARBIDE PRODUCTION - TIER 1a - CH_4 EMISSIONS

STEP 2			
A Amount of Petrol Coke Consumed (t)	B Emission Factor (kg CH_4 / t petrol coke consumed)	C CH_4 Emitted (kg)	D CH_4 Emitted (Gg)
		$C = (A \times B)$	$D = C/10^6$

MODULE	INDUSTRIAL PROCESSES		
SUBMODULE	CARBIDE PRODUCTION		
WORKSHEET	2-9		
SHEET	3 OF 4 SILICON CARBIDE PRODUCTION - TIER 1b - CH_4 EMISSIONS		
STEP 3			
A Amount of Silicon Carbide Produced (t)	B Emission Factor (kg CH_4 / t silicon carbide produced)	C CH_4 Emitted (kg)	D CH_4 Emitted (Gg)
		C = (A × B)	D = C/10^6

MODULE	INDUSTRIAL PROCESSES		
SUBMODULE	CARBIDE PRODUCTION		
WORKSHEET	2-9		
SHEET	4 OF 4 CALCIUM CARBIDE PRODUCTION - CO_2 EMISSIONS		
STEP 4			
A Amount of Carbide Produced (t)	B Emission Factor (t CO_2 / t carbide produced)	C CO_2 Emitted (t)	D CO_2 Emitted (Gg)
		C = (A × B)	D = C/10^3
		Total (Gg):	

MODULE	INDUSTRIAL PROCESSES			
SUBMODULE	PRODUCTION OF OTHER CHEMICALS			
WORKSHEET	2-10			
SHEET	1 OF 5 CH_4 EMISSIONS			
		STEP 1		
Chemical	A Amount of Chemical Produced (t)	B Emission Factor (kg CH_4 / t chemical produced)	C CH_4 Emitted (kg)	D CH_4 Emitted (Gg)
			C = (A × B)	D = C/10^6
			Total (Gg):	

MODULE	INDUSTRIAL PROCESSES			
SUBMODULE	PRODUCTION OF OTHER CHEMICALS			
WORKSHEET	2-10			
SHEET	2 OF 5 NO_x EMISSIONS			
		STEP 2		
Chemical	A Amount of Chemical Produced (t)	B Emission Factor (kg NO_x / t chemical produced)	C NO_x Emitted (kg)	D NO_x Emitted (Gg)
			C = (A × B)	D = C/10^6
			Total (Gg):	

MODULE	INDUSTRIAL PROCESSES			
SUBMODULE	PRODUCTION OF OTHER CHEMICALS			
WORKSHEET	2-10			
SHEET	3 OF 5 NMVOC EMISSIONS			
	STEP 3			
Chemical	A Amount of Chemical Produced (t)	B Emission Factor (kg NMVOC / t chemical produced)	C NMVOC Emitted (kg)	D NMVOC Emitted (Gg)
			C = (A × B)	D = C/10^6
			Total (Gg):	

MODULE	INDUSTRIAL PROCESSES			
SUBMODULE	PRODUCTION OF OTHER CHEMICALS			
WORKSHEET	2-10			
SHEET	4 OF 5 CO EMISSIONS			
	STEP 4			
Chemical	A Amount of Chemical Produced (t)	B Emission Factor (kg CO / t chemical produced)	C CO Emitted (kg)	D CO Emitted (Gg)
			C = (A × B)	D = C/10^6
			Total (Gg):	

MODULE	INDUSTRIAL PROCESSES			
SUBMODULE	PRODUCTION OF OTHER CHEMICALS			
WORKSHEET	2-10			
SHEET	5 OF 5 SO_2 EMISSIONS			
	STEP 5			
Chemical	A Amount of Chemical Produced (t)	B Emission Factor (kg SO_2 / t chemical produced)	C SO_2 Emitted (kg)	D SO_2 Emitted (Gg)
			C = (A × B)	D = C/10^6
			Total (Gg):	

MODULE	INDUSTRIAL PROCESSES
SUBMODULE	METAL PRODUCTION
WORKSHEET	2-11
SHEET	1 OF 11 TIER 1a - CO_2 EMISSIONS

STEP 1				
A Mass of Reducing Agent (t)	B Emission Factor (t CO_2/t reducing agent)	C (Carbon content of ore minus carbon content of metal) x 3.67 (t CO_2/t carbon)	D CO_2 Emitted (t)	E CO_2 Emitted (Gg)
			D = (A x B) + C	$E = D/10^3$

MODULE	INDUSTRIAL PROCESSES
SUBMODULE	METAL PRODUCTION
WORKSHEET	2-11
SHEET	2 OF 11 IRON AND STEEL - TIER 1b - CO_2 EMISSIONS

STEP 2			
A Amount of Iron or Steel Produced (t)	B Emission Factor (t CO_2/t of iron or steel produced)	C CO_2 Emitted (t)	D CO_2 Emitted (Gg)
		C = (A x B)	$D = C/10^3$

MODULE	INDUSTRIAL PROCESSES
SUBMODULE	METAL PRODUCTION
WORKSHEET	2-11
SHEET	3 OF 11 IRON AND STEEL - NO_x, NMVOC, CO AND SO_2 EMISSIONS

STEP 3			
A Amount of Iron or Steel Produced (t)	B Emission Factor (g gas/t of iron or steel produced)	C Gas Emitted (g)	D Gas Emitted (Gg)
		C = (A x B)	$D = C/10^9$
	NO_x		*NO_x*
	NMVOC		*NMVOC*
	CO		*CO*
	SO_2		*SO_2*