

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

■ (CHECKED IF PATHWAY IS ACTIVE)

VAPOR INHALATION

Constituents of Concern	1) Source Medium	2) NAF Value (m ³ /kg) Receptor				3) Exposure Medium Outdoor Air: POE Conc. (mg/m ³) (1) / (2)			
	Concentrazione biogas mg/m ³	On-site (0 m)		Off-site 1 (25 m)	Off-site 2 (50 m)	On-site (0 m)		Off-site 1 (25 m)	Off-site 2 (50 m)
		Residential	Construction Worker	Commercial	Residential	Residential	Construction Worker	Commercial	Residential
Benzene*	4,2E-7	1,0E+0		1,0E+0	1,0E+0	4,2E-7		4,2E-7	4,2E-7
Ethylbenzene*	2,5E-6	1,0E+0		1,0E+0	1,0E+0	2,5E-6		2,5E-6	2,5E-6
Toluene*	3,2E-7	1,0E+0		1,0E+0	1,0E+0	3,2E-7		3,2E-7	3,2E-7
Xylene (mixed isomers)*	5,8E-7	1,0E+0		1,0E+0	1,0E+0	5,8E-7		5,8E-7	5,8E-7
TPH - Aliph >C06-C08*	1,5E-6	1,0E+0		1,0E+0	1,0E+0	1,5E-6		1,5E-6	1,5E-6
TPH - Aliph >C08-C10*	1,2E-5	1,0E+0		1,0E+0	1,0E+0	1,2E-5		1,2E-5	1,2E-5
TPH - Aliph >C10-C12*	8,4E-7	1,0E+0		1,0E+0	1,0E+0	8,4E-7		8,4E-7	8,4E-7
TPH - Aliph >C21-C34*	1,9E-6	1,0E+0		1,0E+0	1,0E+0	1,9E-6		1,9E-6	1,9E-6
TPH - Arom >C08-C10*	9,2E-7	1,0E+0		1,0E+0	1,0E+0	9,2E-7		9,2E-7	9,2E-7

NOTE: NAF = Natural attenuation factor POE = Point of exposure

Site Name: Discarica Rio Eremo SITUAZIONE FUTURA

Site Location: Cesena

Completed By: Ingegneria e Servizi SD

Date Completed: d-mag-yy

Job ID: 701-07/1

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TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

VAPOR INHALATION (cont'd)

Constituents of Concern	4) Exposure Multiplier (EFxED)/(ATx365) (unitless)				5) Average Inhalation Exposure Concentration (mg/m ³) (3) X (4)			
	On-site (0 m)		Off-site 1 (25 m)	Off-site 2 (50 m)	On-site (0 m)		Off-site 1 (25 m)	Off-site 2 (50 m)
	Residential	Construction Worker	Commercial	Residential	Residential	Construction Worker	Commercial	Residential
Benzene*	3,3E-1		2,4E-1	3,3E-1	1,4E-7		1,0E-7	1,4E-7
Ethylbenzene*	7,7E-1		6,8E-1	7,7E-1	2,0E-6		1,7E-6	2,0E-6
Toluene*	7,7E-1		6,8E-1	7,7E-1	2,4E-7		2,2E-7	2,4E-7
Xylene (mixed isomers)*	7,7E-1		6,8E-1	7,7E-1	4,5E-7		4,0E-7	4,5E-7
TPH - Aliph >C06-C08*	7,7E-1		6,8E-1	7,7E-1	1,2E-6		1,0E-6	1,2E-6
TPH - Aliph >C08-C10*	7,7E-1		6,8E-1	7,7E-1	9,0E-6		8,1E-6	9,0E-6
TPH - Aliph >C10-C12*	7,7E-1		6,8E-1	7,7E-1	6,5E-7		5,8E-7	6,5E-7
TPH - Aliph >C21-C34*	7,7E-1		6,8E-1	7,7E-1	1,4E-6		1,3E-6	1,4E-6
TPH - Arom >C08-C10*	7,7E-1		6,8E-1	7,7E-1	7,1E-7		6,3E-7	7,1E-7

* = Chemical with user-specified data

NOTE: AT = Averaging time (days) EF = Exposure frequency (days/yr) ED = Exposure duration (yr)

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TOTAL PATHWAY EXPOSURE (mg/m³)
(Sum average exposure concentrations
from soil and groundwater routes.)

Constituents of Concern	On-site (0 m)		Off-site 1 (25 m)	Off-site 2 (50 m)
	Residential	Construction Worker	Commercial	Residential
Benzene*	1,4E-7		1,0E-7	1,4E-7
Ethylbenzene*	2,0E-6		1,7E-6	2,0E-6
Toluene*	2,4E-7		2,2E-7	2,4E-7
Xylene (mixed isomers)*	4,5E-7		4,0E-7	4,5E-7
TPH - Aliph >C06-C08*	1,2E-6		1,0E-6	1,2E-6
TPH - Aliph >C08-C10*	9,0E-6		8,1E-6	9,0E-6
TPH - Aliph >C10-C12*	6,5E-7		5,8E-7	6,5E-7
TPH - Aliph >C21-C34*	1,4E-6		1,3E-6	1,4E-6
TPH - Arom >C08-C10*	7,1E-7		6,3E-7	7,1E-7

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TIER 2 PATHWAY RISK CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

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CARCINOGENIC RISK

Constituents of Concern	(1) EPA Carcinogenic Classification	(2) Total Carcinogenic Exposure (mg/m ³)				(3) Inhalation Unit Risk Factor (μg/m ³) ⁻¹	(4) Individual COC Risk (2) x (3) x 1000			
		On-site (0 m)		Off-site 1 (25 m)	Off-site 2 (50 m)		On-site (0 m)		Off-site 1 (25 m)	Off-site 2 (50 m)
		Residential	Construction Worker	Commercial	Residential		Residential	Construction Worker	Commercial	Residential
Benzene*	A	1,4E-7		1,0E-7	1,4E-7	8,3E-6	1,2E-9		8,6E-10	1,2E-9
Ethylbenzene*	D									
Toluene*	D									
Xylene (mixed isomers)*	D									
TPH - Aliph >C06-C08*	D									
TPH - Aliph >C08-C10*	D									
TPH - Aliph >C10-C12*	D									
TPH - Aliph >C21-C34*	D									
TPH - Arom >C08-C10*	D									

Total Pathway Carcinogenic Risk =

1,2E-9

8,6E-10

1,2E-9

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TIER 2 PATHWAY RISK CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

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TOXIC EFFECTS

Constituents of Concern	(5) Total Toxicant Exposure (mg/m ³)				(6) Inhalation Reference Conc. (mg/m ³)	(7) Individual COC Hazard Quotient (5) / (6)			
	On-site (0 m)		Off-site 1 (25 m)	Off-site 2 (50 m)		On-site (0 m)		Off-site 1 (25 m)	Off-site 2 (50 m)
	Residential	Construction Worker	Commercial	Residential		Residential	Construction Worker	Commercial	Residential
Benzene*	3,3E-7		2,9E-7	3,3E-7	3,0E-2	1,1E-5		9,7E-6	1,1E-5
Ethylbenzene*	2,0E-6		1,7E-6	2,0E-6	1,0E+0	2,0E-6		1,7E-6	2,0E-6
Toluene*	2,4E-7		2,2E-7	2,4E-7	4,0E-1	6,1E-7		5,4E-7	6,1E-7
Xylene (mixed isomers)*	4,5E-7		4,0E-7	4,5E-7	7,0E-1	6,4E-7		5,7E-7	6,4E-7
TPH - Aliph >C06-C08*	1,2E-6		1,0E-6	1,2E-6	7,0E-1	1,6E-6		1,5E-6	1,6E-6
TPH - Aliph >C08-C10*	9,0E-6		8,1E-6	9,0E-6	2,0E-1	4,5E-5		4,0E-5	4,5E-5
TPH - Aliph >C10-C12*	6,5E-7		5,8E-7	6,5E-7	2,0E-1	3,2E-6		2,9E-6	3,2E-6
TPH - Aliph >C21-C34*	1,4E-6		1,3E-6	1,4E-6	7,0E+0	2,1E-7		1,8E-7	2,1E-7
TPH - Arom >C08-C10*	7,1E-7		6,3E-7	7,1E-7	5,0E-2	1,4E-5		1,3E-5	1,4E-5

Total Pathway Hazard Index = **7,9E-5** **7,0E-5** **7,9E-5**

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