

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

■ (CHECKED IF PATHWAY IS ACTIVE)

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

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

Site Name: Discarica di Rio Eremo SITUAZIONE ATTUALE

Site Location: Cesena

Completed By: Ingegneria e Servizi SD

Date Completed: d-mag-yy

Job ID: 701-07/1

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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-5		1,0E-5	1,4E-5
Ethylbenzene*	7,7E-1		6,8E-1	7,7E-1	2,0E-4		1,7E-4	2,0E-4
Toluene*	7,7E-1		6,8E-1	7,7E-1	2,4E-5		2,2E-5	2,4E-5
Xylene (mixed isomers)*	7,7E-1		6,8E-1	7,7E-1	4,5E-5		4,0E-5	4,5E-5
TPH - Aliph >C06-C08*	7,7E-1		6,8E-1	7,7E-1	1,2E-4		1,0E-4	1,2E-4
TPH - Aliph >C08-C10*	7,7E-1		6,8E-1	7,7E-1	9,0E-4		8,1E-4	9,0E-4
TPH - Aliph >C10-C12*	7,7E-1		6,8E-1	7,7E-1	6,5E-5		5,8E-5	6,5E-5
TPH - Aliph >C21-C34*	7,7E-1		6,8E-1	7,7E-1	1,4E-4		1,3E-4	1,4E-4
TPH - Arom >C08-C10*	7,7E-1		6,8E-1	7,7E-1	7,1E-5		6,3E-5	7,1E-5

* = 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-5		1,0E-5	1,4E-5
Ethylbenzene*	2,0E-4		1,7E-4	2,0E-4
Toluene*	2,4E-5		2,2E-5	2,4E-5
Xylene (mixed isomers)*	4,5E-5		4,0E-5	4,5E-5
TPH - Aliph >C06-C08*	1,2E-4		1,0E-4	1,2E-4
TPH - Aliph >C08-C10*	9,0E-4		8,1E-4	9,0E-4
TPH - Aliph >C10-C12*	6,5E-5		5,8E-5	6,5E-5
TPH - Aliph >C21-C34*	1,4E-4		1,3E-4	1,4E-4
TPH - Arom >C08-C10*	7,1E-5		6,3E-5	7,1E-5

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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-5		1,0E-5	1,4E-5	8,3E-6	1,2E-7		8,6E-8	1,2E-7
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-7

8,6E-8

1,2E-7

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TIER 2 PATHWAY RISK CALCULATION

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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-5		2,9E-5	3,3E-5	3,0E-2	1,1E-3		9,7E-4	1,1E-3
Ethylbenzene*	2,0E-4		1,7E-4	2,0E-4	1,0E+0	2,0E-4		1,7E-4	2,0E-4
Toluene*	2,4E-5		2,2E-5	2,4E-5	4,0E-1	6,1E-5		5,4E-5	6,1E-5
Xylene (mixed isomers)*	4,5E-5		4,0E-5	4,5E-5	7,0E-1	6,4E-5		5,7E-5	6,4E-5
TPH - Aliph >C06-C08*	1,2E-4		1,0E-4	1,2E-4	7,0E-1	1,6E-4		1,5E-4	1,6E-4
TPH - Aliph >C08-C10*	9,0E-4		8,1E-4	9,0E-4	2,0E-1	4,5E-3		4,0E-3	4,5E-3
TPH - Aliph >C10-C12*	6,5E-5		5,8E-5	6,5E-5	2,0E-1	3,2E-4		2,9E-4	3,2E-4
TPH - Aliph >C21-C34*	1,4E-4		1,3E-4	1,4E-4	7,0E+0	2,1E-5		1,8E-5	2,1E-5
TPH - Arom >C08-C10*	7,1E-5		6,3E-5	7,1E-5	5,0E-2	1,4E-3		1,3E-3	1,4E-3

Total Pathway Hazard Index = **7,9E-3** **7,0E-3** **7,9E-3**

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