

Table ?. Oakland Tier 1 RBSLs

Medium	Exposure Pathway	Land Use	Type of Risk	Acenaph-thene	Acenaph-thylene	Acetone	Anthra-cene	Arsenic	Barium	Benz(a)-anthracene	Benzene	Benzo(a)-pyrene	Benzo(b)-fluoranthene	
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic					3.8E+00		3.7E+00	3.7E+01	3.7E-01	3.7E+00	
			Hazard	3.9E+03	3.9E+03	5.8E+03	1.9E+04	2.2E+01	5.3E+03		9.9E+01			
		Commercial/ Industrial	Carcinogenic					2.4E+01		1.6E+01	1.5E+02	1.6E+00	1.6E+01	
			Hazard	4.0E+04	4.0E+04	5.4E+04	2.0E+05	3.8E+02	1.2E+05		9.2E+02			
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic							SAT	7.0E-01	SAT	SAT	
			Hazard	SAT	SAT	1.8E+03	SAT				2.3E+00			
		Commercial/ Industrial	Carcinogenic							SAT	1.1E+01	SAT	SAT	
			Hazard	SAT	SAT	5.3E+04	SAT				6.7E+01			
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic								SAT	3.9E+00	SAT	SAT
			Hazard	SAT	SAT	1.2E+04	SAT				1.6E+01			
		Commercial/ Industrial	Carcinogenic							SAT	1.5E+01	SAT	SAT	
			Hazard	SAT	SAT	7.0E+04	SAT				9.1E+01			
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic						2.1E+01	6.0E+02	3.2E+01	1.0E-02	SAT	SAT
			Hazard	SAT	SAT	2.1E+00	SAT	2.1E+01	6.0E+02		1.0E-02	SAT	SAT	
		Commercial/ Industrial	Carcinogenic					2.1E+01	6.0E+02	SAT	1.0E-02	SAT	SAT	
			Hazard	SAT	SAT	1.4E+01	SAT	2.1E+01	6.0E+02		1.0E-02	SAT	SAT	
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic							>SOL	<i>1.4E+00</i>	>SOL	>SOL	
			Hazard	>SOL	>SOL	2.0E+04	>SOL				4.7E+00			
		Commercial/ Industrial	Carcinogenic							>SOL	<i>2.2E+01</i>	>SOL	>SOL	
			Hazard	>SOL	>SOL	5.8E+05	>SOL				1.4E+02			
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic								>SOL	<i>1.8E+02</i>	>SOL	>SOL
			Hazard	>SOL	>SOL	3.5E+05	>SOL				7.0E+02			
		Commercial/ Industrial	Carcinogenic							>SOL	<i>6.7E+02</i>	>SOL	>SOL	
			Hazard	>SOL	>SOL	>SOL	>SOL				>SOL			
	Ingestion of Groundwater	Residential	Carcinogenic						5.0E-02	1.0E+00	5.6E-04	1.0E-03	2.0E-04	5.6E-04
			Hazard	9.4E-01	9.4E-01	1.6E+00	>SOL	5.0E-02	1.0E+00		1.0E-03	2.0E-04		
		Commercial/ Industrial	Carcinogenic					5.0E-02	1.0E+00	2.4E-03	1.0E-03	2.0E-04	>SOL	
			Hazard	>SOL	>SOL	1.0E+01	>SOL	5.0E-02	1.0E+00		1.0E-03	2.0E-04		
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic					2.0E-02		1.6E-04	6.3E-02	1.1E-05	1.1E-04	
			Hazard	1.1E+00	1.7E+00	4.2E+01	>SOL	1.2E-01	2.8E+01		1.8E-01			

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Tier 2 default - Merritt Sands

Table ?. Oakland Tier 1 RBSLs

Medium	Exposure Pathway	Land Use	Type of Risk	Acenaphthene	Acenaphthylene	Acetone	Anthracene	Arsenic	Barium	Benz(a)-anthracene	Benzene	Benzo(a)-pyrene	Benzo(b)-fluoranthene	
Surficial Soil [mg/kg]	Ingestion/Dermal/Inhalation	Residential	Carcinogenic					3.8E+00		3.7E+00	3.7E+01	3.7E-01	3.7E+00	
			Hazard	3.9E+03	3.9E+03	5.8E+03	1.9E+04	2.2E+01	5.3E+03		9.9E+01			
		Commercial/Industrial	Carcinogenic					2.4E+01		1.6E+01	1.5E+02	1.6E+00	1.6E+01	
			Hazard	4.0E+04	4.0E+04	5.4E+04	2.0E+05	3.8E+02	1.2E+05		9.2E+02			
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic							SAT	7.0E-01	SAT	SAT	
			Hazard	SAT	SAT	1.8E+03	SAT				2.3E+00			
		Commercial/Industrial	Carcinogenic							SAT	<i>1.1E+01</i>	SAT	SAT	
			Hazard	SAT	SAT	5.3E+04	SAT				6.7E+01			
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic								SAT	3.9E+00	SAT	SAT
			Hazard	SAT	SAT	1.2E+04	SAT				1.6E+01			
		Commercial/Industrial	Carcinogenic							SAT	<i>1.5E+01</i>	SAT	SAT	
			Hazard	SAT	SAT	7.0E+04	SAT				9.1E+01			
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic						2.1E+01	6.0E+02	3.2E+01	1.0E-02	SAT	SAT
			Hazard	SAT	SAT	2.1E+00	SAT	2.1E+01	6.0E+02		1.0E-02	SAT	SAT	
		Commercial/Industrial	Carcinogenic					2.1E+01	6.0E+02	SAT	1.0E-02	SAT	SAT	
			Hazard	SAT	SAT	1.4E+01	SAT	2.1E+01	6.0E+02		1.0E-02	SAT	SAT	
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic							>SOL	1.4E+00	>SOL	>SOL	
			Hazard	>SOL	>SOL	2.0E+04	>SOL				4.7E+00			
		Commercial/Industrial	Carcinogenic							>SOL	<i>2.2E+01</i>	>SOL	>SOL	
			Hazard	>SOL	>SOL	5.8E+05	>SOL				1.4E+02			
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic								>SOL	1.8E+02	>SOL	>SOL
			Hazard	>SOL	>SOL	3.5E+05	>SOL				7.0E+02			
		Commercial/Industrial	Carcinogenic							>SOL	<i>0.5E+02</i>	>SOL	>SOL	
			Hazard	>SOL	>SOL	>SOL	>SOL				>SOL			
	Ingestion of Groundwater	Residential	Carcinogenic						5.0E-02	1.0E+00	5.6E-04	1.0E-03	2.0E-04	5.6E-04
			Hazard	9.4E-01	9.4E-01	1.6E+00	>SOL	5.0E-02	1.0E+00		1.0E-03	2.0E-04		
		Commercial/Industrial	Carcinogenic					5.0E-02	1.0E+00	2.4E-03	1.0E-03	2.0E-04	>SOL	
			Hazard	>SOL	>SOL	1.0E+01	>SOL	5.0E-02	1.0E+00		1.0E-03	2.0E-04		
Water Used for Recreation [mg/l]	Ingestion/Dermal	Residential	Carcinogenic					2.0E-02		1.6E-04	6.3E-02	1.1E-05	1.1E-04	
			Hazard	1.1E+00	1.7E+00	4.2E+01	>SOL	1.2E-01	2.8E+01		1.8E-01			

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

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 Table 2. Oakland Tier 2 RBSLs
 Merritt Sands

1630 Park St. Alameda

Medium	Exposure Pathway	Land Use	Type of Risk	Acenaphthene	Acenaphthylene	Acetone	Anthracene	Arsenic	Barium	Benz(a)-anthracene	Benzene	Benzo(a)-pyrene	Benzo(b)-fluoranthene		
Surficial Soil [mg/kg]	Ingestion/Dermal/Inhalation	Residential	Carcinogenic					3.4E+00		3.2E+00	2.7E+01	3.2E-01	3.2E+00		
			Hazard	3.8E+03	3.7E+03	5.2E+03	1.9E+04	2.2E+01	4.5E+03		8.8E+01				
		Commercial/Industrial	Carcinogenic					2.0E+01		1.5E+01	1.5E+02	1.5E+00	1.5E+01		
			Hazard	3.8E+04	3.8E+04	5.5E+04	2.0E+05	3.2E+02	8.8E+04		9.3E+02				
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic							SAT	5.2E-01	SAT	SAT		
			Hazard	SAT	SAT	1.3E+03	SAT				2.0E+00				
		Commercial/Industrial	Carcinogenic							SAT	3.2E+01	SAT	SAT		
			Hazard	SAT	SAT	5.9E+04	SAT				9.0E+01				
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic								SAT	6.7E-01	SAT	SAT	
			Hazard	SAT	SAT	2.0E+03	SAT				3.1E+00				
		Commercial/Industrial	Carcinogenic							SAT	2.2E+00	SAT	SAT		
			Hazard	SAT	SAT	3.3E+04	SAT				5.0E+01				
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic						1.7E+01	4.9E+02	2.3E+01	8.2E-03	SAT	SAT	
			Hazard	SAT	SAT	1.4E+00	SAT	1.7E+01	4.9E+02		8.2E-03	SAT	SAT		
		Commercial/Industrial	Carcinogenic							1.7E+01	4.9E+02	SAT	8.2E-03	SAT	SAT
			Hazard	SAT	SAT	1.3E+01	SAT	1.7E+01	4.9E+02		8.2E-03	SAT	SAT		
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic							>SOL	8.4E-01	>SOL	>SOL		
			Hazard	>SOL	>SOL	1.7E+04	>SOL				3.2E+00				
		Commercial/Industrial	Carcinogenic							>SOL	2.2E+01	>SOL	>SOL		
			Hazard	>SOL	>SOL	7.9E+05	>SOL				1.5E+02				
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic								>SOL	1.9E+01	>SOL	>SOL	
			Hazard	>SOL	>SOL	7.8E+04	>SOL				8.8E+01				
		Commercial/Industrial	Carcinogenic							>SOL	2.2E+01	>SOL	>SOL		
			Hazard	>SOL	>SOL	>SOL	>SOL				1.4E+03				
	Ingestion of Groundwater	Residential	Carcinogenic						5.0E-02	1.0E+00	4.8E-04	1.0E-03	2.0E-04	4.8E-04	
			Hazard	9.4E-01	9.4E-01	1.6E+00	>SOL	5.0E-02	1.0E+00		1.0E-03	2.0E-04			
		Commercial/Industrial	Carcinogenic							5.0E-02	1.0E+00	3.3E-03	1.0E-03	2.0E-04	>SOL
			Hazard	>SOL	>SOL	1.4E+01	>SOL	5.0E-02	1.0E+00		1.0E-03	2.0E-04			
Water Used for Recreation [mg/l]	Ingestion/Dermal	Residential	Carcinogenic					1.9E-02		1.5E-04	5.7E-02	9.8E-06	9.8E-05		
			Hazard	1.1E+00	1.7E+00	4.2E+01	>SOL	1.2E-01	2.8E+01		1.8E-01				

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Last Revised: January 1, 2000

Appendix E: 1 of 8

Residential RBSLs are lower than for Tier 2 Tier 1 RBSLs why?

Risk-Based Screening Levels for Soil Gas
This table shows the actual RBSL calculated, it
does not show "SAT"

Media	Exposure Pathway	Land Use	Type of Risk	Acenaph-thene	Acenaph-thylene	Acetone	Anthra-cene	Arsenic	Barium	Benz(a)-anthracene	Benzene	Benzo(a)-pyrene	Benzo(b)-fluoranthene
AIR	Indoor Air	Residential	Carcinogenic					6.7E-03		2.0E-02	8.0E-01	2.0E-02	2.0E-01
			Hazard	9.4E+01	9.4E+01	1.6E+02	4.7E+02		2.2E-01		2.7E+00		
	Inhalation (ug/m^3)	Commercial/	Carcinogenic					3.2E-02		9.8E-02	3.8E+00	9.8E-02	9.8E-01
		Industrial	Hazard	8.2E+02	8.2E+02	1.4E+03	4.1E+03		1.9E+00		2.3E+01		
	Outdoor Air	Residential	Carcinogenic					8.4E-03		2.6E-02	1.0E+00	2.6E-02	2.6E-01
			Hazard	1.4E+02	1.4E+02	2.3E+02	7.0E+02		3.3E-01		4.0E+00		
	Inhalation (ug/m^3)	Commercial/	Carcinogenic					3.2E-02		9.8E-02	3.8E+00	9.8E-02	9.8E-01
		Industrial	Hazard	8.2E+02	8.2E+02	1.4E+03	4.1E+03		1.9E+00		2.3E+01		

Soil Gas in Subsurface Soil	Vapor Intrusion to Buildings (ug/m^3)	Residential	Carcinogenic							9.1E+03	2.3E+05	8.8E+03	2.3E+05
			Hazard	5.6E+07	4.3E+07	3.1E+07	3.6E+08				7.5E+05		
	Commercial/	Carcinogenic							1.4E+05	3.6E+06	1.4E+05	3.6E+06	
	Industrial	Hazard	1.6E+09	1.3E+09	9.1E+08	1.0E+10				2.2E+07			

J&E Attenuation Coefficient	C _{bldg}	Residential	-	1.7E-06	2.2E-06	5.0E-06	1.3E-06	0.0E+00	0.0E+00	2.2E-06	3.5E-06	2.3E-06	9.1E-07
	C _{source}	Commercial/Industrial	-	5.1E-07	6.5E-07	1.5E-06	3.9E-07	0.0E+00	0.0E+00	6.8E-07	1.1E-06	7.0E-07	2.7E-07

Benzenene conc from soil gas vapor samples
 $12 \text{ ppbV} \times 3.25 = 39 \text{ ug/m}^3$