

Table 5-10H

Calculation of Non Cancer Hazards

Exposure to Sediments - Shellfisherman - RME

Scenario Timeframe:	Future
Medium:	Sediment
Exposure Medium:	Sediment
Receptor Population:	Shellfisherman
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Dermal Absorption Factor	Intake (Non-Cancer) mg/kg-day	Reference Dose (mg/kg-d)	Hazard Quotient
Ingestion (1)	ALUMINUM	13505	mg/kg	NA	5.50E-03	1.0E+00	5.50E-03
	ARSENIC	8.79	mg/kg	NA	3.58E-06	3.0E-04	1.19E-02
	IRON	20978	mg/kg	NA	8.54E-03	3.0E-01	2.85E-02
	MANGANESE	228	mg/kg	NA	9.27E-05	1.4E-01	6.62E-04
	SODIUM	7935	mg/kg	NA	3.23E-03		
	2-METHYLNAPHTHALENE	0.41	mg/kg	NA	1.67E-07	9.0E-03	1.85E-05
	ACENAPHTHYLENE	0.03	mg/kg	NA	1.02E-08		
	BENZO(A)PYRENE equivalent	3.60	mg/kg	NA	1.47E-06		
	BENZO[G,H,I]PERYLENE	1.26	mg/kg	NA	5.12E-07		
	CARBAZOLE	0.69	mg/kg	NA	2.81E-07		
PHENANTHRENE	5.53	mg/kg	NA	2.25E-06			
Dermal (2)	ALUMINUM	13505	mg/kg	NA		1.0E+00	
	ARSENIC	8.79	mg/kg	0.03	1.22E-06	3.0E-04	4.08E-03
	IRON	20978	mg/kg	NA		3.0E-01	
	MANGANESE	228	mg/kg	NA		1.4E-01	
	SODIUM	7935	mg/kg	NA		NA	
	2-METHYLNAPHTHALENE	0.41	mg/kg	0.13	2.47E-07	9.0E-03	2.75E-05
	ACENAPHTHYLENE	0.03	mg/kg	0.13	1.51E-08		
	BENZO(A)PYRENE equivalent	3.60	mg/kg	0.13	2.17E-06		
	BENZO[G,H,I]PERYLENE	1.26	mg/kg	0.13	7.58E-07		
	CARBAZOLE	0.69	mg/kg	0.13	4.16E-07		
PHENANTHRENE	5.53	mg/kg	0.13	3.34E-06			
Total Non Cancer HI Across All Routes of Exposure							5.1E-02

(1) Intake Ingestion = $EPC * (IR * CF * RAF * EF * ED) / (BW * AT * 365 \text{ day/yr})$
= EPC * 4.07E-07
EPC, mg/kg chem-specific
IR, mg-day 100
CF, kg/mg 0.000001
RAF, unitless 1
EF, day/yr 104
AT, yr 30
SA cm2 5700

(2) Intake Dermal = $EPC * (SA * AF * CF * ABS * EF * ED) / (BW * AT * 365 \text{ day/yr})$
= EPC * ABS * 4.64E-06
AF, mg/cm2 0.2
ED, years 30
BW, kg 70

NA = Not Applicable
mg/kg - day = milligram/kilogram - day
mg/kg = milligram/kilogram
EPC = Exposure Point Concentration
RME - Realistic Maximum Exposure

Table 5-10H
Calculation of Non Cancer Hazards
Exposure to Sediments - Resident - RME

Scenario Timeframe:	Future
Medium:	Sediment
Exposure Medium:	Sediment
Receptor Population:	Resident
Receptor Age:	Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Dermal Absorption Factor	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Hazard Quotient
Ingestion (1)	ALUMINUM	13505	mg/kg	NA	3.66E-03	mg/kg-day	1.00E+00	(mg/kg-d)	3.66E-03
	ARSENIC	8.79	mg/kg	NA	2.38E-06	mg/kg-day	3.00E-04	(mg/kg-d)	7.93E-03
	IRON	20978	mg/kg	NA	5.68E-03	mg/kg-day	3.00E-01	(mg/kg-d)	1.89E-02
	MANGANESE	228	mg/kg	NA	6.17E-05	mg/kg-day	1.40E-01	(mg/kg-d)	4.40E-04
	SODIUM	7935	mg/kg	NA	2.15E-03	mg/kg-day			
	2-METHYLNAPHTHALENE	0.41	mg/kg	NA	1.11E-07	mg/kg-day	9.00E-03	(mg/kg-d)	1.23E-05
	ACENAPHTHALENE	0.03	mg/kg	NA	6.77E-09	mg/kg-day			
	BENZO(A)PYRENE equivalent	3.60	mg/kg	NA	9.74E-07	mg/kg-day			
	BENZO(G,H,I)PERYLENE	1.26	mg/kg	NA	3.41E-07	mg/kg-day			
	CARBAZOLE	0.69	mg/kg	NA	1.87E-07	mg/kg-day			
PHENANTHRENE	5.53	mg/kg	NA	1.50E-06	mg/kg-day				
Dermal (2)	ALUMINUM	13505	mg/kg				1.00E+00	(mg/kg-d)	
	ARSENIC	8.79	mg/kg	0.03	2.25E-07	mg/kg-day	3.00E-04	(mg/kg-d)	7.51E-04
	IRON	20978	mg/kg				3.00E-01	(mg/kg-d)	
	MANGANESE	228	mg/kg				1.40E-01	(mg/kg-d)	
	SODIUM	7935	mg/kg						
	ACENAPHTHALENE	0.03	mg/kg	0.13	2.78E-09	mg/kg-day			
	2-METHYLNAPHTHALENE	0.41	mg/kg	0.13	4.56E-08	mg/kg-day	9.00E-03	(mg/kg-d)	5.06E-06
	BENZO(A)PYRENE equivalent	3.60	mg/kg	0.13	4.00E-07	mg/kg-day			
	BENZO(G,H,I)PERYLENE	1.26	mg/kg	0.13	1.40E-07	mg/kg-day			
	CARBAZOLE	0.69	mg/kg	0.13	7.67E-08	mg/kg-day			
PHENANTHRENE	5.53	mg/kg	0.13	6.15E-07	mg/kg-day				
Total Hazard Index Across All Exposure Pathways									3.2E-02

- (1) Intake Ingestion = $EPC * (IF * CF * RAF * EF) / (AT * 365 \text{ day/yr})$
= EPC * 2.71E-07
- (2) Intake Dermal = $EPC * (SFSadj * CF * ABS * EF * EV) / (AT * 365 \text{ day/yr})$
= EPC * ABS * 8.55E-07

NA = Not Applicable
mg/kg - day = milligram/kilogram - day
mg/kg = milligram/kilogram
EPC = Exposure Point Concentration
RME - Realistic Maximum Exposure

EPC, mg/kg	Exposure Point Concentration	chem-specific
IF, mg-yr/kg-day	Ingestion Rate, age weighted	114
CF, kg/mg	Conversion Factor	0.000001
RAF, unitless	Relative Absorption Factor	1
EF, day/yr	Exposure Frequency	26
AT, yr	Averaging Time	30
SFSadj, mg-yr/kg-event	Age-weighted Dermal Factor	360
ABS, unitless	Dermal Absorption Factor	chem-specific
EV, event/day	Event Frequency	1