

**Table 5-10I**  
**Calculation of Non-Cancer Hazards**  
**Ingestion of Clams**  
**Resident - CT**

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

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Relative Absorption Factor	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Hazard Quotient
Ingestion (1)	ALUMINIUM	3.95E+02	mg/kg	1	1.17E-01	mg/kg-day	1.00E+00	(mg/kg-d)	1.17E-01
	ARSENIC	3.52E+00	mg/kg	1	1.04E-03	mg/kg-day	3.00E-04	(mg/kg-d)	3.48E+00
	COPPER	1.03E+01	mg/kg	1	3.05E-03	mg/kg-day		(mg/kg-d)	
	IRON	1.41E+03	mg/kg	1	4.19E-01	mg/kg-day	3.00E-01	(mg/kg-d)	1.40E+00
	LEAD	1.08E+00	mg/kg	1	3.20E-04	mg/kg-day		(mg/kg-d)	
	MANGANESE	4.34E+01	mg/kg	1	1.29E-02	mg/kg-day	1.40E-01	(mg/kg-d)	9.18E-02
	MERCURY	4.56E-02	mg/kg	1	1.35E-05	mg/kg-day	3.00E-04	(mg/kg-d)	4.50E-02
	SODIUM	5.24E+03	mg/kg	1	1.55E+00	mg/kg-day		(mg/kg-d)	
	VANADIUM	1.99E+00	mg/kg	1	5.90E-04	mg/kg-day	1.00E-03	(mg/kg-d)	5.90E-01
	Total PCBs	4.83E-03	mg/kg	1	1.43E-06	mg/kg-day	2.00E-05	(mg/kg-d)	7.16E-02
	ALPHA-HEXACHLOROCYCLOHEXANE	8.70E-05	mg/kg	1	2.58E-08	mg/kg-day		(mg/kg-d)	
	BETA-HEXACHLOROCYCLOHEXANE	1.95E-04	mg/kg	1	5.77E-08	mg/kg-day		(mg/kg-d)	
	DIELDRIN	1.27E-04	mg/kg	1	3.75E-08	mg/kg-day	5.00E-05	(mg/kg-d)	7.50E-04
	ENDOSULFAN I	3.00E-05	mg/kg	1	8.89E-09	mg/kg-day	6.00E-03	(mg/kg-d)	1.48E-06
	ENDOSULFAN II	6.00E-04	mg/kg	1	1.78E-07	mg/kg-day		(mg/kg-d)	
	ENDOSULFAN SULFATE	5.20E-04	mg/kg	1	1.54E-07	mg/kg-day		(mg/kg-d)	
	ENDRIN ALDEHYDE	1.69E-04	mg/kg	1	5.02E-08	mg/kg-day		(mg/kg-d)	
	ENDRIN KETONE	2.47E-04	mg/kg	1	7.32E-08	mg/kg-day		(mg/kg-d)	
	4-CHLORO-3-METHYLPHENOL	3.88E-01	mg/kg	1	1.15E-04	mg/kg-day		(mg/kg-d)	
	ACENAPHTHYLENE	4.20E-04	mg/kg	1	1.25E-07	mg/kg-day		(mg/kg-d)	
	BENZO(A)PYRENE equivalent	3.48E-03	mg/kg	1	1.03E-06	mg/kg-day		(mg/kg-d)	
	BENZO[G,H,I]PERYLENE	3.60E-03	mg/kg	1	1.07E-06	mg/kg-day		(mg/kg-d)	
	PHENANTHRENE	2.41E-03	mg/kg	1	7.15E-07	mg/kg-day		(mg/kg-d)	
<b>Total Hazard Index</b>									<b>5.8E+00</b>

(1) Intake Ingestion = 
$$\frac{\text{EPC} * (\text{IFad}_j * \text{CF}_2 * \text{RAF} * \text{EF}) / (\text{AT} * 365 \text{ day/yr})}{\text{EPC} * 2.96\text{E-}04}$$

IFad <sub>j</sub> =	(IR-C * ED-C * CF) / BW-C + (IR-A * ED-A * CF) / BW-A	EPC, mg/kg	Exposure Point Concentration	chem-specific
=	2.67E+03	IFad <sub>j</sub> , mg-yr/kg-day	Ingestion Rate, age adjusted	2.67E+03
		RAF, unitless	Relative Absorption Factor	1
		EF, day/yr	Exposure Frequency	365
mg/kg = milligram/kilogram		AT, yr	Averaging Time	9
mg/kg - day = milligram/kilogram - day		BW-A, kg	Body Weight, Adult	70
NA = Not Applicable		ED-A, years	Exposure Duration, Adult	7
EPC = Exposure Point Concentration		BW-C, kg	Body Weight, Child	15
CT - Central Tendency		ED-C, years	Exposure Duration, Child	2
		IR-A, kg/day	Ingestion Rate, Adult	0.016
		IR-C, kg/day	Ingestion Rate, Child	0.008
		CF, mg/kg	Conversion Factor	1.00E+06
		CF <sub>2</sub> , kg/mg	Conversion Factor	1.00E-06

**Table 5-10I**  
**Calculation of Non Cancer Hazards**  
**Ingestion of Clams**  
**Resident - RME**

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

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Relative Absorption Factor	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Hazard Quotient
Ingestion (1)	ALUMINUM	3.95E+02	mg/kg	1	1.96E-01	mg/kg-day	1.00E+00	(mg/kg-d)	1.96E-01
	ARSENIC	3.52E+00	mg/kg	1	1.74E-03	mg/kg-day	3.00E-04	(mg/kg-d)	5.81E+00
	COPPER	1.03E+01	mg/kg	1	5.10E-03	mg/kg-day		(mg/kg-d)	
	IRON	1.41E+03	mg/kg	1	7.00E-01	mg/kg-day	3.00E-01	(mg/kg-d)	2.33E+00
	LEAD	1.08E+00	mg/kg	1	5.35E-04	mg/kg-day		(mg/kg-d)	
	MANGANESE	4.34E+01	mg/kg	1	2.15E-02	mg/kg-day	1.40E-01	(mg/kg-d)	1.53E-01
	MERCURY	4.56E-02	mg/kg	1	2.26E-05	mg/kg-day	3.00E-04	(mg/kg-d)	7.53E-02
	SODIUM	5.24E+03	mg/kg	1	2.59E+00	mg/kg-day		(mg/kg-d)	
	VANADIUM	1.99E+00	mg/kg	1	9.86E-04	mg/kg-day	1.00E-03	(mg/kg-d)	9.86E-01
	Total PCBs	4.83E-03	mg/kg	1	2.39E-06	mg/kg-day	2.00E-05	(mg/kg-d)	1.20E-01
	ALPHA-HEXACHLOROCYCLOHEXANE	8.70E-05	mg/kg	1	4.31E-08	mg/kg-day		(mg/kg-d)	
	BETA-HEXACHLOROCYCLOHEXANE	1.95E-04	mg/kg	1	9.65E-08	mg/kg-day		(mg/kg-d)	
	DIELDRIN	1.27E-04	mg/kg	1	6.27E-08	mg/kg-day	5.00E-05	(mg/kg-d)	1.25E-03
	ENDOSULFAN I	3.00E-05	mg/kg	1	1.49E-08	mg/kg-day	6.00E-03	(mg/kg-d)	2.48E-06
	ENDOSULFAN II	6.00E-04	mg/kg	1	2.97E-07	mg/kg-day		(mg/kg-d)	
	ENDOSULFAN SULFATE	5.20E-04	mg/kg	1	2.58E-07	mg/kg-day		(mg/kg-d)	
	ENDRIN ALDEHYDE	1.69E-04	mg/kg	1	8.39E-08	mg/kg-day		(mg/kg-d)	
	ENDRIN KETONE	2.47E-04	mg/kg	1	1.22E-07	mg/kg-day		(mg/kg-d)	
	4-CHLORO-3-METHYLPHENOL	3.88E-01	mg/kg	1	1.92E-04	mg/kg-day		(mg/kg-d)	
	ACENAPHHTHYLENE	4.20E-04	mg/kg	1	2.08E-07	mg/kg-day		(mg/kg-d)	
BENZO(A)PYRENE equivalent	3.48E-03	mg/kg	1	1.72E-06	mg/kg-day		(mg/kg-d)		
BENZO[G,H,I]PERYLENE	3.60E-03	mg/kg	1	1.78E-06	mg/kg-day		(mg/kg-d)		
PHENANTHRENE	2.41E-03	mg/kg	1	1.20E-06	mg/kg-day		(mg/kg-d)		
<b>Total Hazard Index</b>									<b>9.7E+00</b>

(1) Intake Ingestion =  $EPC * (IFadj * CF2 * RAF * EF) / (AT * 365 \text{ day/yr})$   
= EPC \* 4.95E-04

IFadj =	$(IR-C * ED-C * CF) / BW-C + (IR-A * ED-A * CF) / BW-A$	EPC, mg/kg	Exposure Point Concentration	chem-specific
=	1.49E+04	IFadj, mg-yr/kg-da	Ingestion Rate, age adjusted	1.49E+04
		RAF, unitless	Relative Absorption Factor	1
		EF, day/yr	Exposure Frequency	365
		AT, yr	Averaging Time	30
		BW-A, kg	Body Weight, Adult	70
		ED-A, years	Exposure Duration, Adult	24
		BW-C, kg	Body Weight, Child	15
		ED-C, years	Exposure Duration, Child	6
		IR-A, kg/day	Ingestion Rate, Adult	0.034
		IR-C, kg/day	Ingestion Rate, Child	0.008
		CF, mg/kg	Conversion Factor	1.00E+06
		CF2, kg/mg	Conversion Factor	1.00E-06

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

**Table 5-10I**  
**Calculation of Non Cancer Hazards**  
**Ingestion of Clams**  
**Child Resident - RME**

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

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Relative Absorption Factor	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Hazard Quotient
Ingestion (1)	ALUMINUM	3.95E+02	mg/kg	1	2.11E-01	mg/kg-day	1.00E+00	(mg/kg-d)	2.11E-01
	ARSENIC	3.52E+00	mg/kg	1	1.88E-03	mg/kg-day	3.00E-04	(mg/kg-d)	6.26E+00
	COPPER	1.03E+01	mg/kg	1	5.49E-03	mg/kg-day		(mg/kg-d)	
	IRON	1.41E+03	mg/kg	1	7.54E-01	mg/kg-day	3.00E-01	(mg/kg-d)	2.51E+00
	LEAD	1.08E+00	mg/kg	1	5.77E-04	mg/kg-day		(mg/kg-d)	
	MANGANESE	4.34E+01	mg/kg	1	2.31E-02	mg/kg-day	1.40E-01	(mg/kg-d)	1.65E-01
	MERCURY	4.56E-02	mg/kg	1	2.43E-05	mg/kg-day	3.00E-04	(mg/kg-d)	8.11E-02
	SODIUM	5.24E+03	mg/kg	1	2.79E+00	mg/kg-day		(mg/kg-d)	
	VANADIUM	1.99E+00	mg/kg	1	1.06E-03	mg/kg-day	1.00E-03	(mg/kg-d)	1.06E+00
	Total PCBs	4.83E-03	mg/kg	1	2.58E-06	mg/kg-day	2.00E-05	(mg/kg-d)	1.29E-01
	ALPHA-HEXACHLOROCYCLOHEXANE	8.70E-05	mg/kg	1	4.64E-08	mg/kg-day		(mg/kg-d)	
	BETA-HEXACHLOROCYCLOHEXANE	1.95E-04	mg/kg	1	1.04E-07	mg/kg-day		(mg/kg-d)	
	DIELDRIN	1.27E-04	mg/kg	1	6.75E-08	mg/kg-day	5.00E-05	(mg/kg-d)	1.35E-03
	ENDOSULFAN I	3.00E-05	mg/kg	1	1.60E-08	mg/kg-day	6.00E-03	(mg/kg-d)	2.67E-06
	ENDOSULFAN II	6.00E-04	mg/kg	1	3.20E-07	mg/kg-day		(mg/kg-d)	
	ENDOSULFAN SULFATE	5.20E-04	mg/kg	1	2.77E-07	mg/kg-day		(mg/kg-d)	
	ENDRIN ALDEHYDE	1.69E-04	mg/kg	1	9.03E-08	mg/kg-day		(mg/kg-d)	
	ENDRIN KETONE	2.47E-04	mg/kg	1	1.32E-07	mg/kg-day		(mg/kg-d)	
	4-CHLORO-3-METHYLPHENOL	3.88E-01	mg/kg	1	2.07E-04	mg/kg-day		(mg/kg-d)	
	ACENAPHTHYLENE	4.20E-04	mg/kg	1	2.24E-07	mg/kg-day		(mg/kg-d)	
BENZO(A)PYRENE equivalent	3.48E-03	mg/kg	1	1.86E-06	mg/kg-day		(mg/kg-d)		
BENZO(G,H,I)PERYLENE	3.60E-03	mg/kg	1	1.92E-06	mg/kg-day		(mg/kg-d)		
PHENANTHRENE	2.41E-03	mg/kg	1	1.29E-06	mg/kg-day		(mg/kg-d)		
<b>1.0E+01</b>									

(1) Intake Ingestion =  
= EPC \*

$EPC * (IR * RAF * EF * ED) / (BW * AT * 365 \text{ day/yr})$   
5.33E-04

NA = Not Applicable  
mg/kg - day = milligram/kilogram - day  
mg/kg = milligram/kilogram

EPC = Exposure Point Concentration

EPC, mg/kg	Exposure Point Concentration	chem-specific
IR, kg/day	Ingestion Rate	0.008
RAF, unitless	Relative Absorption Factor	1
EF, day/yr	Exposure Frequency	365
AT, yr	Averaging Time	6
ED, years	Exposure Duration	6
BWchild, kg	Body Weight	15