

**Table 5-11F**  
**Calculation of Cancer Risks**  
**Exposure to Soil - Bailey Farmhouse**  
**On-Site Worker - CT**

Scenario Timeframe:	Future
Medium:	Soils
Exposure Medium:	Soils
Receptor Population:	On-Site Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Dermal Absorption Factor	Intake (Cancer)	Intake (Cancer)	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion (1)	ALUMINUM	23200	mg/kg	NA	6.42E-04	mg/kg-day	1.5	1/(mg/kg-day)	2.99E-07
	ARSENIC	7.2	mg/kg	NA	1.99E-07	mg/kg-day			
	IRON	24300	mg/kg	NA	6.73E-04	mg/kg-day			
	LEAD	62.2	mg/kg	NA	1.72E-06	mg/kg-day			
	MANGANESE	522	mg/kg	NA	1.44E-05	mg/kg-day			
	SODIUM	141	mg/kg	NA	3.90E-06	mg/kg-day			
Dermal (2)	ALUMINUM	23200	mg/kg	0.03	7.89E-09	mg/kg-day	1.5	1/(mg/kg-day)	1.18E-08
	ARSENIC	7.2	mg/kg						
	IRON	24300	mg/kg						
	LEAD	62.2	mg/kg						
	MANGANESE	522	mg/kg						
	SODIUM	141	mg/kg						
<b>Total Cancer Risk Across All Exposure Pathways</b>									<b>3.11E-07</b>

(1) Intake Ingestion =  $EPC * (IR * CF * RAF * EF * ED) / (BW * AT * 365 \text{ day/yr})$   
= EPC \* 2.77E-08

(2) Intake Dermal =  $EPC * (SA * AF * CF * ABS * EF * ED) / (BW * AT * 365 \text{ day/yr})$   
= EPC \* ABS \* 3.65E-08

mg/kg = milligram/kilogram	EPC, mg/kg	Exposure Point Concentration chem-specific
mg/kg - day = milligram/kilogram - day	IR, mg/day	Ingestion Rate 50
NA = Not Applicable	CF, kg/mg	Conversion Factor 0.000001
EPC = Exposure Point Concentration	RAF, unitless	Relative Absorption Factor 1
CT = Central Tendency	EF, day/yr	Exposure Frequency 150
	AT, yr	Averaging Time 70
	SA, cm <sup>2</sup>	Surface Area 3300
	AF, mg/cm <sup>2</sup> -event	Adherence Factor 0.02
	ED, years	Exposure Duration 6.6
	BW, kg	Body Weight 70

**Table 5-11F**  
**Calculation of Cancer Risks**  
**Exposure to Soils - Bailey Farmhouse**  
**On-Site Worker - RME**

Scenario Timeframe:	Future
Medium:	Soils
Exposure Medium:	Soils
Receptor Population:	On-Site Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Dermal Absorption Factor	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion (1)	ALUMINUM	23200	mg/kg	NA	4.86E-03	mg/kg-day	1.50E+00	1/(mg/kg-day)	2.26E-06
	ARSENIC	7.2	mg/kg	NA	1.51E-06	mg/kg-day			
	IRON	24300	mg/kg	NA	5.10E-03	mg/kg-day			
	LEAD	62.2	mg/kg	NA	1.30E-05	mg/kg-day			
	MANGANESE	522	mg/kg	NA	1.09E-04	mg/kg-day			
	SODIUM	141	mg/kg	NA	2.96E-05	mg/kg-day			
Dermal (2)	ALUMINUM	23200	mg/kg	0.03	2.99E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	4.48E-07
	ARSENIC	7.2	mg/kg						
	IRON	24300	mg/kg						
	LEAD	62.2	mg/kg						
	MANGANESE	522	mg/kg						
	SODIUM	141	mg/kg						
<b>Total Cancer Risk Across All Exposure Pathways</b>									<b>2.7E-06</b>

(1) Intake Ingestion =  $EPC * (IR * CF * RAF * EF * ED) / (BW * AT * 365 \text{ day/yr})$   
= EPC \* 2.10E-07

(2) Intake Dermal =  $EPC * (SA * AF * CF * ABS * EF * ED) / (AT * BW * 365 \text{ day/yr})$   
= EPC \* ABS \* 1.38E-06

mg/kg = milligram/kilogram	EPC, mg/kg	Exposure Point Concentration chem-specific
mg/kg - day = milligram/kilogram - day	IR, mg/day	Ingestion Rate
NA = Not Applicable	CF, kg/mg	Conversion Factor
EPC = Exposure Point Concentration	RAF, unitless	Relative Absorption Factor
RME = Reasonable Maximum Exposure	EF, day/yr	Exposure Frequency
	AT, yr	Averaging Time
	SA, cm <sup>2</sup>	Surface Area
	AF, mg/cm <sup>2</sup>	Adherence Factor
	ED, years	Exposure Duration
	BW, kg	Body Weight

**Table 5-11F**  
**Calculation of Cancer Risks**  
**Exposure to Surface Soils - Bailey Farmhouse**  
**Construction Worker**

Scenario Timeframe:	Future
Medium:	Soils
Exposure Medium:	Soils
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Dermal Absorption Factor	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	ALUMINUM	23200	mg/kg	NA	6.85E-04	mg/kg-day	1.50E+00	1/(mg/kg-day)	3.19E-07
	ARSENIC	7.2	mg/kg	NA	2.13E-07	mg/kg-day			
	IRON	24300	mg/kg	NA	7.17E-04	mg/kg-day			
	LEAD	62.2	mg/kg	NA	1.84E-06	mg/kg-day			
	MANGANESE	522	mg/kg	NA	1.54E-05	mg/kg-day			
	SODIUM	141	mg/kg	NA	4.16E-06	mg/kg-day			
Dermal	ALUMINUM	23200	mg/kg	0.03	1.28E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	1.91E-08
	ARSENIC	7.2	mg/kg						
	IRON	24300	mg/kg						
	LEAD	62.2	mg/kg						
	MANGANESE	522	mg/kg						
	SODIUM	141	mg/kg						
<b>Total Cancer Risk Across All Exposure Pathways</b>									<b>3.4E-07</b>

(1) Intake Ingestion =  $EPC * (IR * CF * RAF * EF * ED) / (BW * AT * 365 \text{ day/yr})$

= EPC \* 2.95E-08

(2) Intake Dermal =  $EPC * (SA * AF * CF * ABS * EF * ED) / (BW * AT * 365 \text{ day/yr})$

= EPC \* ABS \* 5.90E-08

mg/kg = milligram/kilogram

mg/kg - day = milligram/kilogram - day

NA = Not Applicable

EPC = Exposure Point Concentration

EPC, mg/kg

IR, mg/day

CF, kg/mg

RAF, unitless

EF, day/yr

AT, yr

SA, cm<sup>2</sup>

AF, mg/cm<sup>2</sup>-event

ED, years

BW, kg

Exposure Point Concentration chem-specific

Ingestion Rate, age weighted 330

Conversion Factor 0.000001

Relative Absorption Factor 1

Exposure Frequency 160

Averaging Time 70

Surface Area 3300

Adherence Factor 0.2

Exposure Duration 1

Body Weight 70

**Table 5-11F**  
**Calculation of Cancer Risks**  
**Exposure to Subsurface Soils - Bailey Farmhouse**  
**Construction Worker**

Scenario Timeframe:	Future
Medium:	Soils
Exposure Medium:	Subsurface Soils
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Dermal Absorption Factor	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion (1)	ALUMINUM	23200	mg/kg	NA	6.85E-04	mg/kg-day	1.5	1/(mg/kg-day)	3.67E-07
	ARSENIC	8	mg/kg	NA	2.45E-07	mg/kg-day			
	IRON	24300	mg/kg	NA	7.17E-04	mg/kg-day			
	LEAD	62	mg/kg	NA	1.82E-06	mg/kg-day			
	SODIUM	141	mg/kg	NA	4.16E-06	mg/kg-day			
	MANGANESE	522	mg/kg	NA	1.54E-05	mg/kg-day			
Dermal (2)	ALUMINUM	23200	mg/kg	0.03	1.47E-08	mg/kg-day	1.5	1/(mg/kg-day)	2.20E-08
	ARSENIC	8	mg/kg						
	IRON	24300	mg/kg						
	SODIUM	141	mg/kg						
	LEAD	62	mg/kg						
	MANGANESE	522	mg/kg						
<b>Total Cancer Risk Across All Exposure Pathways</b>									<b>3.9E-07</b>

(1) Intake Ingestion =  $EPC * (IR * CF * RAF * EF * ED) / (BW * AT * 365 \text{ day/yr})$   
= EPC \* 2.95E-08

(2) Intake Dermal =  $EPC * (SA * AF * CF * ABS * EF * ED) / (BW * AT * 365 \text{ day/yr})$   
= EPC \* ABS \* 5.90E-08

mg/kg = milligram/kilogram	EPC, mg/kg	Exposure Point Concentration chem-specific
mg/kg - day = milligram/kilogram - day	IR, mg/day	Ingestion Rate, age weighted 330
NA = Not Applicable	CF, kg/mg	Conversion Factor 0.000001
EPC = Exposure Point Concentration	RAF, unitless	Relative Absorption Factor 1
	EF, day/yr	Exposure Frequency 160
	AT, yr	Averaging Time 70
	SA, cm <sup>2</sup>	Surface Area 3300
	AF, mg/cm <sup>2</sup> -event	Adherence Factor 0.2
	ED, years	Exposure Duration 1
	BW, kg	Body Weight 70