Table 3-1
Ecological Exposure Pathways Summary for Midnite Mine Site

		Terrestrial Receptors										
		Soil Organisms			Wildlife (terrestrial/riparian ecosystem consumers)							
					Mammals[b]				Birds			
					Herbivore	Herbivore	Invertivore	Carnivore	Herbivore	Invertivore	Omnivore	Carnivore
Exposure Media	Exposure Routes	Plants[a]	Microorganisms	Invertebrtates	Meadow Vole	White-Tailed Deer	Masked Shrew	Bobcat	Ruffed Grouse	Cliff Swallow	American Robin	Great Horned Owl
Stream/Pit Surface Water	Radiation	-	-	-	2	2	2	2	2	2	2	2
	Direct Contact	o	-	-	-	-	-	-	-	-	-	-
	Ingestion	-	-	-	●	●	●	●	●	●	●	●
Stream/Pit Sediment	Radiation	-	-	-	-	2	-	-	-	-	-	-
	Direct Contact	-	-	-	-	-	-	-	-	-	-	-
	Ingestion	-	-	-	-	●	-	-	-	-	-	-
Surface Material[c]	Radiation	1	2	2	2	2	2	2	2	2	2	2
	Direct Contact	●	●	●	o	o	o	o	o	o	o	o
	Ingestion	-	o	o	●	●	●	●	●	●	●	●
Pit Wall Material	Radiation	o	o	o	o	o	o	o	o	o	o	o
	Direct Contact	o	●	●	-	-	-	-	-	-	-	-
	Ingestion	-	-	-	-	-	-	-	-	-	-	-
Haul Road	Radiation	o	o	o	o	o	o	o	o	o	o	o
	Direct Contact	o	-	-	o	o	o	o	o	o	o	o
	Ingestion	-	-	-	o	o	o	o	o	o	o	o
				-								

		Aquatic Receptors			Terrestrial Receptors							
					Wildlife (aquatic ecosystem consumers)							
					Amphibian	Mammals[b]			Birds			
					Invertivore	Herbivore	Omnivore	Piscivore	Herbivore	Invertivore	Piscivore	Piscivore
Exposure Media	Exposure Routes	Plants	Invertebrates	Fish	Spotted Frog	Muskrat	Racoon	Mink	Mallard	Common Snipe	Great Blue Heron	Bald Eagle
Stream/Pit Surface Water	Radiation	1	3	3	2	2	2	2	2	2	2	2
	Direct Contact	●	●	●	●	o	o	o	o	o	o	o
	Ingestion	-	o	o	o	●	●	●	●	●	●	●
Stream/Pit Sediment	Radiation	1	3	3	2	2	2	2	2	2	2	2
	Direct Contact	o	●	o	o	o	o	o	o	o	-	-
	Ingestion	-	o	o	o	●	●	●	●	●	●	●
Surface Material[d]	Radiation	-	-	-	2	2	2	2	2	2	2	2
	Direct Contact	-	-	-	o	o	o	o	o	o	o	o
	Ingestion	-	-	-	o	o	o	o	o	o	o	o
Pit Wall Material	Radiation	-	-	-	-	2	2	2	2	2	2	2
	Direct Contact	-	-	-	-	-	-	-	-	-	-	-
	Ingestion	-	-	-	-	-	-	-	-	-	-	-
Haul Road	Radiation	-	-	-	o	o	o	o	o	o	o	o
	Direct Contact	-	-	-	-	-	-	-	-	-	-	-
	Ingestion	-	-	-	-	-	-	-	-	-	-	-

Radiation = Evaluated using the DOE's *A Graded Approach for Evaluating Radiation Doses to Aquatic and Terrestrial Biota* (USDOE 2000). See Footnotes 1, 2, and 3.
Direct Contact = Uptake by plants, invertebrates, fish, and amphibians through direct contact with soil, water, or sediment.
Ingestion = Direct (incidental ingestion of soil/sediment) and indirect ingestion of food and water via the food web.
- = Pathway incomplete or not applicable; quantitative evaluation not performed.
● = Pathway potentially complete and selected for quantitative evaluation.
o = Pathway potentially complete but not selected for quantitative evaluation as data or methods are lacking or pathway relatively unimportant for risk management decisions.

a - Terrestrial Plants includes riparian plants or upland plants depending on habitat/location.
b - Does not include humans; humans are addressed separately in the Human Health Risk Assessment.
c - For the purpose of this exposure table, Surface Material includes surface material in the Mined Area (waste ore/protore stockpiles/backfilled pits), soils downwind in the Potentially Impacted Area (PIA), riparian sediments, and material in fuel disposal areas.
d - For the purpose of this exposure table, Surface Material includes surface material in the Mined Area (waste ore/protore stockpiles/backfilled pits), soils downwind in the Potentially Impacted Area (PIA), and material in fuel disposal areas.
1 - Radiation exposure compared with 1 rad/day for plants.
2 - Radiation exposure compared with 0.1 rad/day for terrestrial animals.
3 - Radiation exposure compared with 1 rad/day for aquatic animals.

Table 3-2
Summary of Available Terrestrial Screening Values for Soil Organisms
(mg/kg)

Analyte	Plants[a]	Soil Organisms[b]	Earthworms[b]
Inorganics			
Aluminum	50	600	nb
Antimony	5	nb	nb
Arsenic	10	100	60
Barium	500	3000	nb
Beryllium	10	nb	nb
Boron	0.5	20	nb
Cadmium	3	20	20
Calcium	nb	nb	nb
Chromium	1	10	0.4
Cobalt	20	1000	nb
Copper	100	100	50
Iron	nb	200	nb
Lead	50	900	500
Magnesium	nb	nb	nb
Manganese	500	100	nb
Mercury	0.3	30	0.1
Molybdenum	2	200	nb
Nickel	30	90	200
Potassium	nb	nb	nb
Selenium	1	100	70
Silver	2	50	nb
Sodium	nb	nb	nb
Strontium	nb	nb	nb
Sulfate	nb	nb	nb
Thallium	1	nb	nb
Uranium	5	nb	nb
Vanadium	2	20	nb
Zinc	50	100	200

a - Efroymson et al. 1997a

b - Efroymson et al. 1997b

nb - no benchmark

Table 3-3
Amphibian Toxicity Reference Values and Benchmarks

Analyte	Form	Test Species	Exposure Duration	Acute LC50 (ug/L)	Acute LC50 to Chronic LOAEL (ug/L)	Acute LC50 to Chronic NOAEL (ug/L)	Final Chronic LOAEL (ug/L)[1]	Final Chronic NOAEL (ug/L)[2]	Source
Inorganics									
Aluminum	Aluminum chloride	*Rana pipiens* , embryo	96 hrs	471	20	40	24	12	Freda et al. 1990 In: Schuytema and Nebeker 1996
Antimony	Antimony trichloride	*Gastrophryne carolinensis* , embryo	7 d	3.0E-10	20	40	1.5E-11	7.5E-12	Birge 1978; Birge et al. 1979 In: Schuytema and Nebeker 1996
Arsenic	Arsenic trioxide	*Rana hexadactyla* , tadpole	96 hrs	249	20	40	12	6.2	Khangarot et al. 1985b In: Schuytema and Nebeker 1996
Barium	--	--	--	--	--	--	--	--	--
Beryllium	Beryllium sulfate	*Ambystoma opacum,* larva	96 hrs	3,150	20	40	158	79	Slonim and Ray 1975 In: Schuytema and Nebeker 1996
Boron	Borax	*Rana pipiens,* embryo	4 d	--	20	40	6000	3000	Birge and Black1977 In: Schuytema and Nebeker 1996
Cadmium	Cadmium chloride	*Ambystoma gracile,* larva	10 d	--	--	--	45	13	Nebeker et al. 1994 In: Schuytema and Nebeker 1996
Chromium (total)	Potassium chromate	*Rana hexdactyla* , tadpole	96 hrs	42,950	20	40	2100	1100	Khangarot et al. 1985b In: Schuytema and Nebeker 1996
Cobalt	--	--	--	--	--	--	--	--	--
Copper	Copper	*Xenopus laevis,* embryo	96 hrs	110	20	40	5.5	2.8	Linder et al. 1991 In: Schuytema and Nebeker 1996
Iron	Iron	*Xenopus laevis* , embryo	96 hrs	1,800	20	40	90	45	Linder et al. 1991 In: Schuytema and Nebeker 1996
Lead	Lead nitrate	*Rana hexadactyla* , tadpole	96 hrs	3.3E-08	20	40	1.7E-09	8.3E-10	Khangarot et al. 1985b In: Schuytema and Nebeker 1996
Magnesium	--	--	--	--	--	--	--	--	--
Manganese	Manganese sulfate	*Microhyla ornata* , tadpole	96 hrs	14,330	20	40	720	360	Rao and Madhyastha 1987 In: Schuytema and Nebeker 1996
Mercury	Mercuric chloride	*Rana heckscheri,* tadpole	96 hrs	502	20	40	25	13	Punzo 1993a,b In: Schuytema and Nebeker
Molybdenum	--	--	--	--	--	--	--	--	--
Nickel	Nickel	*Xenopus laevis,* embryo	96 hrs	1,700	20	40	85	43	Linder et al. 1991 In: Schuytema and Nebeker 1996
Selenium	Selenium	*Xenopus laevis* , embryo	96 hrs	1,500	20	40	75	38	Linder et al. 1991 In: Schuytema and Nebeker 1996
Silver	Silver nitrate	*Rana hexadactyla* , tadpole	96 hrs	25,700	20	40	1300	640	Khangarot et al. 1985b In: Schuytema and Nebeker 1996
Strontium	--	--	--	--	--	--	--	--	--
Thallium	Thallium trichloride	*Gastrophyrne carrolinensis* , embryo	7 d	110	20	40	5.5	2.8	Birge and Black1977 In: Schuytema and Nebeker 1996
Uranium	--	--	--	--	--	--	--	--	--
Vanadium	--	--	--	--	--	--	--	--	--
Zinc	Zinc sulfate	*Xenopus laevis* , embryo	96 hrs	899	20	40	45	22	Fort et al. 1989 In: Schuytema and Nebeker 1996

Table 3-3 (continued)
Amphibian Toxicity Reference Values and Benchmarks

Note: Uncertainty factors were developed to calculate Final Chronic LOAELs and NOAELs where unavailable from literature. The uncertainty factors used are based on the ratio of reported chronic and acute toxicity data for amphibians for cadmium and dieldrin as reported in Schuytema and Nebeker 1996.

1 - Final Chronic LOAEL based on Acute LC_{50} divided by an uncertainty factor of 20, except boron and cadmium. For boron the Final Chronic LOAEL is based on the Final Chronic NOAEL (LC_1) multiplied by an uncertainty factor of 20. For cadmium the Final Chronic LOAEL is directly from the cited source.

2 - Final Chronic NOAEL based on Acute LC_{50} divided by an uncertainty factor of 40, except boron and cadmium. For boron the Final Chronic

"--" - No toxicity reference value or benchmark available.

LOAEL - Lowest Observed Adverse Effects Level

NOAEL - No Observed Adverse Effects Level

ug/L - micrograms per liter

Table 3-4
Inorganic Parameters - Model Input Values

Metals (mg/kg)		Inorganic Kd	Source	Aquatic BCF	Source	BSAF Regression Slope	Source	BSAF Regression Intercept	Source	BSAF 90th Percentile	Source	Median BSAF	Source	Theoretical BSAF	Source	Soil Invertebrate Regression Slope	Source	Soil Invertebrate Regression Intercept	Source	Soil Invertebrate 90th Percentile BCF	Source	Soil Invertebrate Median BCF	Source	Plant Regression Slope	Source	Plant Regression Intercept	Source
7429905	Aluminum	6.20E+01	30	1.36E+02	1							1.00E+00	29							1.18E-01	19	4.30E-02	19				
7440360	Antimony	4.50E+01	15	1.08E+01	2							2.40E-01	17	2.40E-01	17							1.00E+00	29				
7440382	Arsenic	2.90E+01	15	2.90E+00	3	0.754	16	-0.292	16	6.90E-01	16	1.43E-01	16	1.00E-01	17	0.706	19	-1.421	19	5.23E-01	19	2.24E-01	19	0.564	18	-1.992	18
7440393	Barium	4.10E+01	15	1.50E+02	4							3.66E+00	17	3.66E+00	17					1.60E-01	19	1.60E-01	19				
7440417	Beryllium	7.90E+02	15	9.50E+01	5							1.20E-01	17	1.20E-01	17					1.18E+00	19	4.50E-02	19				
7440428	Boron	6.20E+01	30	1.00E+00	27							1.00E+00	29									1.00E+00	29				
7440439	Cadmium	7.50E+01	15	7.13E+02	6	0.692	16	0.0395	16	7.99E+00	16	6.00E-01	16	9.51E+00	17	0.795	19	2.114	19	4.07E+01	19	7.71E+00	19	0.546	18	-0.476	18
7440473	Chromium (Total)	1.80E+06	15	3.00E+00	5	0.365	16	0.2092	16	4.68E-01	16	1.00E-01	16	1.67E-06	17					3.16E+00	19	3.06E-01	19				
7440484	Cobalt	4.70E+01	27	9.80E-01	7					9.80E-01	24	9.80E-01	24							2.91E-01	19	1.22E-01	19				
7440508	Copper	2.20E+01	5	4.69E+02	8	0.278	16	1.089	16	5.25E+00	16	1.56E+00	16	2.13E+01	17	0.264	19	1.675	19	1.53E+00	19	5.15E-01	19	0.394	18	0.669	18
7439896	Iron	2.50E+01	27																	7.80E-02	19	3.60E-02	19				
7439921	Lead	2.80E+05	5	3.31E+02	9	0.801	16	-0.776	16	6.07E-01	16	7.10E-02	16	1.18E-03	17	0.807	19	-0.218	19	1.52E+00	19	2.66E-01	19	0.561	18	-1.328	18
7439954	Magnesium	4.60E+00	27	6.82E+02	14	0.208	16	1.8	16	7.53E+00	16	1.94E+00	16	1.48E+02	17	0.328	19	4.449	19	1.29E+01	19	1.50E-01	30	0.555	18	1.575	18
7439965	Manganese	6.50E+01	27	7.30E+01	10							1.00E+00	29			0.682	19	-0.809	19	1.24E-01	19	5.40E-02	19				
7439976	Mercury	8.20E+01	15	3.00E+03	25					2.87E+00	16	1.14E+00	16			0.118	19	-0.684	19	2.06E+01	19	1.69E+00	19	0.544	18	-0.996	18
7439987	Molybdenum	1.80E+01	27	6.82E+02	14	0.208	16	1.8	16	7.53E+00	16	1.94E+00	16	3.79E+01	17	0.328	19	4.449	19	1.29E+01	19	3.20E+00	19	0.555	18	1.575	18
7440020	Nickel	6.50E+01	15	3.51E+01	11					2.32E+00	16	4.86E-01	16	5.40E-01	17					4.73E+00	19	1.06E+00	19	0.748	18	-2.224	18
7782492	Selenium	5.00E+00	15	9.40E+01	12							1.88E+01	17	1.88E+01	17	0.733	19	-0.075	19	1.34E+00	19	9.85E-01	19	1.104	18	-0.678	18
7440224	Silver	8.30E+00	15	2.18E+01	13							2.63E+00	17	2.63E+00	17					1.53E+01	19	2.05E+00	19				
7440246	Strontium	3.70E+01	27	6.82E+02	14	0.208	16	1.8	16	7.53E+00	16	1.94E+00	16	1.84E+01	17	0.328	19	4.449	19	1.29E+01	19	3.20E+00	19	0.555	18	1.575	18
7440280	Thallium	7.10E+01	15	6.70E+01	5							9.44E-01	17	9.44E-01	17							1.00E+00	29				
7440611	Uranium	4.10E+02	15	3.00E+01	22					3.00E-01	22	1.00E-01	22							8.52E-01	23	6.25E-01	23				
7440622	Vanadium	1.00E+03	15	1.00E+02	4							1.00E-01	17	1.00E-01	17					8.80E-02	19	4.20E-02	19				
7440666	Zinc	6.20E+01	15	6.82E+02	14	0.208	16	1.8	16	7.53E+00	16	1.94E+00	16	1.10E+01	17	0.328	19	4.449	19	1.29E+01	19	3.20E+00	19	0.555	18	1.575	18

Kd - Diffusion coefficient
BCF - Bioconcentration Factor
BSAF - Bio-Sediment Accumulation Factor

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23 Driver. 1994. Geometric mean and 90%UCL from Table 3.6
24 Assumed BSAF = BCF
25 Geometric Mean of inorganic BCFs from USEPA (1985c) AWQC for Mercury
26 Buse. 1986. Geometric mean and 90% UCL.
27 Baes, C.F., R. Sharp. A. Sjoreen, and R. Shor. 1984. A review and analysis of parameters for assessing transport of environmentally released radionuclides through agriculture.
Prepared by ORNL for DOE. 150 pp. et al. 1984. (terrestrial plant BCF median and 90% assumed to be same for fluoride and boron; assumed other boron BCFs = 1; assumed aquatic fluoride BCF = 1).
28 all chromium VI parameters assumed to be the same as chromium (total)
29 no value available; assume 1.0
30 used zinc as surrogate for some boron, zirconium, tin, strontium, molybdenum values; where no values available.
Note: Median BSAF and BCF is the model default value; model permits selection of other values.
* Zinc used as surrogate for zirconium, tin, strontium, and molybdenum.

Table 3-4 (continued)
Inorganic Parameters - Model Input Values

Metals (mg/kg)		Plant 90th Percentile BCF	Source	Plant Median BCF	Source	Herbivore Regression Slope	Source	Herbivore Regression Intercept	Source	Herbivore 90th Percentile BCF	Source	Herbivore Median BCF	Source	Omnivore Regression Slope	Source	Omnivore Regression Intercept	Source	Omnivore 90th Percentile BCF	Source	Omnivore Median BCF	Source	Invertivore Regression Slope	Source	Invertivore Regression Intercept	Source	Invertivore 90th Percentile BCF	Source	Invertivore Median BCF	Source
7429905	Aluminum	5.00E-03	18	2.87E-03	18					3.10E-02	20	1.71E-02	20					9.30E-02		6.18E-02						9.30E-02	20	6.18E-02	20
7440360	Antimony	1.14E-02	18	1.02E-02	18					8.00E-03	5	8.00E-03	5							8.00E-03	5					8.00E-03	5	8.00E-03	5
7440382	Arsenic	1.10E+00	18	3.75E-02	18	1.1382	20	-5.6531	20	1.60E-02	20	4.20E-03	20	7.35E-01	20	-4.58E+00	20	1.60E-02	20	4.20E-03	20	0.8188	21	-4.88471	21	1.30E-03	20	1.30E-03	20
7440393	Barium	4.77E-01	18	1.56E-01	18	3.86E-01	20	3.36E-01	20	2.53E-01	20	3.15E-02	20	2.35E+00	20	-1.01E+01	20	6.90E-02	20	4.63E-02	20					1.12E-01	21	5.66E-02	21
7440417	Beryllium	1.00E-02	5	1.00E-02	5					3.20E-01	5	3.20E-01	5					3.20E-01	5	3.20E-01	5					3.20E-01	5	3.20E-01	5
7440428	Boron	8.00E-01	27	8.00E-01	27					1.00E+00	27	1.00E+00	27					1.00E+00	27	1.00E+00	27					1.00E+00	27	1.00E+00	27
7440439	Cadmium	3.25E+00	18	5.86E-01	18	0.4723	20	-1.2571	20	4.48E-01	20	1.26E-01	20	5.66E-01	20	-1.54E+00	20	4.62E-01	20	1.22E-01	20	0.9638	20	0.815	20	7.02E+00	20	2.11E+00	20
7440473	Chromium (Total)	8.39E-02	18	4.10E-02	18	0.3887	20	-1.35E-01	20	3.09E-01	20	8.84E-02	20	0.7326	20	-1.4945	20	3.49E-01	20	6.99E-02	20	0.7338	21	-1.4599	21	9.50E-02	20	8.15E-02	20
7440484	Cobalt	2.48E-02	18	7.45E-03	18	1.31E+00	20	-4.26E+00	20	1.40E-01	20	2.10E-02	20	-6.18E-01	20	-2.03E-01	20	2.50E-02	20	1.58E-02	20	1.31E+00	21	-4.47E+00	21	1.00E-01	21	2.05E-02	21
7440508	Copper	6.25E-01	18	1.24E-01	18	0.0675	20	2.04E+00	20	1.29E+00	20	1.09E-01	20	0.7326	20	-1.4945	20	5.54E-01	20	1.27E-01	20	0.1783	20	2.1042	20	1.12E+00	20	7.71E-01	20
7439896	Iron	1.00E-02	18	4.25E-03	18	0.6207	20	-0.4758	20	2.40E-02	20	1.26E-02	20	-0.0643	20	6.2403	20	1.50E-02	20	1.24E-02	20	0.5969	21	-0.2879	21	1.71E-02	21	1.24E-02	21
7439921	Lead	4.68E-01	18	3.89E-02	18	0.5181	20	-0.6114	20	1.87E-01	20	5.22E-02	20	0.2194	20	0.5669	20	2.86E-01	20	6.59E-02	20	0.4869	20	0.4819	20	3.39E-01	20	1.60E-01	20
7439954	Magnesium	1.82E+00	18	3.66E-01	18	0.0738	20	4.4713	20	2.32E+00	20	2.50E-01	27	0.0745	20	4.4987	20	2.78E+00	20	5.58E-01	20	0.1324	20	4.2479	20	2.90E+00	20	8.33E-01	20
7439965	Manganese	2.31E-01	18	7.92E-02	18					7.90E-02	20	1.56E-02	20					3.70E-02		3.09E-02						3.70E-02	20	3.09E-02	20
7439976	Mercury	5.00E+00	18	6.52E-01	18	-2.2764	21	-4.87E+00	21	2.40E-02	20	2.39E-02	20	-8.97E-01	20	-4.03E+00	20	1.30E-01	20	5.42E-02	20	-2.2764	21	-4.87E+00	21	1.05E+00	20	1.05E+00	20
7439987	Molybdenum	1.82E+00	18	3.66E-01	18	0.0738	20	4.4713	20	2.32E+00	20	5.04E-01	20	0.0745	20	4.4987	20	2.78E+00	20	5.58E-01	20	0.1324	20	4.2479	20	2.90E+00	20	8.33E-01	20
7440020	Nickel	1.41E+00	18	1.80E-02	18	0.3766	20	0.3174	20	8.98E-01	20	5.13E-02	20	0.478	20	-0.414	20	5.89E-01	20	1.68E-01	20	0.5444	20	-0.4266	20	5.78E-01	20	3.64E-01	20
7782492	Selenium	3.01E+00	18	6.72E-01	18	0.3764	21	-0.4158	21	1.55E-01	20	0.00E+00	20	0.3786	20	-0.426	20	1.26E+00	20	2.06E-01	20	0.3764	21	-0.4158	21	8.13E-01	20	7.24E-01	20
7440224	Silver	3.67E-02	18	1.40E-02	18					7.00E-03	20	0.00E+00	20					8.10E-01		1.51E-01						8.10E-01	20	1.51E-01	20
7440246	Strontium	1.82E+00	18	3.66E-01	18	0.0738	20	4.4713	20	2.32E+00	20	5.04E-01	20	0.0745	20	4.4987	20	2.78E+00	20	5.58E-01	20	0.1324	20	4.2479	20	2.90E+00	20	8.33E-01	20
7440280	Thallium	4.00E-03	5	4.00E-03	5					1.23E-01	20	1.12E-01	20					1.23E-01	20	1.12E-01	20					1.23E-01	20	1.12E-01	20
7440611	Uranium	1.34E-01	23	8.82E-02	23					7.00E-01	22	5.00E-01	22					5.00E-01	22	2.60E-01	22					5.00E-01	22	2.60E-01	22
7440622	Vanadium	9.70E-03	18	4.85E-03	18					1.90E-02	20	1.29E-02	20					1.31E-02	20	1.04E-02	20					1.31E-02	20	1.04E-02	20
7440666	Zinc	1.82E+00	18	3.66E-01	18	0.0738	20	4.4713	20	2.32E+00	20	5.04E-01	20	0.0745	20	4.4987	20	2.78E+00	20	5.58E-01	20	0.1324	20	4.2479	20	2.90E+00	20	8.33E-01	20

Kd - Diffusion coefficient
BCF - Bioconcentration Factor
BSAF - Bio-Sediment Accumulation Factor

Table 3-5
Wildlife Exposure Factors for Functional Groups and Receptors

Representative Species			Body Weight			Food Ingestion Rate			Composition of Diet (wet weight) (%)						Soil Ingestion Rate			Water Intake		
Food-web classification	Common Name	Scientific Name	kg wet wt.	Comment	Reference	kg dry wt/day	Comment	Reference	Plants	Inverte-brates	Small Mammals/ Birds	Fish	Comment	Reference	kg dry wt/day	Comment (based on % Food Intake [dry weight])	Reference	Liter/day	Comment	Reference
Birds																				
Avian piscivore (A)	bald eagle	*Haliaeetus leucocephalus*	4.74	adult males and females	Dunning 1993	0.16	Dry weight - FI (kg/day) for all birds = $0.0582BW^{0.651}$(kg BW)	USEPA 1993	0%	0%	73%	27%	Washington (river)	USEPA 1993 (Fitzner and Hanson 1979)	0.0032	Assumed default of 2% based on lowest measured values for birds	Beyer et al. 1994	0.167	WI (L/day)= $0.059*BW^{0.67}$ (BW in wet wt. kg) all birds	USEPA 1993
Avian omnivore (T)	American robin	*Turdus migratorius*	0.077	adult males and females	Dunning 1993	0.016	Dry weight - FI (g/day) for passerine birds = $0.398(BW^{0.85})$	USEPA 1993	12%	88%	0%	0%	New York	USEPA 1993 (adapted from Howell 1942)	0.0016	Assumed 10% - comparable to birds feeding with >50% of diet terrestrial invertebrates	Adapted from Beyer et al. 1994	0.0106	WI (L/day)= $0.059*BW^{0.67}$ (BW in wet wt. kg) all birds	USEPA 1993
Avian invertivore (T)	cliff swallow	*Petrochelidon pyrrhonota*	0.0216	males and females	Dunning 1993	0.0054	Dry weight - FI (g/day) for passerine birds = $0.398(BW^{0.85})$	USEPA 1993	0%	100%	0%	0%	Primary diet	Sample et al. 1997	0.000108	Assumed default of 2% based on lowest measured values for birds	Adapted from Beyer et al. 1994	0.00451	WI (L/day)= $0.059*BW^{0.67}$ (BW in wet wt. kg) all birds	USEPA 1993
Avian invertivore (A)	common snipe	*Capella gallinago*	0.122	adult males and females	Dunning 1993	0.0148	Dry weight - FI (kg/day) for all birds = $0.0582BW^{0.651}$(kg BW)	USEPA 1993	12%	88%	0%	0%		Larison 1970 in CH2M Hill 2000	0.00154	Assumed 10.4% - comparable to woodcock	Adapted from Beyer et al. 1994	0.0144	WI (L/day)= $0.059*BW^{0.67}$ (BW in wet wt. kg) all birds	USEPA 1993
Avian carnivore (T)	great horned owl	*Bubo virginianus*	1.31	adult males and females	Dunning 1993	0.0694	Dry weight - FI (kg/day) for all birds = $0.0582BW^{0.651}$(kg BW)	USEPA 1993	0%	0%	100%	0%		Houston et al. 1998 in CH2M Hill 2000	0.00139	Assumed default of 2% based on lowest measured values for birds	Adapted from Beyer et al. 1994	0.07	WI (L/day)= $0.059*BW^{0.67}$ (BW in wet wt. kg) all birds	USEPA 1993
Avian piscivore (A)	great blue heron	*Ardea herodias*	2.39	adult males and females location not specified	USEPA 1993 (Hartman 1961)	0.103	Dry weight - FI (kg/day) for all birds = $0.0582BW^{0.651}$(kg BW)	USEPA 1993	0%	5%	0%	95%	Lower Michigan	USEPA 1993 (Alexander 1977)	0.00515	5% - estimated from diet and soil/sediment intake information	Adapted from Beyer et al. 1994	0.1058	WI (L/day)= $0.059*BW^{0.67}$ (BW in wet wt. kg) all birds	USEPA 1993
Avian herbivore (A)	mallard	*Anas platyrhynchos*	1.134	adult males and females throughout North America	USEPA 1993 (Nelson & Martin 1953)	0.0632	Dry weight - FI (kg/day) for all birds = $0.0582BW^{0.651}$(kg BW)	USEPA 1993	42%	58%	0%	0%	North Dakota	USEPA 1993 (Swanson et al. 1985)	0.00739	11.7% - 90th percentile value from CDA-specific data	CH2M Hill 2000 (Beyer et al. 1998)	0.064	WI (L/day)= $0.059*BW^{0.67}$ (BW in wet wt. kg) all birds	USEPA 1993
Avian herbivore (T)	ruffed grouse	*Bonasa umbellus*	0.576	adult males and females	Dunning 1993	0.0406	Dry weight - FI (kg/day) for all birds = $0.0582BW^{0.651}$(kg BW)	USEPA 1993	90%	10%	0%	0%		Cade and Sosa 1985	0.00378	Assumed 9.3% - comparable to wild turkey	Adapted from Beyer et al. 1994	0.0408	WI (L/day)= $0.059*BW^{0.67}$ (BW in wet wt. kg) all birds	USEPA 1993
Mammals																				
Mammalian carnivore (T)	bobcat	*Lynx rufus*	9.5	midpoint of males and females range	Fitzgerald et al. 1994	0.437	Dry weight - FI (kg/day) for all mammals = $0.0687BW^{0.822}$ (kg BW)	USEPA 1993	0%	0%	100%	0%	Cottontail rabbits and other small mammals	Fitzgerald et al. 1994	0.00874	Assumed 2% based on lowest measured value for mammals	Adapted from Beyer et al. 1994	0.7509	WI (L/day) = $0.099 BW^{0.90}$ (BW in kg wet wt.)	USEPA 1993
Mammalian herbivore (A)	muskrat	*Ondatra zibethicus*	1.14	adult males and females winter and spring Idaho, New York	USEPA 1993 (Dozier 1950; Reeves & Williams 1956)	0.0963	Dry weight - FI (kg/day) for herbivores = $(0.577*BW^{0.727})/1000$ (g BW)	USEPA 1993	100%	0%	0%	0%	Primarily herbivorous	USEPA 1993 (Dozier 1950)	0.004815	5% - estimated from diet and soil/sediment intake information	Adapted from Beyer et al. 1994	0.1114	WI (L/day) = $0.099 BW^{0.90}$ (BW in kg wet wt.)	USEPA 1993
Mammalian omnivore (A)	raccoon	*Procyon lotor*	6.9	adult males and females in Illinois	USEPA 1993 (Sanderson 1984)	0.3361	Dry weight - FI (kg/day) for all mammals = $0.0687BW^{0.822}$ (kg BW)	USEPA 1993	38%	46%	14%	2%	Maryland (forest)	USEPA 1993 (Llewellyn and Uhler 1952)	0.0316	9.4% of dry wt diet	Beyer et al. 1994	0.5631	WI (L/day) = $0.099 BW^{0.90}$ (BW in kg wet wt.)	USEPA 1993
Mammalian herbivore (T)	meadow vole	*Microtus pennsylvanicus*	0.042	adult males and females summer and spring Quebec and Ontario, Canada	USEPA 1993 (Brochu et al. 1988; Boonstra & Rodd 1983)	0.00511	Dry weight - FI (kg/day) for rodents = $(0.621*BW^{0.564})/1000$ (g BW)	USEPA 1993	97%	3%	0%	0%	Illinois	USEPA 1993 (Lindroth and Batzli 1984)	0.000123	2.4% of dry wt FI rate	Beyer et al. 1994	0.0057	WI (L/day) = $0.099 BW^{0.90}$ (BW in kg wet wt.)	USEPA 1993
Mammalian piscivore (A)	mink	*Mustela vison*	0.852	adult males and females summer and fall Montana	USEPA 1993 (Mitchill 1961)	0.0602	Dry weight - FI (kg/day) for all mammals = $0.0687BW^{0.822}$ (kg BW)	USEPA 1993	17%	11%	5%	67%	Michigan (stream; year-round)	USEPA 1993 (Alexander 1977)	0.002408	4% - estimated from diet and soil/sediment intake information	Adapted from Beyer et al. 1994	0.0857	WI (L/day) = $0.099 BW^{0.90}$ (BW in kg wet wt.)	USEPA 1993
Mammalian invertivore (T)	masked shrew	*Sorex cinereus*	0.00533		CH2M Hill 2000 (Silva and Downing 1995)	0.0016	Dry weight - FI (kg/day) for rodents = $(0.621*BW^{0.564})/1000$ (g BW)	USEPA 1993	3%	97%	0%	0%		Bellocq et al. 1994 in CH2M Hill 2000	0.000208	Assumed 13% - comparable to short-tailed shrew	CH2M Hill 2000 (Talmage and Walton	0.00089	WI (L/day) = $0.099 BW^{0.90}$ (BW in kg wet wt.)	USEPA 1993
Mammalian herbivore (T)	white-tailed deer	*Odocoileus virginianus*	72.6		CH2M Hill 2000 (Bailey 1936)	1.973	Dry weight - FI (kg/day) for herbivores = $(0.577*BW^{0.727})/1000$ (g BW)	USEPA 1993	100%	0%	0%	0%	Primary diet	Fitzgerald et al. 1994	0.03946	2%	Beyer et al. 1994	4.68	WI (L/day) = $0.099 BW^{0.90}$ (BW in kg wet wt.)	USEPA 1993

T = Terrestrial ecosystem consumer
A = Aquatic ecosystem consumer
Area use factor not applied in screening risk model.

Table 3-6
Mammal Toxicity Reference Values and Benchmarks

Analyte	Form	Test Species	Exposure Duration	Exposure Route	Endpoint(s)	Lethal/Non-lethal Endpoint Designation	TRVs and Uncertainty Factors (UFs)														Benchmarks		Source of TRV Data
							Acute LD_{50} (mg/kg-bw/d)	Acute LD_{50} to Acute nonlethal NOAEL UF	Acute LOAEL	Acute NOAEL	Acute to Chronic UF	Subchronic LOAEL (mg/kg-bw/d)	Subchronic NOAEL (mg/kg-bw/d)	Subchronic to Chronic UF	Chronic LOAEL (mg/kg-bw/d)	Chronic NOAEL (mg/kg-bw/d)	Lethal LOAEL to nonlethal LOAEL UF	Lethal LOAEL to nonlethal NOAEL UF	Nonlethal LOAEL to nonlethal NOAEL UF	Lethal NOAEL to nonlethal NOAEL UF	Final Chronic LOAEL (mg/kg-bw/d)	Final Chronic NOAEL (mg/kg-bw/d)	
Inorganics																							
Aluminum	$AlCl_3$	mouse	3 gen	food	reproduction	non-lethal	--	--	--	--	--	--	--	--	19.3	--	--	--	3	--	19.3	6.43	Sample et al. 1996
Antimony	antimony potassium tartrate	mouse	Lifetime (>1 yr)	food	lifespan	non-lethal	--	--	--	--	--	--	--	--	1.25	--	--	--	3	--	1.25	0.417	Sample et al. 1996
Arsenic	Arsenite	mouse	3 gen	water	reproduction	non-lethal	--	--	--	--	--	--	--	--	1.26	--	--	--	3	--	1.26	0.42	Sample et al. 1996
Barium	barium chloride	rat	16 mo	water	growth	non-lethal	--	--	--	--	--	--	--	--	--	5.1	--	--	3	--	15.3	5.1	Sample et al. 1996
Beryllium	beryllium sulfate	rat	Lifetime (>1 yr)	oral	longevity, weight	non-lethal	--	--	--	--	--	--	--	--	--	0.66	--	--	3	--	2	1	Sample et al. 1996
Boron	boric acid or borax	rat	3 gen	food	reproduction	non-lethal	--	--	--	--	--	--	--	--	93.6	28	--	--	--	--	93.6	28	Sample et al. 1996
Cadmium	cadmium chloride	rat	6 wks, critical lifestage	oral, gavage	reproduction	non-lethal	--	--	--	--	--	--	--	--	10	1	--	--	--	--	10	1	Sample et al. 1996
Chromium (total)	Cr+3 as Cr_2O_3	rat	90 d and 2 yr	food	reproduction	non-lethal	--	--	--	--	--	--	--	--	--	2737	--	--	3	--	8211	2737	Sample et al. 1996
Cobalt	cobalt sulfate	rat	8 weeks	oral	body weight	non-lethal	--	--	--	--	--	4.2	--	3	--	--	--	--	3	--	1.4	0.47	ASTDR 1997a
Copper	copper sulfate	mink	357 d, critical lifestage	food	reproduction	non-lethal	--	--	--	--	--	--	--	--	15.4	11.7	--	--	--	--	15.4	11.7	Sample et al. 1996
Iron	ferric chloride, ferric nitrate	rat	acute	oral	mortality	lethal	500	15	--	--	10	--	--	--	--	--	--	--	3	--	10	3.33	HSDB 2000
Lead	lead acetate	rat	3 gen	food	reproduction	non-lethal	--	--	--	--	--	--	--	--	80	8	--	--	--	--	80	8	Sample et al. 1996
Magnesium	MgCl	rat	1 dose assumed	oral	mortality	lethal	2800	15	--	--	10	--	--	--	--	--	--	--	3	--	56	18.67	Sax 1992
Manganese	Mn_3O_4	rat	Through gestation for 224 d	food	reproduction	non-lethal	--	--	--	--	--	--	--	--	284	88	--	--	--	--	284	88	Sample et al. 1996
Mercury	Methyl Mercury Chloride	mink	93 d, not during critical lifestage	food	mortality, weight loss, ataxia	non-lethal	--	--	--	--	--	0.245	0.15	3	--	--	--	--	--	--	0.082	0.05	Sample et al. 1996
Molybdenum	MoO_4	mouse	3 gen	water	reproduction	non-lethal	--	--	--	--	--	--	--	--	2.6	--	--	--	3	--	2.6	0.87	Sample et al. 1996
Nickel	nickel sulfate hexahydrate	rat	3 gen	food	reproduction	non-lethal	--	--	--	--	--	--	--	--	80	40	--	--	--	--	80	40	Sample et al. 1996
Selenium	Selenate (SeO_4)	rat	1 yr, 2 gen	water	reproduction	non-lethal	--	--	--	--		--	--	--	0.33	0.20	--	--	--	--	0.33	0.20	Sample et al. 1996
Silver		rat	37 wks	water	body weight	non-lethal	--	--	--	--		222	--	3	74	--	--	--	3	--	74	25	ATSDR 1997b
Strontium	stable strontium chloride	rat	3 yr	water	body weight and bone changes	non-lethal	--	--	--	--	--	--	--	--	--	263	--	--	3	--	789	263	Sample et al. 1996
Thallium	thallium sulfate	rat	60 d	water	reproduction (male testicular function)	non-lethal	--	--	--	--	--	0.74	--	3	--	--	--	--	3	--	0.25	0.08	Sample et al. 1996
Uranium	Uranyl acetate	mouse	>60 d, critical lifestage	intubation	reproduction	non-lethal	--	--	--	--	--	--	--	--	6.13	3.07	--	--	--	--	6.1	3.1	Sample et al. 1996
Vanadium	sodium metavanadate ($NaVO_3$)	rat	60 d prior to gestation and through lactation	oral intubation	reproduction	non-lethal	--	--	--	--	--	--	--	--	2.1	--	--	--	3	--	2.1	0.7	Sample et al. 1996
Zinc	zinc oxide	rat	days 1 to 16 of gestation	food	reproduction	non-lethal	--	--	--	--	--	--	--	--	320	160	--	--	--	--	320	160	Sample et al. 1996

LD_{50} - Median Lethal Dose
LOAEL - Lowest Observed Adverse Effects Level
NOAEL - No Observed Adverse Effects Level
TRV - Toxicity Reference Value
UF - Uncertainty Factor
gen - generation

Table 3-7
Bird Toxicity Reference Values and Benchmarks

Analyte	Form	Test Species	Exposure Duration	Exposure Route	Endpoint	Lethal/ Non-lethal Endpoint	TRVs and Uncertainty Factors (Ufs)														Benchmarks		Source of TRV Data
							Acute LD_{50} (mg/kg-bw/d)	Acute LD_{50} to Acute nonlethal NOAEL UF	Acute LOAEL	Acute NOAEL	Acute to Chronic UF	Subchronic LOAEL (mg/kg-bw/d)	Subchronic NOAEL (mg/kg-bw/d)	Subchronic to Chronic UF	Chronic LOAEL (mg/kg-bw/d)	Chronic NOAEL (mg/kg-bw/d)	Lethal LOAEL to nonlethal LOAEL UF	Lethal LOAEL to nonlethal NOAEL UF	Nonlethal LOAEL to nonlethal NOAEL UF	Lethal NOAEL to nonlethal NOAEL UF	Final Chronic LOAEL (mg/kg-bw/d)	Final Chronic NOAEL (mg/kg-bw/d)	
Inorganics																							
Aluminum	$AlCl_3$	day-old white leghorn chicks	--	--	--	lethal	--	--	--	--	--	--	--	--	44.5	--	3	10	--	--	14.8	4.45	Sample et al. 1996
Antimony	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	NAV
Arsenic	sodium arsenite	mallard duck	128 d	food	mortality	lethal	--	--	--	--	--	--	--	--	12.84	5.14	3	--	--	3	4.28	1.7	Sample et al. 1996
Barium	barium hydroxide	1-day old chicks	4 wks	food	mortality	lethal	--	--	--	--	--	417	208	3	--	--	3	--	--	3	46	23	Sample et al. 1996
Beryllium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	NAV
Boron	boric acid	mallard duck	>6 wks, critical lifestage	food	reproduction	non-lethal	--	--	--	--	--	--	--	--	100	28.8	--	--	--	--	100	29	Sample et al. 1996
Cadmium	cadmium chloride	mallard duck	90 d, critical lifestage	food	reproduction	non-lethal	--	--	--	--	--	--	--	--	20	1.45	--	--	--	--	20	1.45	Sample et al. 1996
Chromium (total)	Cr+3 as $CrK(SO_4)_2$	black duck	10 mo, critical lifestage	food	reproduction	non-lethal	--	--	--	--	--	--	--	--	5	1	--	--	--	--	5	1	Sample et al. 1996
Cobalt	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	NAV
Copper	copper oxide	1 day old chicks	10 wks	food	mortality, growth	lethal	--	--	--	--	--	--	--	--	61.7	47	3	--	--	3	21	16	Sample et al. 1996
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	NAV
Lead	lead acetate	Japanese quail	12 wks, critical lifestage	food	reproduction	non-lethal	--	--	--	--	--	--	--	--	11.3	1.13	--	--	--	--	11.3	1.13	Sample et al. 1996
Magnesium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	NAV
Manganese	Mn_3O_4	1-d old Japanese quail	75 d	food	growth	non-lethal	--	--	--	--	--	--	--	--	--	997	--	--	3	--	2991	997	Sample et al. 1996
Mercury	mercuric chloride	Japanese Quail	1 yr	food	reproduction	non-lethal	--	--	--	--	--	--	--	--	0.90	0.45	--	--	--	--	0.90	0.45	Sample et al. 1996
Molybdenum	sodium molybdate (MoO_4)	chicken	21 d through reproduction	food	reproduction	non-lethal	--	--	--	--	--	--	--	--	35.3	--	--	--	3	--	35.3	11.8	Sample et al. 1996
Nickel	nickel sulfate	mallard duckling	90 d	food	mortality, growth, behavior	non-lethal	--	--	--	--	--	--	--	--	107	77.4	--	--	--	--	107	77.4	Sample et al. 1996
Selenium	selanomethio-nine	mallard duck	100 d, critical lifestage	food	reproduction	non-lethal	--	--	--	--	--	--	--	--	0.8	0.4	--	--	--	--	0.80	0.40	Sample et al. 1996
Silver		turkey	5 wks	food	cardiovascular, hematological	non-lethal	--	--	--	--	--	496.8	165.6	3	--	--	--	--	--	--	166	55	Jensen et al. 1974
Strontium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	NAV
Thallium	--	--	--	--	--	--	--		--	--		--	--		--	--	--		--	--	--	--	NAV
Uranium	depleted metallic	black duck	6 wks	food	mortality, body weight, blood chemistry, liver and kidney effects	non-lethal	--	--	--	--	--	--	--	--	--	16	--	--	3	--	48.0	16.0	Sample et al. 1996
Vanadium	vanadyl sulfate	mallard duck	12 wks	food	mortality	lethal	--	--	--	--	--	--	--	--	--	11.4	--	--	--	3	11.4	3.8	Sample et al. 1996
Zinc	zinc sulfate	white leghorn hen	44 wks	food	reproduction	non-lethal	--	--	--	--	--	--	--	--	131	14.5	--	--	--	--	131	14.5	Sample et al. 1996

LD_{50} - Median Lethal Dose
LOAEL - Lowest Observed Adverse Effects Level
NAV - No avian value available
NOAEL - No Observed Adverse Effects Level
TRV - Toxicity Reference Value
UF - Uncertainty Factor
gen - generation

Table 3-8
Mammalian Intertaxon Uncertainty Factors

Classification of TRV Test Animals and Mammalian Receptors

Organism	Receptor or Test Species	Class	Order	Family	Genus	Species
Bobcat	Receptor	Mammalia	Carnivora	Felidae	*Lynx*	*rufus*
Dog	Test Species	Mammalia	Carnivora	Canidae	*Canus*	*familiaris*
Masked shrew	Receptor	Mammalia	Insectivora	Soricidae	*Sorex*	*cinereus*
Meadow vole	Receptor	Mammalia	Rodentia	Cricetidae	*Microtus*	*pennsylvanicus*
Mink	Receptor/ Test Species	Mammalia	Carnivora	Mustelidae	*Mustela*	*vison*
Mouse	Test Species	Mammalia	Rodentia	Muridae	*Peromyscus*	sp.
Muskrat	Receptor	Mammalia	Rodentia	Muridae	*Ondatra*	zibethicus
Oldfield mouse	Test Species	Mammalia	Rodentia	Muridae	*Peromyscus*	*polionotus*
Raccoon	Receptor	Mammalia	Carnivora	Procyonidae	*Procyon*	*lotor*
Rat	Test Species	Mammalia	Rodentia	Muridae	*Rattus*	sp.
Rhesus monkey	Test Species	Mammalia	Primates	Ceropithecidae	*Macaca*	*rhesus*
Rodents	Test Species	Mammalia	Rodentia	--	--	--
White-footed mouse	Test Species	Mammalia	Rodentia	Muridae	*Peromyscus*	*leucopus*
White-tailed deer	Receptor	Mammalia	Artiodactyl	Cervidae	*Odocoileus*	*virginianus*

Taxon Uncertainty Factors For Mammalian Receptors Based On TRV Test Species

Receptor	TRV Test Species															
	white-footed mouse		mouse		oldfield mouse		rat		rodents		mink		Rhesus monkey		dog	
	UF	Basis	UF	Basis	UF	Basis	UF	Basis	UF	Basis	UF	Basis	UF	Basis	UF	Basis
Bobcat	5	Order	5	Order	5	Order	5	Order	5	Order	4	Family	5	Order	4	Family
Masked shrew	5	Order	5	Order	5	Order	5	Order	5	Order	5	Order	5	Order	5	Order
Meadow vole	4	Family	4	Family	4	Family	4	Family	4	Family	5	Order	5	Order	5	Order
Mink	5	Order	5	Order	5	Order	5	Order	5	Order	1	NA	5	Order	4	Family
Muskrat	3	Genus	3	Genus	3	Genus	3	Genus	4	Family	5	Order	5	Order	5	Order
Raccoon	5	Order	5	Order	5	Order	5	Order	5	Order	4	Family	5	Order	4	Family
White-tailed deer	5	Order	5	Order	5	Order	5	Order	5	Order	5	Order	5	Order	5	Order

TRV - Toxicity Reference Value
UF - Uncertainty Factor

Table 3-9
Biota Concentration Guides for Use in Terrestrial Plant System Evaluations

Radionuclide	Biota Concentration Guides	
	Soil (pCi/g)	Water (pCi/L)
R-226	3E+02	1E+07
R-228	2E+02	3E+07
Th-232	2E+04	3E+09
U-234	5E+04	3E+09
U-235	3E+04	1E+08
U-238	2E+04	5E+07

Source: U.S. Department of Energy (DOE) 2000. (adapted from Table 7.3)
pCi/g - picocuries per gram (= 37 Bq/kg)
pCi/L - picocuries per liter (= 37 Bq/m^3)

Table 3-10
Biota Concentration Guides for Use in
Terrestrial Animal System Evaluations

Radionuclide	Biota Concentration Guides	
	Soil (pCi/g)	Water (pCi/L)
R-226	2E+00	3E+02
R-228	2E+00	2E+02
Th-232	2E+03	5E+04
U-234	5E+03	3E+05
U-235	3E+03	5E+05
U-238	2E+03	5E+05

Source: U.S. Department of Energy (DOE) 2000 (adapted from Table 7.4).
pCi/g - picocuries per gram (= 37 Bq/kg)
pCi/L - picocuries per liter (= 37 Bq/m^3)