INTEGRATED
Environmental Services, Inc.

Application for
Facility Permit / Waste Discharge

Supplemental Documentation

Boeing Realty Corporation
C-6 Facility
Los Angeles, California
September 1997

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Prepared by
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For
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Supplemental Documentation
Boeing Realty Corporation
C-6 Facility

Attachment 1

Health-Based Allowable Soil Concentrations Based on Conservative Construction Worker Exposures At Bradley Landfill

Table 1
Health-Based Soil Concentrations (mg/kg), Based on Construction Worker Exposures

Constituent	HBRG HQ=0.2 (mg/kg)	HBRG ILCR=10^{-6} (mg/kg)	Initial HBRG (mg/kg)
1-butanol	4.71E+05	NA	4.71E+05
1,1-dichloroethane	2.20E+05	1.62E+05	1.62E+05
1,1-dichloroethene	1.94E+03	1.46E+03	1.46E+03
1,1,1,2-tetrachloroethane	6.79E+03	3.71E+04	6.79E+03
1,1,2-trichloroethane	9.00E+03	1.33E+04	9.00E+03
1,1,2,2-tetrachloroethane	NA	3.57E+03	3.57E+03
1,2-dibromo-3-chloropropane	2.50E+03	1.38E+02	1.38E+02
1,2-dibromoethane	7.38E+03	2.69E+02	2.69E+02
1,2-dichlorobenzene	NA	NA	NT
1,2-dichloroethane	NA	1.35E+04	1.35E+04
1,2-dichloropropane	3.53E+03	1.24E+04	3.53E+03
1,2-diphenylhydrazine	NA	1.11E+03	1.11E+03
1,2,3-trichloropropane	1.36E+04	1.38E+02	1.38E+02
1,2,4-trichlorobenzene	2.28E+03	NA	2.28E+03
1,3-dichloropropene	6.76E+02	5.36E+03	6.76E+02
1,4-dichlorobenzene	5.71E+07	2.42E+04	2.42E+04
2-butanone	4.52E+05	NA	4.52E+05
2-chlorophenol	1.14E+04	NA	1.14E+04
2-methylphenol	1.14E+05	NA	1.14E+05
2-naphthylamine	NA	5.39E+02	5.39E+02
2,4-dichlorophenol	6.83E+02	NA	6.83E+02
2,4-dimethylphenol	4.55E+04	NA	4.55E+04
2,4-dinitrophenol	4.56E+02	NA	4.56E+02
2,4-dinitrotoluene	4.55E+02	3.13E+03	4.55E+02
2,4,5-trichlorophenol	2.28E+05	NA	2.28E+05
2,4,6-trichlorophenol	NA	1.39E+04	1.39E+04
2,6-dinitrotoluene	2.28E+03	1.43E+03	1.43E+03
3,3-dichlorobenzidine	NA	8.08E+02	8.08E+02
4-chloroaniline	9.10E+02	NA	9.10E+02
4-methyl-2-pentanone	1.79E+05	NA	1.79E+05
4-methylphenol	1.14E+03	NA	1.14E+03

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Table 1 (Cont.)

Constituent	HBRG HQ=0.2 (mg/kg)	HBRG ILCR=10^{-6} (mg/kg)	Initial HBRG (mg/kg)
4,4-ddd	NA	5.66E+03	5.66E+03
4,4-dde	NA	4.00E+03	4.00E+03
4,4-ddt	1.60E+02	4.00E+03	1.60E+02
acenaphthene	1.06E+05	NA	1.06E+05
acetone	2.24E+05	NA	2.24E+05
acrolein	NA	NA	NT
acrylonitrile	2.25E+03	9.57E+02	9.57E+02
aldrin	9.57E+00	7.99E+01	9.57E+00
alpha-bhc	NA	2.16E+02	2.16E+02
aniline	3.85E+05	1.70E+05	1.70E+05
anthracene	5.31E+04	NA	5.31E+04
antimony	1.18E+02	NA	1.18E+02
aroclor 1016	NA	NA	NT
aroclor 1254	1.14E+01	NA	1.14E+01
arsenic	1.16E+02	1.10E+03	1.16E+02
barium	3.30E+04	NA	3.30E+04
benzene	NA	9.42E+03	9.42E+03
benzidine	6.83E+02	1.94E+00	1.94E+00
benzoic acid	9.11E+05	NA	9.11E+05
benzo(a)anthracene	NA	6.28E+02	6.28E+02
benzo(a)pyrene	NA	6.28E+01	6.28E+01
benzo(b)fluoranthene	NA	6.28E+02	6.28E+02
benzo(k)fluoranthene	NA	6.28E+02	6.28E+02
benzyl alcohol	2.28E+05	NA	2.28E+05
benzyl chloride	NA	5.68E+03	5.68E+03
beryllium	2.04E+02	2.48E+08	2.04E+02
beta-bhc	NA	7.55E+02	7.55E+02
beta-chloronaphthalene	NA	NA	NT
bis(2-chloro-1-methylethyl)ether	NA	1.38E+04	1.38E+04
bis(2-chloroethyl)ether	NA	3.87E+02	3.87E+02
bis(2-ethylhexyl)phthalate	NA	1.15E+05	1.15E+05
bromodichloromethane	4.53E+03	7.42E+03	4.53E+03
bromoform	4.53E+03	1.22E+05	4.53E+03
bromomethane	NA	NA	NT

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Table 1 (Cont.)

Constituent	HBRG HQ=0.2 (mg/kg)	HBRG ILCR=10^{-6} (mg/kg)	Initial HBRG (mg/kg)
cadmium	2.15E+02	1.39E+08	2.15E+02
carbazole	NA	4.85E+04	4.85E+04
carbon disulfide	2.22E+04	NA	2.22E+04
carbon tetrachloride	NA	6.30E+03	6.30E+03
chlordane	1.37E+01	8.08E+02	1.37E+01
chlorobenzene	NA	NA	NT
chloroform	2.35E+03	3.26E+04	2.35E+03
chloromethane	NA	6.76E+04	6.76E+04
chromium iii	4.21E+05	NA	4.21E+05
chromium vi	1.06E+04	5.39E+03	5.39E+03
chrysene	NA	6.28E+03	6.28E+03
cis-1,2-dichloroethene	2.20E+04	NA	2.20E+04
copper	1.64E+04	NA	1.64E+04
cumene	8.24E+04	NA	8.24E+04
cyanide	9.14E+03	NA	9.14E+03
dibenzo(a,h)anthracene	NA	1.84E+02	1.84E+02
dibromochloromethane	4.41E+04	1.00E+04	1.00E+04
dichlorodifluoromethane	1.14E+05	NA	1.14E+05
dieldrin	1.60E+01	8.49E+01	1.60E+01
diethyl phthalate	1.82E+06	NA	1.82E+06
di-n-butylphthalate	2.28E+05	NA	2.28E+05
di-n-octylphthalate	4.55E+03	NA	4.55E+03
endosulfan	1.91E+03	NA	1.91E+03
endrin	9.58E+01	NA	9.58E+01
ethyl chloride	1.49E+07	NA	1.49E+07
ethylbenzene	NA	NA	NT
fluoranthene	9.11E+04	NA	9.11E+04
fluorene	9.11E+04	NA	9.11E+04
gamma-bhc	9.90E+02	1.28E+03	9.90E+02
heptachlor	1.06E+02	1.59E+02	1.06E+02
heptachlor epoxide	4.14E+00	1.04E+02	4.14E+00
hexachlorobenzene	NA	5.38E+02	5.38E+02
hexachlorobutadiene	NA	1.24E+04	1.24E+04
hexachlorocyclopentadiene	6.15E+03	NA	6.15E+03

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Table 1 (Cont.)

Constituent	HBRG HQ=0.2 (mg/kg)	HBRG ILCR=10^{-6} (mg/kg)	Initial HBRG (mg/kg)
hexachloroethane	2.27E+03	2.48E+04	2.27E+03
indeno(1,2,3-cd)pyrene	NA	8.08E+02	8.08E+02
isobutyl alcohol	6.76E+05	NA	6.76E+05
isophorone	4.55E+05	1.02E+06	4.55E+05
mercury	8.86E+01	NA	8.86E+01
methoxychlor	1.14E+03	NA	1.14E+03
methyl methacrylate	1.75E+04	NA	1.75E+04
methylene bromide	2.23E+04	NA	2.23E+04
methylene chloride	1.44E+04	7.24E+04	1.44E+04
methyl-tert-butyl ether	NA	NA	NT
molybdenum	1.62E+04	NA	1.62E+04
n-butylbenzyl phthalate	4.55E+04	NA	4.55E+04
nickel	3.12E+03	2.29E+09	3.12E+03
nitroaniline, o-	8.43E+05	NA	8.43E+05
nitrobenzene	1.14E+03	NA	1.14E+03
nitrosodiphenylamine, p-	NA	4.41E+04	4.41E+04
n-nitrosodimethylamine	NA	4.31E+01	4.31E+01
n-nitroso-di-n-propylamine	NA	1.38E+02	1.38E+02
n-nitrosodiphenylamine	NA	1.08E+05	1.08E+05
o-chlorotoluene	4.49E+04	NA	4.49E+04
p-chloro-m-cresol	4.55E+05	NA	4.55E+05
pentachlorophenol	3.98E+03	3.14E+04	3.98E+03
phenol	1.37E+05	NA	1.37E+05
pyrene	3.07E+04	NA	3.07E+04
selenium	2.37E+03	NA	2.37E+03
silver	1.69E+03	NA	1.69E+03
styrene	3.16E+07	NA	3.16E+07
tetrachloroethene	2.26E+04	1.89E+04	1.89E+04
toluene	4.72E+05	NA	4.72E+05
toxaphene	NA	8.08E+02	8.08E+02
trans-1,2-dichloroethene	4.39E+04	NA	4.39E+04
trichloroethene	NA	6.63E+04	6.63E+04
trichlorofluoromethane	1.56E+05	NA	1.56E+05
vanadium	1.09E+03	NA	1.09E+03

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Table 1 (Cont.)

Constituent	HBRG HQ=0.2 (mg/kg)	HBRG ILCR=10^{-6} (mg/kg)	Initial HBRG (mg/kg)
vinyl acetate	1.78E+05	NA	1.78E+05
vinyl chloride	NA	1.46E+03	1.46E+03
xylenes	4.52E+05	NA	4.52E+05
zinc	1.14E+05	NA	1.14E+05

Note:
NA - Not Applicable
NT - No Toxicity Data for Compound

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Table A
Summary of Unit Risk Characterization
Construction Worker
Via Incidental Ingestion of Soils

Intake Equation = $\frac{CS \times EF \times ED \times CF \times IR}{BW \times AT}$

IRs	Ingestion rate of soil (RAGS, 1989)	480	mg/day
CF	Conversion factor	1.0E-06	kg/mg
EF	Exposure frequency	20	d/year
EDn	Exposure duration for non-carcinogens	0.082	year
EDc	Exposure duration for carcinogens	0.082	year
BW	Body weight	70	kg
ATc	Average time for carcinogens (lifetime)	25550	day
ATn	Average time for non-carcinogens (EDn x 365)	30	day
CS	Concentration of chemicals in soil	(see table below)	

Chemical Concentrations

Compound	Concentration	Compound	Concentration
1-butanol	1.0E+00	2-butanone	1.0E+00
1,1-dichloroethane	1.0E+00	2-chlorophenol	1.0E+00
1,1-dichloroethene	1.0E+00	2-methylphenol	1.0E+00
1,1,1,2-tetrachloroethane	1.0E+00	2-naphthylamine	1.0E+00
1,1,2-trichloroethane	1.0E+00	2,4-dichlorophenol	1.0E+00
1,1,2,2-tetrachloroethane	1.0E+00	2,4-dimethylphenol	1.0E+00
1,2-dibromo-3-chloropropane	1.0E+00	2,4-dinitrophenol	1.0E+00
1,2-dibromoethane	1.0E+00	2,4-dinitrotoluene	1.0E+00
1,2-dichlorobenzene	1.0E+00	2,4,5-trichlorophenol	1.0E+00
1,2-dichloroethane	1.0E+00	2,4,6-trichlorophenol	1.0E+00
1,2-dichloropropane	1.0E+00	2,6-dinitrotoluene	1.0E+00
1,2-diphenylhydrazine	1.0E+00	3,3-dichlorobenzidine	1.0E+00
1,2,3-trichloropropane	1.0E+00	4-chloroaniline	1.0E+00
1,2,4-trichlorobenzene	1.0E+00	4-methyl-2-pentanone	1.0E+00
1,3-dichloropropene	1.0E+00		
1,4-dichlorobenzene	1.0E+00		

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Table A (cont.)
Summary of Unit Risk Characterization
Construction Worker
Via Incidental Ingestion of Soils

	Non-Carcinogenic Calculation		
Compound	CDI (mg/kg-d)	RfD (mg/kg-d)	UH (unitless)
1-butanol	3.75E-07	1.00E+00	3.75E-07
1,1-dichloroethane	3.75E-07	1.00E+00	3.75E-07
1,1-dichloroethene	3.75E-07	9.00E-03	4.17E-05
1,1,1,2-tetrachloroethane	3.75E-07	3.00E-02	1.25E-05
1,1,2-trichloroethane	3.75E-07	4.00E-02	9.37E-06
1,1,2,2-tetrachloroethane	3.75E-07	NA	NA
1,2-dibromo-3-chloropropane	3.75E-07	NA	NA
1,2-dibromoethane	3.75E-07	NA	NA
1,2-dichlorobenzene	3.75E-07	NA	NA
1,2-dichloroethane	3.75E-07	NA	NA
1,2-dichloropropane	3.75E-07	NA	NA
1,2-diphenylhydrazine	3.75E-07	NA	NA
1,2,3-trichloropropane	3.75E-07	6.00E-02	6.25E-06
1,2,4-trichlorobenzene	3.75E-07	1.00E-02	3.75E-05
1,3-dichloropropene	3.75E-07	3.00E-03	1.25E-04
1,4-dichlorobenzene	3.75E-07	NA	NA
2-butanone	3.75E-07	2.00E+00	1.87E-07
2-chlorophenol	3.75E-07	5.00E-02	7.50E-06
2-methylphenol	3.75E-07	5.00E-01	7.50E-07
2-naphthylamine	3.75E-07	NA	NA
2,4-dichlorophenol	3.75E-07	3.00E-03	1.25E-04
2,4-dimethylphenol	3.75E-07	2.00E-01	1.87E-06
2,4-dinitrophenol	3.75E-07	2.00E-03	1.87E-04
2,4-dinitrotoluene	3.75E-07	2.00E-03	1.87E-04
2,4,5-trichlorophenol	3.75E-07	1.00E+00	3.75E-07
2,4,6-trichlorophenol	3.75E-07	NA	NA
2,6-dinitrotoluene	3.75E-07	1.00E-02	3.75E-05
3,3-dichlorobenzidine	3.75E-07	NA	NA
4-chloroaniline	3.75E-07	4.00E-03	9.37E-05
4-methyl-2-pentanone	3.75E-07	8.00E-01	4.69E-07

	Carcinogenic Calculation		
Compound	CDI (mg/kg-d)	CSF $(mg/kg\text{-}d)^{-1}$	UR (unitless)
1-butanol	4.40E-10	NA	NA
1,1-dichloroethane	4.40E-10	5.70E-03	2.51E-12
1,1-dichloroethene	4.40E-10	6.00E-01	2.64E-10
1,1,1,2-tetrachloroethane	4.40E-10	2.60E-02	1.14E-11
1,1,2-trichloroethane	4.40E-10	7.20E-02	3.17E-11
1,1,2,2-tetrachloroethane	4.40E-10	2.70E-01	1.19E-10
1,2-dibromo-3-chloropropane	4.40E-10	7.00E+00	3.08E-09
1,2-dibromoethane	4.40E-10	3.60E+00	1.58E-09
1,2-dichlorobenzene	4.40E-10	NA	NA
1,2-dichloroethane	4.40E-10	7.00E-02	3.08E-11
1,2-dichloropropane	4.40E-10	6.30E-02	2.77E-11
1,2-diphenylhydrazine	4.40E-10	8.70E-01	3.83E-10
1,2,3-trichloropropane	4.40E-10	7.00E+00	3.08E-09
1,2,4-trichlorobenzene	4.40E-10	NA	NA
1,3-dichloropropene	4.40E-10	1.80E-01	7.92E-11
1,4-dichlorobenzene	4.40E-10	4.00E-02	1.76E-11
2-butanone	4.40E-10	NA	NA
2-chlorophenol	4.40E-10	NA	NA
2-methylphenol	4.40E-10	NA	NA
2-naphthylamine	4.40E-10	1.80E+00	7.92E-10
2,4-dichlorophenol	4.40E-10	NA	NA
2,4-dimethylphenol	4.40E-10	NA	NA
2,4-dinitrophenol	4.40E-10	NA	NA
2,4-dinitrotoluene	4.40E-10	3.10E-01	1.36E-10
2,4,5-trichlorophenol	4.40E-10	NA	NA
2,4,6-trichlorophenol	4.40E-10	7.00E-02	3.08E-11
2,6-dinitrotoluene	4.40E-10	6.80E-01	2.99E-10
3,3-dichlorobenzidine	4.40E-10	1.20E+00	5.28E-10
4-chloroaniline	4.40E-10	NA	NA
4-methyl-2-pentanone	4.40E-10	NA	NA

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Table B
Summary of Unit Risk Characterization
Construction Worker
Via Dermal Contact with Soils

Intake Equation = $\frac{CS \times CF \times EF \times ED \times AF \times ABS \times SA}{BW \times AT}$

SA	Surface area of exposed skin (50th percentile, hands only)	5800	cm^2/day
AF	Adherence Factor	1	mg/cm^2
ABS	Absorption factor (see table below)	csv	
CF	Conversion factor	1.0E-06	kg/mg
EF	Exposure frequency	20	d/year
EDn	Exposure duration for non-carcinogens	0	year
EDc	Exposure duration for carcinogens	0	year
BW	Body weight	70	kg
ATc	Average time for carcinogens (lifetime)	25550	day
ATn	Average time for non-carcinogens (EDn x 365)	30	day
CS	Concentration of chemicals in soil (see table below)	csv	

Chemical Concentrations

Compound	ABS (unitless)	Concentration (mg/kg)
1-butanol	NA	1.00E+00
1,1-dichloroethane	1.00E-01	1.00E+00
1,1-dichloroethene	1.00E-01	1.00E+00
1,1,1,2-tetrachloroethane	1.00E-01	1.00E+00
1,1,2-trichloroethane	1.00E-01	1.00E+00
1,1,2,2-tetrachloroethane	1.00E-01	1.00E+00
1,2-dibromo-3-chloropropane	1.00E-01	1.00E+00
1,2-dibromoethane	1.00E-01	1.00E+00
1,2-dichlorobenzene	1.00E-01	1.00E+00
1,2-dichloroethane	1.00E-01	1.00E+00
1,2-dichloropropane	1.00E-01	1.00E+00
1,2-diphenylhydrazine	1.00E-01	1.00E+00
1,2,3-trichloropropane	1.00E-01	1.00E+00
1,2,4-trichlorobenzene	1.00E-01	1.00E+00
1,3-dichloropropene	1.00E-01	1.00E+00
1,4-dichlorobenzene	1.00E-01	1.00E+00

Compound	ABS (unitless)	Concentration (mg/kg)
2-butanone	1.00E-01	1.00E+00
2-chlorophenol	1.00E-01	1.00E+00
2-methylphenol	1.00E-01	1.00E+00
2-naphthylamine	1.00E-01	1.00E+00
2,4-dichlorophenol	1.00E-01	1.00E+00
2,4-dimethylphenol	1.00E-01	1.00E+00
2,4-dinitrophenol	1.00E-01	1.00E+00
2,4-dinitrotoluene	1.00E-01	1.00E+00
2,4,5-trichlorophenol	1.00E-01	1.00E+00
2,4,6-trichlorophenol	1.00E-01	1.00E+00
2,6-dinitrotoluene	1.00E-01	1.00E+00
3,3-dichlorobenzidine	1.00E-01	1.00E+00
4-chloroaniline	1.00E-01	1.00E+00
4-methyl-2-pentanone	1.00E-01	1.00E+00

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Table B (cont.)
Summary of Unit Risk Characterization
Construction Worker
Via Dermal Contact with Soils

	Non-Carcinogenic Calculation		
Compound	CDI (mg/kg-d)	RfD (mg/kg-d)	UH (unitless)
1-butanol	NA	9.00E-01	NA
1,1-dichloroethane	4.53E-07	9.00E-01	5.03E-07
1,1-dichloroethene	4.53E-07	8.10E-03	5.59E-05
1,1,1,2-tetrachloroethane	4.53E-07	2.70E-02	1.68E-05
1,1,2-trichloroethane	4.53E-07	3.60E-02	1.26E-05
1,1,2,2-tetrachloroethane	4.53E-07	NA	NA
1,2-dibromo-3-chloropropane	4.53E-07	NA	NA
1,2-dibromoethane	4.53E-07	NA	NA
1,2-dichlorobenzene	4.53E-07	NA	NA
1,2-dichloroethane	4.53E-07	NA	NA
1,2-dichloropropane	4.53E-07	NA	NA
1,2-diphenylhydrazine	4.53E-07	NA	NA
1,2,3-trichloropropane	4.53E-07	5.40E-02	8.39E-06
1,2,4-trichlorobenzene	4.53E-07	9.00E-03	5.03E-05
1,3-dichloropropene	4.53E-07	2.70E-03	1.68E-04
1,4-dichlorobenzene	4.53E-07	NA	NA
2-butanone	4.53E-07	1.80E+00	2.52E-07
2-chlorophenol	4.53E-07	4.50E-02	1.01E-05
2-methylphenol	4.53E-07	4.50E-01	1.01E-06
2-naphthylamine	4.53E-07	NA	NA
2,4-dichlorophenol	4.53E-07	2.70E-03	1.68E-04
2,4-dimethylphenol	4.53E-07	1.80E-01	2.52E-06
2,4-dinitrophenol	4.53E-07	1.80E-03	2.52E-04
2,4-dinitrotoluene	4.53E-07	1.80E-03	2.52E-04
2,4,5-trichlorophenol	4.53E-07	9.00E-01	5.03E-07
2,4,6-trichlorophenol	4.53E-07	NA	NA
2,6-dinitrotoluene	4.53E-07	9.00E-03	5.03E-05
3,3-dichlorobenzidine	4.53E-07	NA	NA
4-chloroaniline	4.53E-07	3.60E-03	1.26E-04
4-methyl-2-pentanone	4.53E-07	7.20E-01	6.29E-07

	Carcinogenic Calculation		
Compound	CDI (mg/kg-d)	CSF (mg/kg-d)-1	UR (unitless)
1-butanol	NA	NA	NA
1,1-dichloroethane	5.32E-10	6.33E-03	3.37E-12
1,1-dichloroethene	5.32E-10	6.67E-01	3.55E-10
1,1,1,2-tetrachloroethane	5.32E-10	2.89E-02	1.54E-11
1,1,2-trichloroethane	5.32E-10	8.00E-02	4.25E-11
1,1,2,2-tetrachloroethane	5.32E-10	3.00E-01	1.60E-10
1,2-dibromo-3-chloropropane	5.32E-10	7.78E+00	4.14E-09
1,2-dibromoethane	5.32E-10	4.00E+00	2.13E-09
1,2-dichlorobenzene	5.32E-10	NA	NA
1,2-dichloroethane	5.32E-10	7.78E-02	4.14E-11
1,2-dichloropropane	5.32E-10	7.00E-02	3.72E-11
1,2-diphenylhydrazine	5.32E-10	9.67E-01	5.14E-10
1,2,3-trichloropropane	5.32E-10	7.78E+00	4.14E-09
1,2,4-trichlorobenzene	5.32E-10	NA	NA
1,3-dichloropropene	5.32E-10	2.00E-01	1.06E-10
1,4-dichlorobenzene	5.32E-10	4.44E-02	2.36E-11
2-butanone	5.32E-10	NA	NA
2-chlorophenol	5.32E-10	NA	NA
2-methylphenol	5.32E-10	NA	NA
2-naphthylamine	5.32E-10	2.00E+00	1.06E-09
2,4-dichlorophenol	5.32E-10	NA	NA
2,4-dimethylphenol	5.32E-10	NA	NA
2,4-dinitrophenol	5.32E-10	NA	NA
2,4-dinitrotoluene	5.32E-10	3.44E-01	1.83E-10
2,4,5-trichlorophenol	5.32E-10	NA	NA
2,4,6-trichlorophenol	5.32E-10	7.78E-02	4.14E-11
2,6-dinitrotoluene	5.32E-10	7.56E-01	4.02E-10
3,3-dichlorobenzidine	5.32E-10	1.33E+00	7.09E-10
4-chloroaniline	5.32E-10	NA	NA
4-methyl-2-pentanone	5.32E-10	NA	NA

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Table C
Summary of Unit Risk Characterization
Construction Worker
Via Inhalation of Particulates and Volatiles

Intake Equation = $\frac{CS \times (1/VF + 1/PEF) \times EF \times ED \times ET \times IR}{BW \times AT}$

IR	Inhalation rate of gases (RAGS, 1989)	2.5E+00	m_3/h
EF	Exposure frequency	2.0E+01	days/year
EDn	Exposure duration for non-carcinogens	8.2E-02	year
EDc	Exposure duration for carcinogens	8.2E-02	year
BW	Body weight	7.0E+01	kg
ATc	Average time for carcinogens (lifetime)	2.6E+04	days
ATn	Average time for non-carcinogens (EDn x 365)	3.0E+01	days
ET	Exposure time	1.0E+00	h/d
CS	Concentration of chemicals in soil	(see table below)	
VF	Volatilization Factor	(see table below)	
PEF	Particulate Emission Factor	(see table below)	

Chemical Concentrations

Compound	VF (m3/kg)	PEF (m3/kg)	Cs (mg/kg)
1-butanol	3.9E+04	4.8E+09	1.0E+00
1,1-dichloroethane	4.5E+04	4.8E+09	1.0E+00
1,1-dichloroethene	4.1E+04	4.8E+09	1.0E+00
1,1,1,2-tetrachloroethane	3.6E+05	4.8E+09	1.0E+00
1,1,2-trichloroethane	1.8E+05	4.8E+09	1.0E+00
1,1,2,2-tetrachloroethane	3.8E+05	4.8E+09	1.0E+00
1,2-dibromo-3-chloropropane	4.3E+05	4.8E+09	1.0E+00
1,2-dibromoethane	1.3E+05	4.8E+09	1.0E+00
1,2-dichlorobenzene	4.7E+05	4.8E+09	1.0E+00
1,2-dichloroethane	8.0E+04	4.8E+09	1.0E+00
1,2-dichloropropane	9.3E+03	4.8E+09	1.0E+00
1,2-diphenylhydrazine	2.7E+08	4.8E+09	1.0E+00
1,2,3-trichloropropane	3.2E+05	4.8E+09	1.0E+00
1,2,4-trichlorobenzene	2.0E+06	4.8E+09	1.0E+00
1,3-dichloropropene	1.1E+05	4.8E+09	1.0E+00
1,4-dichlorobenzene	7.8E+05	4.8E+09	1.0E+00

Compound	VF (m3/kg)	PEF (m3/kg)	Cs (mg/kg)
2-butanone	2.0E+05	4.8E+09	1.0E+00
2-chlorophenol	1.1E+06	4.8E+09	1.0E+00
2-methylphenol	2.7E+06	4.8E+09	1.0E+00
2-naphthylamine	3.2E+07	4.8E+09	1.0E+00
2,4-dichlorophenol	6.0E+06	4.8E+09	1.0E+00
2,4-dimethylphenol	1.0E+07	4.8E+09	1.0E+00
2,4-dinitrophenol	1.3E+08	4.8E+09	1.0E+00
2,4-dinitrotoluene	2.9E+07	4.8E+09	1.0E+00
2,4,5-trichlorophenol	3.3E+06	4.8E+09	1.0E+00
2,4,6-trichlorophenol	1.6E+07	4.8E+09	1.0E+00
2,6-dinitrotoluene	1.0E+07	4.8E+09	1.0E+00
3,3-dichlorobenzidine	5.6E+08	4.8E+09	1.0E+00
4-chloroaniline	2.8E+06	4.8E+09	1.0E+00
4-methyl-2-pentanone	3.8E+05	4.8E+09	1.0E+00

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Table C (cont.)
Summary of Unit Risk Characterization
Construction Worker
Via Inhalation of Particulates and Volatiles

	Non-Carcinogenic Calculation		
Compound	CDI (mg/kg-d)	RfD (mg/kg-d)	UH (unitless)
1-butanol	5.0E-08	1.0E+00	5.0E-08
1,1-dichloroethane	4.3E-08	1.4E+00	3.0E-08
1,1-dichloroethene	4.8E-08	9.0E-03	5.3E-06
1,1,1,2-tetrachloroethane	5.4E-09	3.0E-02	1.8E-07
1,1,2-trichloroethane	1.1E-08	4.0E-02	2.8E-07
1,1,2,2-tetrachloroethane	5.2E-09	NA	NA
1,2-dibromo-3-chloropropane	4.6E-09	5.7E-05	8.0E-05
1,2-dibromoethane	1.5E-08	5.7E-04	2.7E-05
1,2-dichlorobenzene	4.1E-09	NA	NA
1,2-dichloroethane	2.4E-08	NA	NA
1,2-dichloropropane	2.1E-07	3.7E-03	5.7E-05
1,2-diphenylhydrazine	7.7E-12	NA	NA
1,2,3-trichloropropane	6.2E-09	6.0E-02	1.0E-07
1,2,4-trichlorobenzene	9.7E-10	5.7E-01	1.7E-09
1,3-dichloropropene	1.7E-08	5.7E-03	3.0E-06
1,4-dichlorobenzene	2.5E-09	7.1E-01	3.5E-09
2-butanone	9.8E-09	2.9E+00	3.4E-09
2-chlorophenol	1.8E-09	5.0E-02	3.7E-08
2-methylphenol	7.2E-10	5.0E-01	1.4E-09
2-naphthylamine	6.1E-11	NA	NA
2,4-dichlorophenol	3.3E-10	3.0E-03	1.1E-07
2,4-dimethylphenol	1.9E-10	2.0E-01	9.5E-10
2,4-dinitrophenol	1.5E-11	2.0E-03	7.6E-09
2,4-dinitrotoluene	6.8E-11	2.0E-03	3.4E-08
2,4,5-trichlorophenol	5.9E-10	1.0E+00	5.9E-10
2,4,6-trichlorophenol	1.2E-10	NA	NA
2,6-dinitrotoluene	1.9E-10	1.0E-02	1.9E-08
3,3-dichlorobenzidine	3.9E-12	NA	NA
4-chloroaniline	6.9E-10	4.0E-03	1.7E-07
4-methyl-2-pentanone	5.1E-09	2.3E-01	2.2E-08

	Carcinogenic Calculation		
Compound	CDI (mg/kg-d)	CSF (mg/kg-d)-1	UR (unitless)
1-butanol	5.9E-11	NA	NA
1,1-dichloroethane	5.0E-11	5.7E-03	2.9E-13
1,1-dichloroethene	5.6E-11	1.2E+00	6.8E-11
1,1,1,2-tetrachloroethane	6.4E-12	2.6E-02	1.7E-13
1,1,2-trichloroethane	1.3E-11	7.2E-02	9.3E-13
1,1,2,2-tetrachloroethane	6.1E-12	2.7E-01	1.7E-12
1,2-dibromo-3-chloropropane	5.4E-12	7.0E+00	3.8E-11
1,2-dibromoethane	1.8E-11	2.5E-01	4.5E-12
1,2-dichlorobenzene	4.8E-12	NA	NA
1,2-dichloroethane	2.9E-11	7.0E-02	2.0E-12
1,2-dichloropropane	2.5E-10	6.3E-02	1.6E-11
1,2-diphenylhydrazine	9.1E-15	8.7E-01	7.9E-15
1,2,3-trichloropropane	7.3E-12	7.0E+00	5.1E-11
1,2,4-trichlorobenzene	1.1E-12	NA	NA
1,3-dichloropropene	2.0E-11	5.5E-02	1.1E-12
1,4-dichlorobenzene	2.9E-12	4.0E-02	1.2E-13
2-butanone	1.1E-11	NA	NA
2-chlorophenol	2.1E-12	NA	NA
2-methylphenol	8.4E-13	NA	NA
2-naphthylamine	7.2E-14	1.8E+00	1.3E-13
2,4-dichlorophenol	3.8E-13	NA	NA
2,4-dimethylphenol	2.2E-13	NA	NA
2,4-dinitrophenol	1.8E-14	NA	NA
2,4-dinitrotoluene	8.0E-14	3.1E-01	2.5E-14
2,4,5-trichlorophenol	7.0E-13	NA	NA
2,4,6-trichlorophenol	1.4E-13	7.0E-02	9.8E-15
2,6-dinitrotoluene	2.2E-13	6.8E-01	1.5E-13
3,3-dichlorobenzidine	4.6E-15	1.2E+00	5.5E-15
4-chloroaniline	8.1E-13	NA	NA
4-methyl-2-pentanone	6.0E-12	NA	NA

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Table D
Summary of Unit Risk Calculations
Construction Worker

Chemicals of Concern	Unit Hazard Quotient Soil Inhalation (unitless)	Unit Hazard Quotient Soil Dermal (unitless)	Unit Hazard Quotient Soil Ingestion (unitless)	Unit Hazard Quotient Soil Total (unitless)	Unit Incremental Lifetime Cancer Risk Soil Inhalation (unitless)	Unit Incremental Lifetime Cancer Risk Soil Dermal (unitless)	Unit Incremental Lifetime Cancer Risk Soil Ingestion (unitless)	Unit Incremental Lifetime Cancer Risk Soil Total (unitless)
1-butanol	4.98E-08	NA	3.75E-07	4.25E-07	NA	NA	NA	NA
1,1-dichloroethane	3.01E-08	5.03E-07	3.75E-07	9.08E-07	2.88E-13	3.37E-12	2.51E-12	6.16E-12
1,1-dichloroethene	5.34E-06	5.59E-05	4.17E-05	1.03E-04	6.77E-11	3.55E-10	2.64E-10	6.86E-10
1,1,1,2-tetrachloroethane	1.81E-07	1.68E-05	1.25E-05	2.95E-05	1.65E-13	1.54E-11	1.14E-11	2.70E-11
1,1,2-trichloroethane	2.75E-07	1.26E-05	9.37E-06	2.22E-05	9.30E-13	4.25E-11	3.17E-11	7.52E-11
1,1,2,2-tetrachloroethane	NA	NA	NA	NA	1.65E-12	1.60E-10	1.19E-10	2.80E-10
1,2-dibromo-3-chloropropane	8.01E-05	NA	NA	8.01E-05	3.76E-11	4.14E-09	3.08E-09	7.26E-09
1,2-dibromoethane	2.71E-05	NA	NA	2.71E-05	4.54E-12	2.13E-09	1.58E-09	3.72E-09
1,2-dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA
1,2-dichloroethane	NA	NA	NA	NA	2.01E-12	4.14E-11	3.08E-11	7.42E-11
1,2-dichloropropane	5.67E-05	NA	NA	5.67E-05	1.56E-11	3.72E-11	2.77E-11	8.05E-11
1,2-diphenylhydrazine	NA	NA	NA	NA	7.87E-15	5.14E-10	3.83E-10	8.97E-10
1,2,3-trichloropropane	1.03E-07	8.39E-06	6.25E-06	1.47E-05	5.09E-11	4.14E-09	3.08E-09	7.27E-09
1,2,4-trichlorobenzene	1.70E-09	5.03E-05	3.75E-05	8.78E-05	NA	NA	NA	NA
1,3-dichloropropene	3.05E-06	1.68E-04	1.25E-04	2.96E-04	1.12E-12	1.06E-10	7.92E-11	1.87E-10
1,4-dichlorobenzene	3.50E-09	NA	NA	3.50E-09	1.18E-13	2.36E-11	1.76E-11	4.14E-11
2-butanone	3.42E-09	2.52E-07	1.87E-07	4.42E-07	NA	NA	NA	NA
2-chlorophenol	3.66E-08	1.01E-05	7.50E-06	1.76E-05	NA	NA	NA	NA
2-methylphenol	1.44E-09	1.01E-06	7.50E-07	1.76E-06	NA	NA	NA	NA
2-naphthylamine	NA	NA	NA	NA	1.30E-13	1.06E-09	7.92E-10	1.86E-09
2,4-dichlorophenol	1.08E-07	1.68E-04	1.25E-04	2.93E-04	NA	NA	NA	NA
2,4-dimethylphenol	9.48E-10	2.52E-06	1.87E-06	4.39E-06	NA	NA	NA	NA
2,4-dinitrophenol	7.60E-09	2.52E-04	1.87E-04	4.39E-04	NA	NA	NA	NA
2,4-dinitrotoluene	3.42E-08	2.52E-04	1.87E-04	4.39E-04	2.49E-14	1.83E-10	1.36E-10	3.20E-10
2,4,5-trichlorophenol	5.95E-10	5.03E-07	3.75E-07	8.79E-07	NA	NA	NA	NA
2,4,6-trichlorophenol	NA	NA	NA	NA	9.82E-15	4.14E-11	3.08E-11	7.22E-11
2,6-dinitrotoluene	1.89E-08	5.03E-05	3.75E-05	8.78E-05	1.51E-13	4.02E-10	2.99E-10	7.01E-10
3,3-dichlorobenzidine	NA	NA	NA	NA	5.48E-15	7.09E-10	5.28E-10	1.24E-09
4-chloroaniline	1.74E-07	1.26E-04	9.37E-05	2.20E-04	NA	NA	NA	NA
4-methyl-2-pentanone	2.24E-08	6.29E-07	4.69E-07	1.12E-06	NA	NA	NA	NA

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Table E
Summary of Health-Based Soil Concentrations
Via Construction Worker Scenario

Chemicals of Concern	Hazard Quotient: Soil (mg/kg) Total Unit HQ (unitless)	Hazard Quotient: Soil (mg/kg) Scaled Soil Concentration HQ=0.2	Hazard Quotient: Soil (mg/kg) Risk based Concentration HQ=0.2	Incremental Lifetime Cancer Risk: Soil (mg/kg) Total Unit ILCR (unitless)	Incremental Lifetime Cancer Risk: Soil (mg/kg) Scaled Soil Concentration ILCR=1E-06	Incremental Lifetime Cancer Risk: Soil (mg/kg) Risk based Concentration ILCR=1E-06
1-butanol	4.25E-07	4.71E+05	4.71E+05	NA	NA	NA
1,1-dichloroethane	9.08E-07	2.20E+05	2.20E+05	6.16E-12	1.62E+05	1.62E+05
1,1-dichloroethene	1.03E-04	1.94E+03	1.94E+03	6.86E-10	1.46E+03	1.46E+03
1,1,1,2-tetrachloroethane	2.95E-05	6.79E+03	6.79E+03	2.70E-11	3.71E+04	3.71E+04
1,1,2-trichloroethane	2.22E-05	9.00E+03	9.00E+03	7.52E-11	1.33E+04	1.33E+04
1,1,2,2-tetrachloroethane	NA	NA	NA	2.80E-10	3.57E+03	3.57E+03
1,2-dibromo-3-chloropropane	8.01E-05	2.50E+03	2.50E+03	7.26E-09	1.38E+02	1.38E+02
1,2-dibromoethane	2.71E-05	7.38E+03	7.38E+03	3.72E-09	2.69E+02	2.69E+02
1,2-dichlorobenzene	NA	NA	NA	NA	NA	NA
1,2-dichloroethane	NA	NA	NA	7.42E-11	1.35E+04	1.35E+04
1,2-dichloropropane	5.67E-05	3.53E+03	3.53E+03	8.05E-11	1.24E+04	1.24E+04
1,2-diphenylhydrazine	NA	NA	NA	8.97E-10	1.11E+03	1.11E+03
1,2,3-trichloropropane	1.47E-05	1.36E+04	1.36E+04	7.27E-09	1.38E+02	1.38E+02
1,2,4-trichlorobenzene	8.78E-05	2.28E+03	2.28E+03	NA	NA	NA
1,3-dichloropropene	2.96E-04	6.76E+02	6.76E+02	1.87E-10	5.36E+03	5.36E+03
1,4-dichlorobenzene	3.50E-09	5.71E+07	5.71E+07	4.14E-11	2.42E+04	2.42E+04
2-butanone	4.42E-07	4.52E+05	4.52E+05	NA	NA	NA
2-chlorophenol	1.76E-05	1.14E+04	1.14E+04	NA	NA	NA
2-methylphenol	1.76E-06	1.14E+05	1.14E+05	NA	NA	NA
2-naphthylamine	NA	NA	NA	1.86E-09	5.39E+02	5.39E+02
2,4-dichlorophenol	2.93E-04	6.83E+02	6.83E+02	NA	NA	NA
2,4-dimethylphenol	4.39E-06	4.55E+04	4.55E+04	NA	NA	NA
2,4-dinitrophenol	4.39E-04	4.56E+02	4.56E+02	NA	NA	NA
2,4-dinitrotoluene	4.39E-04	4.55E+02	4.55E+02	3.20E-10	3.13E+03	3.13E+03
2,4,5-trichlorophenol	8.79E-07	2.28E+05	2.28E+05	NA	NA	NA
2,4,6-trichlorophenol	NA	NA	NA	7.22E-11	1.39E+04	1.39E+04
2,6-dinitrotoluene	8.78E-05	2.28E+03	2.28E+03	7.01E-10	1.43E+03	1.43E+03
3,3-dichlorobenzidine	NA	NA	NA	1.24E-09	8.08E+02	8.08E+02
4-chloroaniline	2.20E-04	9.10E+02	9.10E+02	NA	NA	NA
4-methyl-2-pentanone	1.12E-06	1.79E+05	1.79E+05	NA	NA	NA

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Table A
Summary of Unit Risk Characterization
Construction Worker
Via Incidental Ingestion of Soils

Intake Equation = $\frac{CS \times EF \times ED \times CF \times IR}{BW \times AT}$

IRs	Ingestion rate of soil (RAGS, 1989)	480	mg/day
CF	Conversion factor	1.0E-06	kg/mg
EF	Exposure frequency	20	d/year
EDn	Exposure duration for non-carcinogens	0.082	year
EDc	Exposure duration for carcinogens	0.082	year
BW	Body weight	70	kg
ATc	Average time for carcinogens (lifetime)	25550	day
ATn	Average time for non-carcinogens (EDn x 365)	30	day
CS	Concentration of chemicals in soil	(see table below)	

Chemical Concentrations

Compound	Concentration
4-methylphenol	1.0E+00
4,4-ddd	1.0E+00
4,4-dde	1.0E+00
4,4-ddt	1.0E+00
acenaphthene	1.0E+00
acetone	1.0E+00
acrolein	1.0E+00
acrylonitrile	1.0E+00
aldrin	1.0E+00
alpha-bhc	1.0E+00
aniline	1.0E+00
anthracene	1.0E+00
antimony	1.0E+00
aroclor 1016	1.0E+00
aroclor 1254	1.0E+00
arsenic	1.0E+00

Compound	Concentration
barium	1.0E+00
benzene	1.0E+00
benzidine	1.0E+00
benzoic acid	1.0E+00
benzo(a)anthracene	1.0E+00
benzo(a)pyrene	1.0E+00
benzo(b)fluoranthene	1.0E+00
benzo(k)fluoranthene	1.0E+00
benzyl alcohol	1.0E+00
benzyl chloride	1.0E+00
beryllium	1.0E+00
beta-bhc	1.0E+00
beta-chloronaphthalene	1.0E+00
bis(2-chloro-1-methylethyl)ether	1.0E+00

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Table A (cont.)
Summary of Unit Risk Characterization
Construction Worker
Via Incidental Ingestion of Soils

	Non-Carcinogenic Calculation		
Compound	CDI (mg/kg-d)	RfD (mg/kg-d)	UH (unitless)
4-methylphenol	3.75E-07	5.00E-03	7.50E-05
4,4-ddd	3.75E-07	NA	NA
4,4-dde	3.75E-07	NA	NA
4,4-ddt	3.75E-07	5.00E-04	7.50E-04
acenaphthene	3.75E-07	6.00E-01	6.25E-07
acetone	3.75E-07	1.00E+00	3.75E-07
acrolein	3.75E-07	NA	NA
acrylonitrile	3.75E-07	1.00E-02	3.75E-05
aldrin	3.75E-07	3.00E-05	1.25E-02
alpha-bhc	3.75E-07	NA	NA
aniline	3.75E-07	NA	NA
anthracene	3.75E-07	3.00E-01	1.25E-06
antimony	3.75E-07	4.00E-04	9.37E-04
aroclor 1016	3.75E-07	NA	NA
aroclor 1254	3.75E-07	5.00E-05	7.50E-03
arsenic	3.75E-07	3.00E-04	1.25E-03
barium	3.75E-07	7.00E-02	5.36E-06
benzene	3.75E-07	NA	NA
benzidine	3.75E-07	3.00E-03	1.25E-04
benzoic acid	3.75E-07	4.00E+00	9.37E-08
benzo(a)anthracene	3.75E-07	NA	NA
benzo(a)pyrene	3.75E-07	NA	NA
benzo(b)fluoranthene	3.75E-07	NA	NA
benzo(k)fluoranthene	3.75E-07	NA	NA
benzyl alcohol	3.75E-07	1.00E+00	3.75E-07
benzyl chloride	3.75E-07	NA	NA
beryllium	3.75E-07	5.00E-03	7.50E-05
beta-bhc	3.75E-07	NA	NA
beta-chloronaphthalene	3.75E-07	NA	NA
bis(2-chloro-1-methylethyl)ether	3.75E-07	NA	NA

	Carcinogenic Calculation		
Compound	CDI (mg/kg-d)	CSF $(mg/kg\text{-}d)^{-1}$	UR (unitless)
4-methylphenol	4.40E-10	NA	NA
4,4-ddd	4.40E-10	2.40E-01	1.06E-10
4,4-dde	4.40E-10	3.40E-01	1.50E-10
4,4-ddt	4.40E-10	3.40E-01	1.50E-10
acenaphthene	4.40E-10	NA	NA
acetone	4.40E-10	NA	NA
acrolein	4.40E-10	NA	NA
acrylonitrile	4.40E-10	1.00E+00	4.40E-10
aldrin	4.40E-10	1.70E+01	7.48E-09
alpha-bhc	4.40E-10	6.30E+00	2.77E-09
aniline	4.40E-10	5.70E-03	2.51E-12
anthracene	4.40E-10	NA	NA
antimony	4.40E-10	NA	NA
aroclor 1016	4.40E-10	NA	NA
aroclor 1254	4.40E-10	NA	NA
arsenic	4.40E-10	1.50E+00	6.60E-10
barium	4.40E-10	NA	NA
benzene	4.40E-10	1.00E-01	4.40E-11
benzidine	4.40E-10	5.00E+02	2.20E-07
benzoic acid	4.40E-10	NA	NA
benzo(a)anthracene	4.40E-10	1.20E+00	5.28E-10
benzo(a)pyrene	4.40E-10	1.20E+01	5.28E-09
benzo(b)fluoranthene	4.40E-10	1.20E+00	5.28E-10
benzo(k)fluoranthene	4.40E-10	1.20E+00	5.28E-10
benzyl alcohol	4.40E-10	NA	NA
benzyl chloride	4.40E-10	1.70E-01	7.48E-11
beryllium	4.40E-10	NA	NA
beta-bhc	4.40E-10	1.80E+00	7.92E-10
beta-chloronaphthalene	4.40E-10	NA	NA
bis(2-chloro-1-methylethyl)ether	4.40E-10	7.00E-02	3.08E-11

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Table B
Summary of Unit Risk Characterization
Construction Worker
Via Dermal Contact with Soils

Intake Equation = $\frac{CS \times CF \times EF \times ED \times AF \times ABS \times SA}{BW \times AT}$

SA	Surface area of exposed skin (50th percentile, hands only)	5800	cm^2/day
AF	Adherence Factor	1	mg/cm^2
ABS	Absorption factor (see table below)	csv	
CF	Conversion factor	1.0E-06	kg/mg
EF	Exposure frequency	20	d/year
EDn	Exposure duration for non-carcinogens	0	year
EDc	Exposure duration for carcinogens	0	year
BW	Body weight	70	kg
ATc	Average time for carcinogens (lifetime)	25550	day
ATn	Average time for non-carcinogens (EDn x 365)	30	day
CS	Concentration of chemicals in soil (see table below)	csv	

Chemical Concentrations

Compound	ABS (unitless)	Concentration (mg/kg)
4-methylphenol	1.00E-01	1.00E+00
4,4-ddd	5.00E-02	1.00E+00
4,4-dde	5.00E-02	1.00E+00
4,4-ddt	5.00E-02	1.00E+00
acenaphthene	1.50E-01	1.00E+00
acetone	1.00E-01	1.00E+00
acrolein	1.00E-01	1.00E+00
acrylonitrile	1.00E-01	1.00E+00
aldrin	5.00E-02	1.00E+00
alpha-bhc	5.00E-02	1.00E+00
aniline	1.00E-01	1.00E+00
anthracene	1.50E-01	1.00E+00
antimony	1.00E-02	1.00E+00
aroclor 1016	1.00E-01	1.00E+00
aroclor 1254	1.00E-01	1.00E+00
arsenic	3.00E-02	1.00E+00

Compound	ABS (unitless)	Concentration (mg/kg)
barium	1.00E-02	1.00E+00
benzene	1.00E-01	1.00E+00
benzidine	1.00E-01	1.00E+00
benzoic acid	1.00E-01	1.00E+00
benzo(a)anthracene	1.50E-01	1.00E+00
benzo(a)pyrene	1.50E-01	1.00E+00
benzo(b)fluoranthene	1.50E-01	1.00E+00
benzo(k)fluoranthene	1.50E-01	1.00E+00
benzyl alcohol	1.00E-01	1.00E+00
benzyl chloride	1.00E-01	1.00E+00
beryllium	1.00E-02	1.00E+00
beta-bhc	5.00E-02	1.00E+00
beta-chloronaphthalene	1.00E-01	1.00E+00
bis(2-chloro-1-methylethyl)ether	1.00E-01	1.00E+00

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Table B (cont.)
Summary of Unit Risk Characterization
Construction Worker
Via Dermal Contact with Soils

	Non-Carcinogenic Calculation		
Compound	CDI (mg/kg-d)	RfD (mg/kg-d)	UH (unitless)
4-methylphenol	4.53E-07	4.50E-03	1.01E-04
4,4-ddd	2.26E-07	NA	NA
4,4-dde	2.26E-07	NA	NA
4,4-ddt	2.26E-07	4.50E-04	5.03E-04
acenaphthene	6.79E-07	5.40E-01	1.26E-06
acetone	4.53E-07	9.00E-01	5.03E-07
acrolein	4.53E-07	NA	NA
acrylonitrile	4.53E-07	9.00E-03	5.03E-05
aldrin	2.26E-07	2.70E-05	8.39E-03
alpha-bhc	2.26E-07	NA	NA
aniline	4.53E-07	NA	NA
anthracene	6.79E-07	2.70E-01	2.52E-06
antimony	4.53E-08	6.00E-05	7.55E-04
aroclor 1016	4.53E-07	NA	NA
aroclor 1254	4.53E-07	4.50E-05	1.01E-02
arsenic	1.36E-07	2.85E-04	4.77E-04
barium	4.53E-08	6.37E-02	7.11E-07
benzene	4.53E-07	NA	NA
benzidine	4.53E-07	2.70E-03	1.68E-04
benzoic acid	4.53E-07	3.60E+00	1.26E-07
benzo(a)anthracene	6.79E-07	NA	NA
benzo(a)pyrene	6.79E-07	NA	NA
benzo(b)fluoranthene	6.79E-07	NA	NA
benzo(k)fluoranthene	6.79E-07	NA	NA
benzyl alcohol	4.53E-07	9.00E-01	5.03E-07
benzyl chloride	4.53E-07	NA	NA
beryllium	4.53E-08	5.00E-05	9.06E-04
beta-bhc	2.26E-07	NA	NA
beta-chloronaphthalene	4.53E-07	NA	NA
bis(2-chloro-1-methylethyl)ether	4.53E-07	NA	NA

	Carcinogenic Calculation		
Compound	CDI (mg/kg-d)	CSF $(mg/kg\text{-}d)^{-1}$	UR (unitless)
4-methylphenol	5.32E-10	NA	NA
4,4-ddd	2.66E-10	2.67E-01	7.09E-11
4,4-dde	2.66E-10	3.78E-01	1.00E-10
4,4-ddt	2.66E-10	3.78E-01	1.00E-10
acenaphthene	7.98E-10	NA	NA
acetone	5.32E-10	NA	NA
acrolein	5.32E-10	NA	NA
acrylonitrile	5.32E-10	1.11E+00	5.91E-10
aldrin	2.66E-10	1.89E+01	5.02E-09
alpha-bhc	2.66E-10	7.00E+00	1.86E-09
aniline	5.32E-10	6.33E-03	3.37E-12
anthracene	7.98E-10	NA	NA
antimony	5.32E-11	NA	NA
aroclor 1016	5.32E-10	NA	NA
aroclor 1254	5.32E-10	NA	NA
arsenic	1.60E-10	1.58E+00	2.52E-10
barium	5.32E-11	NA	NA
benzene	5.32E-10	1.11E-01	5.91E-11
benzidine	5.32E-10	5.56E+02	2.95E-07
benzoic acid	5.32E-10	NA	NA
benzo(a)anthracene	7.98E-10	1.33E+00	1.06E-09
benzo(a)pyrene	7.98E-10	1.33E+01	1.06E-08
benzo(b)fluoranthene	7.98E-10	1.33E+00	1.06E-09
benzo(k)fluoranthene	7.98E-10	1.33E+00	1.06E-09
benzyl alcohol	5.32E-10	NA	NA
benzyl chloride	5.32E-10	1.89E-01	1.00E-10
beryllium	5.32E-11	NA	NA
beta-bhc	2.66E-10	2.00E+00	5.32E-10
beta-chloronaphthalene	5.32E-10	NA	NA
bis(2-chloro-1-methylethyl)ether	5.32E-10	7.78E-02	4.14E-11

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Table C
Summary of Unit Risk Characterization
Construction Worker
Via Inhalation of Particulates and Volatiles

Intake Equation = $\frac{CS \times (1/VF + 1/PEF) \times EF \times ED \times ET \times IR}{BW \times AT}$

IR	Inhalation rate of gases (RAGS, 1989)	2.5E+00	m3/h
EF	Exposure frequency	2.0E+01	days/year
EDn	Exposure duration for non-carcinogens	8.2E-02	year
EDc	Exposure duration for carcinogens	8.2E-02	year
BW	Body weight	7.0E+01	kg
ATc	Average time for carcinogens (lifetime)	2.6E+04	days
ATn	Average time for non-carcinogens (EDn x 365)	3.0E+01	days
ET	Exposure time	1.0E+00	h/d
CS	Concentration of chemicals in soil	(see table below)	
VF	Volatilization Factor	(see table below)	
PEF	Particulate Emission Factor	(see table below)	

Chemical Concentrations

Compound	VF (m3/kg)	PEF (m3/kg)	Cs (mg/kg)
4-methylphenol	6.3E+06	4.8E+09	1.0E+00
4,4-ddd	2.9E+08	4.8E+09	1.0E+00
4,4-dde	1.8E+07	4.8E+09	1.0E+00
4,4-ddt	1.6E+08	4.8E+09	1.0E+00
acenaphthene	3.6E+06	4.8E+09	1.0E+00
acetone	1.5E+05	4.8E+09	1.0E+00
acrolein	2.6E+05	4.8E+09	1.0E+00
acrylonitrile	1.6E+05	4.8E+09	1.0E+00
aldrin	1.3E+07	4.8E+09	1.0E+00
alpha-bhc	2.3E+07	4.8E+09	1.0E+00
aniline	1.3E+07	4.8E+09	1.0E+00
anthracene	1.5E+07	4.8E+09	1.0E+00
antimony	NA	4.8E+09	1.0E+00
aroclor 1016	7.2E+06	4.8E+09	1.0E+00
aroclor 1254	1.2E+07	4.8E+09	1.0E+00
arsenic	NA	4.8E+09	1.0E+00

Compound	VF (m3/kg)	PEF (m3/kg)	Cs (mg/kg)
barium	NA	4.8E+09	1.0E+00
benzene	7.6E+04	4.8E+09	1.0E+00
benzidine	5.2E+06	4.8E+09	1.0E+00
benzoic acid	9.0E+06	4.8E+09	1.0E+00
benzo(a)anthracene	3.9E+08	4.8E+09	1.0E+00
benzo(a)pyrene	3.6E+08	4.8E+09	1.0E+00
benzo(b)fluoranthene	2.1E+08	4.8E+09	1.0E+00
benzo(k)fluoranthene	1.1E+08	4.8E+09	1.0E+00
benzyl alcohol	2.5E+06	4.8E+09	1.0E+00
benzyl chloride	4.9E+05	4.8E+09	1.0E+00
beryllium	NA	4.8E+09	1.0E+00
beta-bhc	7.9E+07	4.8E+09	1.0E+00
beta-chloronaphthalene	1.2E+06	4.8E+09	1.0E+00
bis(2-chloro-1-methylethyl)et	6.0E+05	4.8E+09	1.0E+00

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Table C (cont.)
Summary of Unit Risk Characterization
Construction Worker
Via Inhalation of Particulates and Volatiles

	Non-Carcinogenic Calculation		
Compound	CDI (mg/kg-d)	RfD (mg/kg-d)	UH (unitless)
4-methylphenol	3.1E-10	5.0E-03	6.3E-08
4,4-ddd	7.2E-12	NA	NA
4,4-dde	1.1E-10	NA	NA
4,4-ddt	1.2E-11	5.0E-04	2.5E-08
acenaphthene	5.4E-10	6.0E-01	9.0E-10
acetone	1.3E-08	1.0E+00	1.3E-08
acrolein	7.5E-09	NA	NA
acrylonitrile	1.2E-08	1.0E-02	1.2E-06
aldrin	1.5E-10	3.0E-05	5.1E-06
alpha-bhc	8.7E-11	NA	NA
aniline	1.5E-10	2.9E-04	5.2E-07
anthracene	1.3E-10	3.0E-01	4.4E-10
antimony	4.1E-13	4.0E-04	1.0E-09
aroclor 1016	2.7E-10	NA	NA
aroclor 1254	1.7E-10	5.0E-05	3.3E-06
arsenic	4.1E-13	3.0E-04	1.4E-09
barium	4.1E-13	1.4E-03	2.9E-10
benzene	2.6E-08	NA	NA
benzidine	3.8E-10	3.0E-03	1.3E-07
benzoic acid	2.2E-10	4.0E+00	5.5E-11
benzo(a)anthracene	5.4E-12	NA	NA
benzo(a)pyrene	5.8E-12	NA	NA
benzo(b)fluoranthene	9.8E-12	NA	NA
benzo(k)fluoranthene	1.8E-11	NA	NA
benzyl alcohol	7.9E-10	1.0E+00	7.9E-10
benzyl chloride	4.0E-09	NA	NA
beryllium	4.1E-13	5.0E-03	8.2E-11
beta-bhc	2.5E-11	NA	NA
beta-chloronaphthalene	1.6E-09	NA	NA
bis(2-chloro-1-methylethyl)ether	3.3E-09	NA	NA

	Carcinogenic Calculation		
Compound	CDI (mg/kg-d)	CSF $(mg/kg\text{-}d)^{-1}$	UR (unitless)
4-methylphenol	3.7E-13	NA	NA
4,4-ddd	8.4E-15	2.4E-01	2.0E-15
4,4-dde	1.3E-13	3.4E-01	4.3E-14
4,4-ddt	1.4E-14	3.4E-01	4.9E-15
acenaphthene	6.3E-13	NA	NA
acetone	1.6E-11	NA	NA
acrolein	8.8E-12	NA	NA
acrylonitrile	1.4E-11	1.0E+00	1.4E-11
aldrin	1.8E-13	1.7E+01	3.0E-12
alpha-bhc	1.0E-13	6.3E+00	6.4E-13
aniline	1.7E-13	5.7E-03	9.9E-16
anthracene	1.5E-13	NA	NA
antimony	4.8E-16	NA	NA
aroclor 1016	3.2E-13	NA	NA
aroclor 1254	2.0E-13	NA	NA
arsenic	4.8E-16	1.2E+01	5.8E-15
barium	4.8E-16	NA	NA
benzene	3.0E-11	1.0E-01	3.0E-12
benzidine	4.4E-13	5.0E+02	2.2E-10
benzoic acid	2.6E-13	NA	NA
benzo(a)anthracene	6.3E-15	3.9E-01	2.5E-15
benzo(a)pyrene	6.8E-15	3.9E+00	2.7E-14
benzo(b)fluoranthene	1.1E-14	3.9E-01	4.5E-15
benzo(k)fluoranthene	2.1E-14	3.9E-01	8.0E-15
benzyl alcohol	9.2E-13	NA	NA
benzyl chloride	4.7E-12	1.7E-01	8.0E-13
beryllium	4.8E-16	8.4E+00	4.0E-15
beta-bhc	3.0E-14	1.8E+00	5.3E-14
beta-chloronaphthalene	1.9E-12	NA	NA
bis(2-chloro-1-methylethyl)ether	3.8E-12	3.5E-02	1.3E-13

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Table D
Summary of Unit Risk Calculations
Construction Worker

Chemicals of Concern	Unit Hazard Quotient Soil Inhalation (unitless)	Unit Hazard Quotient Soil Dermal (unitless)	Unit Hazard Quotient Soil Ingestion (unitless)	Unit Hazard Quotient Soil Total (unitless)	Unit Incremental Lifetime Cancer Risk Soil Inhalation (unitless)	Unit Incremental Lifetime Cancer Risk Soil Dermal (unitless)	Unit Incremental Lifetime Cancer Risk Soil Ingestion (unitless)	Unit Incremental Lifetime Cancer Risk Soil Total (unitless)
4-methylphenol	6.25E-08	1.01E-04	7.50E-05	1.76E-04	NA	NA	NA	NA
4,4-ddd	NA	NA	NA	NA	2.02E-15	7.09E-11	1.06E-10	1.77E-10
4,4-dde	NA	NA	NA	NA	4.28E-14	1.00E-10	1.50E-10	2.50E-10
4,4-ddt	2.47E-08	5.03E-04	7.50E-04	1.25E-03	4.92E-15	1.00E-10	1.50E-10	2.50E-10
acenaphthene	8.97E-10	1.26E-06	6.25E-07	1.88E-06	NA	NA	NA	NA
acetone	1.34E-08	5.03E-07	3.75E-07	8.92E-07	NA	NA	NA	NA
acrolein	NA	NA	NA	NA	NA	NA	NA	NA
acrylonitrile	1.20E-06	5.03E-05	3.75E-05	8.90E-05	1.41E-11	5.91E-10	4.40E-10	1.05E-09
aldrin	5.05E-06	8.39E-03	1.25E-02	2.09E-02	3.03E-12	5.02E-09	7.48E-09	1.25E-08
alpha-bhc	NA	NA	NA	NA	6.43E-13	1.86E-09	2.77E-09	4.64E-09
aniline	5.19E-07	NA	NA	5.19E-07	9.93E-16	3.37E-12	2.51E-12	5.88E-12
anthracene	4.37E-10	2.52E-06	1.25E-06	3.77E-06	NA	NA	NA	NA
antimony	1.02E-09	7.55E-04	9.37E-04	1.69E-03	NA	NA	NA	NA
aroclor 1016	NA	NA	NA	NA	NA	NA	NA	NA
aroclor 1254	3.32E-06	1.01E-02	7.50E-03	1.76E-02	NA	NA	NA	NA
arsenic	1.36E-09	4.77E-04	1.25E-03	1.73E-03	5.76E-15	2.52E-10	6.60E-10	9.12E-10
barium	2.86E-10	7.11E-07	5.36E-06	6.07E-06	NA	NA	NA	NA
benzene	NA	NA	NA	NA	3.00E-12	5.91E-11	4.40E-11	1.06E-10
benzidine	1.25E-07	1.68E-04	1.25E-04	2.93E-04	2.21E-10	2.95E-07	2.20E-07	5.16E-07
benzoic acid	5.46E-11	1.26E-07	9.37E-08	2.20E-07	NA	NA	NA	NA
benzo(a)anthracene	NA	NA	NA	NA	2.47E-15	1.06E-09	5.28E-10	1.59E-09
benzo(a)pyrene	NA	NA	NA	NA	2.67E-14	1.06E-08	5.28E-09	1.59E-08
benzo(b)fluoranthene	NA	NA	NA	NA	4.48E-15	1.06E-09	5.28E-10	1.59E-09
benzo(k)fluoranthene	NA	NA	NA	NA	8.03E-15	1.06E-09	5.28E-10	1.59E-09
benzyl alcohol	7.85E-10	5.03E-07	3.75E-07	8.79E-07	NA	NA	NA	NA
benzyl chloride	NA	NA	NA	NA	7.99E-13	1.00E-10	7.48E-11	1.76E-10
beryllium	8.18E-11	9.06E-04	7.50E-05	9.81E-04	4.03E-15	NA	NA	4.03E-15
beta-bhc	NA	NA	NA	NA	5.31E-14	5.32E-10	7.92E-10	1.32E-09
beta-chloronaphthalene	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-chloro-1-methylethyl)ether	NA	NA	NA	NA	1.34E-13	4.14E-11	3.08E-11	7.23E-11

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Table E
Summary of Health-Based Soil Concentrations Via Construction Worker Scenario

Chemicals of Concern	Hazard Quotient: Total Unit HQ (unitless)	Hazard Quotient: Soil (mg/kg) Scaled Soil Concentration HQ=0.2	Hazard Quotient: Soil (mg/kg) Risk based Concentration HQ=0.2	Incremental Lifetime Cancer Risk: Total Unit ILCR (unitless)	Incremental Lifetime Cancer Risk: Soil (mg/kg) Scaled Soil Concentration ILCR=1E-06	Incremental Lifetime Cancer Risk: Soil (mg/kg) Risk based Concentration ILCR=1E-06
4-methylphenol	1.76E-04	1.14E+03	1.14E+03	NA	NA	NA
4,4-ddd	NA	NA	NA	1.77E-10	5.66E+03	5.66E+03
4,4-dde	NA	NA	NA	2.50E-10	4.00E+03	4.00E+03
4,4-ddt	1.25E-03	1.60E+02	1.60E+02	2.50E-10	4.00E+03	4.00E+03
acenaphthene	1.88E-06	1.06E+05	1.06E+05	NA	NA	NA
acetone	8.92E-07	2.24E+05	2.24E+05	NA	NA	NA
acrolein	NA	NA	NA	NA	NA	NA
acrylonitrile	8.90E-05	2.25E+03	2.25E+03	1.05E-09	9.57E+02	9.57E+02
aldrin	2.09E-02	9.57E+00	9.57E+00	1.25E-08	7.99E+01	7.99E+01
alpha-bhc	NA	NA	NA	4.64E-09	2.16E+02	2.16E+02
aniline	5.19E-07	3.85E+05	3.85E+05	5.88E-12	1.70E+05	1.70E+05
anthracene	3.77E-06	5.31E+04	5.31E+04	NA	NA	NA
antimony	1.69E-03	1.18E+02	1.18E+02	NA	NA	NA
aroclor 1016	NA	NA	NA	NA	NA	NA
aroclor 1254	1.76E-02	1.14E+01	1.14E+01	NA	NA	NA
arsenic	1.73E-03	1.16E+02	1.16E+02	9.12E-10	1.10E+03	1.10E+03
barium	6.07E-06	3.30E+04	3.30E+04	NA	NA	NA
benzene	NA	NA	NA	1.06E-10	9.42E+03	9.42E+03
benzidine	2.93E-04	6.83E+02	6.83E+02	5.16E-07	1.94E+00	1.94E+00
benzoic acid	2.20E-07	9.11E+05	9.11E+05	NA	NA	NA
benzo(a)anthracene	NA	NA	NA	1.59E-09	6.28E+02	6.28E+02
benzo(a)pyrene	NA	NA	NA	1.59E-08	6.28E+01	6.28E+01
benzo(b)fluoranthene	NA	NA	NA	1.59E-09	6.28E+02	6.28E+02
benzo(k)fluoranthene	NA	NA	NA	1.59E-09	6.28E+02	6.28E+02
benzyl alcohol	8.79E-07	2.28E+05	2.28E+05	NA	NA	NA
benzyl chloride	NA	NA	NA	1.76E-10	5.68E+03	5.68E+03
beryllium	9.81E-04	2.04E+02	2.04E+02	4.03E-15	2.48E+08	2.48E+08
beta-bhc	NA	NA	NA	1.32E-09	7.55E+02	7.55E+02
beta-chloronaphthalene	NA	NA	NA	NA	NA	NA
bis(2-chloro-1-methylethyl)ether	NA	NA	NA	7.23E-11	1.38E+04	1.38E+04

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Table A
Summary of Unit Risk Characterization
Construction Worker
Via Incidental Ingestion of Soils

Intake Equation = $\frac{CS \times EF \times ED \times CF \times IR}{BW \times AT}$

IRs	Ingestion rate of soil (RAGS, 1989)	480	mg/day
CF	Conversion factor	1.0E-06	kg/mg
EF	Exposure frequency	20	d/year
EDn	Exposure duration for non-carcinogens	0.082	year
EDc	Exposure duration for carcinogens	0.082	year
BW	Body weight	70	kg
ATc	Average time for carcinogens (lifetime)	25550	day
ATn	Average time for non-carcinogens (EDn x 365)	30	day
CS	Concentration of chemicals in soil	(see table below)	

Chemical Concentrations

Compound	Concentration	Compound	Concentration
bis(2-chloroethyl)ether	1.0E+00	cis-1,2-dichloroethene	1.0E+00
bis(2-ethylhexyl)phthalate	1.0E+00	copper	1.0E+00
bromodichloromethane	1.0E+00	cumene	1.0E+00
bromoform	1.0E+00	cyanide	1.0E+00
bromomethane	1.0E+00	dibenzo(a,h)anthracene	1.0E+00
cadmium	1.0E+00	dibromochloromethane	1.0E+00
carbazole	1.0E+00	dichlorodifluoromethane	1.0E+00
carbon disulfide	1.0E+00	dieldrin	1.0E+00
carbon tetrachloride	1.0E+00	diethyl phthalate	1.0E+00
chlordane	1.0E+00	di-n-butylphthalate	1.0E+00
chlorobenzene	1.0E+00	di-n-octylphthalate	1.0E+00
chloroform	1.0E+00	endosulfan	1.0E+00
chloromethane	1.0E+00	endrin	1.0E+00
chromium iii	1.0E+00	ethyl chloride	1.0E+00
chromium vi	1.0E+00		
chrysene	1.0E+00		

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Table A (cont.)
Summary of Unit Risk Characterization
Construction Worker
Via Incidental Ingestion of Soils

	Non-Carcinogenic Calculation		
Compound	CDI (mg/kg-d)	RfD (mg/kg-d)	UH (unitless)
bis(2-chloroethyl)ether	3.75E-07	NA	NA
bis(2-ethylhexyl)phthalate	3.75E-07	NA	NA
bromodichloromethane	3.75E-07	2.00E-02	1.87E-05
bromoform	3.75E-07	2.00E-02	1.87E-05
bromomethane	3.75E-07	NA	NA
cadmium	3.75E-07	5.00E-04	7.50E-04
carbazole	3.75E-07	NA	NA
carbon disulfide	3.75E-07	1.00E-01	3.75E-06
carbon tetrachloride	3.75E-07	NA	NA
chlordane	3.75E-07	6.00E-05	6.25E-03
chlorobenzene	3.75E-07	NA	NA
chloroform	3.75E-07	1.00E-02	3.75E-05
chloromethane	3.75E-07	NA	NA
chromium iii	3.75E-07	1.00E+00	3.75E-07
chromium vi	3.75E-07	2.00E-02	1.87E-05
chrysene	3.75E-07	NA	NA
cis-1,2-dichloroethene	3.75E-07	1.00E-01	3.75E-06
copper	3.75E-07	3.70E-02	1.01E-05
cumene	3.75E-07	4.00E-01	9.37E-07
cyanide	3.75E-07	2.00E-02	1.87E-05
dibenzo(a,h)anthracene	3.75E-07	NA	NA
dibromochloromethane	3.75E-07	2.00E-01	1.87E-06
dichlorodifluoromethane	3.75E-07	9.00E-01	4.17E-07
dieldrin	3.75E-07	5.00E-05	7.50E-03
diethyl phthalate	3.75E-07	8.00E+00	4.69E-08
di-n-butylphthalate	3.75E-07	1.00E+00	3.75E-07
di-n-octylphthalate	3.75E-07	2.00E-02	1.87E-05
endosulfan	3.75E-07	6.00E-03	6.25E-05
endrin	3.75E-07	3.00E-04	1.25E-03
ethyl chloride	3.75E-07	NA	NA

	Carcinogenic Calculation		
Compound	CDI (mg/kg-d)	CSF $(mg/kg\text{-}d)^{-1}$	UR (unitless)
bis(2-chloroethyl)ether	4.40E-10	2.50E+00	1.10E-09
bis(2-ethylhexyl)phthalate	4.40E-10	8.40E-03	3.70E-12
bromodichloromethane	4.40E-10	1.30E-01	5.72E-11
bromoform	4.40E-10	7.93E-03	3.49E-12
bromomethane	4.40E-10	NA	NA
cadmium	4.40E-10	NA	NA
carbazole	4.40E-10	2.00E-02	8.80E-12
carbon disulfide	4.40E-10	NA	NA
carbon tetrachloride	4.40E-10	1.50E-01	6.60E-11
chlordane	4.40E-10	1.20E+00	5.28E-10
chlorobenzene	4.40E-10	NA	NA
chloroform	4.40E-10	3.10E-02	1.36E-11
chloromethane	4.40E-10	1.30E-02	5.72E-12
chromium iii	4.40E-10	NA	NA
chromium vi	4.40E-10	4.20E-01	1.85E-10
chrysene	4.40E-10	1.20E-01	5.28E-11
cis-1,2-dichloroethene	4.40E-10	NA	NA
copper	4.40E-10	NA	NA
cumene	4.40E-10	NA	NA
cyanide	4.40E-10	NA	NA
dibenzo(a,h)anthracene	4.40E-10	4.10E+00	1.80E-09
dibromochloromethane	4.40E-10	9.40E-02	4.14E-11
dichlorodifluoromethane	4.40E-10	NA	NA
dieldrin	4.40E-10	1.60E+01	7.04E-09
diethyl phthalate	4.40E-10	NA	NA
di-n-butylphthalate	4.40E-10	NA	NA
di-n-octylphthalate	4.40E-10	NA	NA
endosulfan	4.40E-10	NA	NA
endrin	4.40E-10	NA	NA
ethyl chloride	4.40E-10	NA	NA

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Table B
Summary of Unit Risk Characterization
Construction Worker
Via Dermal Contact with Soils

Intake Equation = $\frac{CS \times CF \times EF \times ED \times AF \times ABS \times SA}{BW \times AT}$

SA	Surface area of exposed skin (50th percentile, hands only)	5800	cm^2/day
AF	Adherence Factor	1	mg/cm^2
ABS	Absorption factor (see table below)	csv	
CF	Conversion factor	1.0E-06	kg/mg
EF	Exposure frequency	20	d/year
EDn	Exposure duration for non-carcinogens	0	year
EDc	Exposure duration for carcinogens	0	year
BW	Body weight	70	kg
ATc	Average time for carcinogens (lifetime)	25550	day
ATn	Average time for non-carcinogens (EDn x 365)	30	day
CS	Concentration of chemicals in soil (see table below)	csv	

Chemical Concentrations

Compound	ABS (unitless)	Concentration (mg/kg)
bis(2-chloroethyl)ether	1.00E-01	1.00E+00
bis(2-ethylhexyl)phthalate	1.00E-01	1.00E+00
bromodichloromethane	1.00E-01	1.00E+00
bromoform	1.00E-01	1.00E+00
bromomethane	1.00E-01	1.00E+00
cadmium	1.00E-03	1.00E+00
carbazole	1.00E-01	1.00E+00
carbon disulfide	1.00E-01	1.00E+00
carbon tetrachloride	1.00E-01	1.00E+00
chlordane	1.00E-01	1.00E+00
chlorobenzene	1.00E-01	1.00E+00
chloroform	1.00E-01	1.00E+00
chloromethane	1.00E-01	1.00E+00
chromium iii	1.00E-02	1.00E+00
chromium vi	1.00E-04	1.00E+00
chrysene	1.50E-01	1.00E+00

Compound	ABS (unitless)	Concentration (mg/kg)
cis-1,2-dichloroethene	1.00E-01	1.00E+00
copper	1.00E-02	1.00E+00
cumene	1.00E-01	1.00E+00
cyanide	1.00E-02	1.00E+00
dibenzo(a,h)anthracene	1.50E-01	1.00E+00
dibromochloromethane	1.00E-01	1.00E+00
dichlorodifluoromethane	1.00E-01	1.00E+00
dieldrin	5.00E-02	1.00E+00
diethyl phthalate	1.00E-01	1.00E+00
di-n-butylphthalate	1.00E-01	1.00E+00
di-n-octylphthalate	1.00E-01	1.00E+00
endosulfan	5.00E-02	1.00E+00
endrin	5.00E-02	1.00E+00
ethyl chloride	1.00E-01	1.00E+00

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Table B (cont.)
Summary of Unit Risk Characterization
Construction Worker
Via Dermal Contact with Soils

	Non-Carcinogenic Calculation		
Compound	CDI (mg/kg-d)	RfD (mg/kg-d)	UH (unitless)
bis(2-chloroethyl)ether	4.53E-07	NA	NA
bis(2-ethylhexyl)phthalate	4.53E-07	NA	NA
bromodichloromethane	4.53E-07	1.80E-02	2.52E-05
bromoform	4.53E-07	1.80E-02	2.52E-05
bromomethane	4.53E-07	NA	NA
cadmium	4.53E-09	2.50E-05	1.81E-04
carbazole	4.53E-07	NA	NA
carbon disulfide	4.53E-07	9.00E-02	5.03E-06
carbon tetrachloride	4.53E-07	NA	NA
chlordane	4.53E-07	5.40E-05	8.39E-03
chlorobenzene	4.53E-07	NA	NA
chloroform	4.53E-07	1.00E-02	4.53E-05
chloromethane	4.53E-07	NA	NA
chromium iii	4.53E-08	4.50E-01	1.01E-07
chromium vi	4.53E-10	9.00E-03	5.03E-08
chrysene	6.79E-07	NA	NA
cis-1,2-dichloroethene	4.53E-07	9.00E-02	5.03E-06
copper	4.53E-08	2.22E-02	2.04E-06
cumene	4.53E-07	3.60E-01	1.26E-06
cyanide	4.53E-08	1.44E-02	3.15E-06
dibenzo(a,h)anthracene	6.79E-07	NA	NA
dibromochloromethane	4.53E-07	1.80E-01	2.52E-06
dichlorodifluoromethane	4.53E-07	8.10E-01	5.59E-07
dieldrin	2.26E-07	4.50E-05	5.03E-03
diethyl phthalate	4.53E-07	7.20E+00	6.29E-08
di-n-butylphthalate	4.53E-07	9.00E-01	5.03E-07
di-n-octylphthalate	4.53E-07	1.80E-02	2.52E-05
endosulfan	2.26E-07	5.40E-03	4.19E-05
endrin	2.26E-07	2.70E-04	8.39E-04
ethyl chloride	4.53E-07	NA	NA

	Carcinogenic Calculation		
Compound	CDI (mg/kg-d)	CSF (mg/kg-d)-1	UR (unitless)
bis(2-chloroethyl)ether	5.32E-10	2.78E+00	1.48E-09
bis(2-ethylhexyl)phthalate	5.32E-10	9.33E-03	4.96E-12
bromodichloromethane	5.32E-10	1.44E-01	7.68E-11
bromoform	5.32E-10	8.81E-03	4.69E-12
bromomethane	5.32E-10	NA	NA
cadmium	5.32E-12	NA	NA
carbazole	5.32E-10	2.22E-02	1.18E-11
carbon disulfide	5.32E-10	NA	NA
carbon tetrachloride	5.32E-10	1.67E-01	8.86E-11
chlordane	5.32E-10	1.33E+00	7.09E-10
chlorobenzene	5.32E-10	NA	NA
chloroform	5.32E-10	3.10E-02	1.65E-11
chloromethane	5.32E-10	1.44E-02	7.68E-12
chromium iii	5.32E-11	NA	NA
chromium vi	5.32E-13	9.33E-01	4.96E-13
chrysene	7.98E-10	1.33E-01	1.06E-10
cis-1,2-dichloroethene	5.32E-10	NA	NA
copper	5.32E-11	NA	NA
cumene	5.32E-10	NA	NA
cyanide	5.32E-11	NA	NA
dibenzo(a,h)anthracene	7.98E-10	4.56E+00	3.63E-09
dibromochloromethane	5.32E-10	1.04E-01	5.55E-11
dichlorodifluoromethane	5.32E-10	NA	NA
dieldrin	2.66E-10	1.78E+01	4.73E-09
diethyl phthalate	5.32E-10	NA	NA
di-n-butylphthalate	5.32E-10	NA	NA
di-n-octylphthalate	5.32E-10	NA	NA
endosulfan	2.66E-10	NA	NA
endrin	2.66E-10	NA	NA
ethyl chloride	5.32E-10	NA	NA

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Table C
Summary of Unit Risk Characterization
Construction Worker
Via Inhalation of Particulates and Volatiles

Intake Equation = $\frac{CS \times (1/VF + 1/PEF) \times EF \times ED \times ET \times IR}{BW \times AT}$

IR	Inhalation rate of gases (RAGS, 1989)	2.5E+00	m3/h
EF	Exposure frequency	2.0E+01	days/year
EDn	Exposure duration for non-carcinogens	8.2E-02	year
EDc	Exposure duration for carcinogens	8.2E-02	year
BW	Body weight	7.0E+01	kg
ATc	Average time for carcinogens (lifetime)	2.6E+04	days
ATn	Average time for non-carcinogens (EDn x 365)	3.0E+01	days
ET	Exposure time	1.0E+00	h/d
CS	Concentration of chemicals in soil	(see table below)	
VF	Volatilization Factor	(see table below)	
PEF	Particulate Emission Factor	(see table below)	

Chemical Concentrations

Compound	VF (m3/kg)	PEF (m3/kg)	Cs (mg/kg)
bis(2-chloroethyl)ether	7.8E+05	4.8E+09	1.0E+00
bis(2-ethylhexyl)phthalate	1.0E+08	4.8E+09	1.0E+00
bromodichloromethane	3.6E+05	4.8E+09	1.0E+00
bromoform	4.2E+05	4.8E+09	1.0E+00
bromomethane	1.8E+04	4.8E+09	1.0E+00
cadmium	NA	4.8E+09	1.0E+00
carbazole	6.8E+07	4.8E+09	1.0E+00
carbon disulfide	4.0E+04	4.8E+09	1.0E+00
carbon tetrachloride	8.3E+04	4.8E+09	1.0E+00
chlordane	8.0E+06	4.8E+09	1.0E+00
chlorobenzene	1.5E+05	4.8E+09	1.0E+00
chloroform	7.9E+04	4.8E+09	1.0E+00
chloromethane	1.0E+04	4.8E+09	1.0E+00
chromium iii	NA	4.8E+09	1.0E+00
chromium vi	NA	4.8E+09	1.0E+00
chrysene	8.3E+08	4.8E+09	1.0E+00

Compound	VF (m3/kg)	PEF (m3/kg)	Cs (mg/kg)
cis-1,2-dichloroethene	6.0E+04	4.8E+09	1.0E+00
copper	NA	4.8E+09	1.0E+00
cumene	3.3E+05	4.8E+09	1.0E+00
cyanide	NA	4.8E+09	1.0E+00
dibenzo(a,h)anthracene	3.0E+10	4.8E+09	1.0E+00
dibromochloromethane	7.0E+04	4.8E+09	1.0E+00
dichlorodifluoromethane	4.4E+03	4.8E+09	1.0E+00
dieldrin	1.1E+07	4.8E+09	1.0E+00
diethyl phthalate	6.1E+06	4.8E+09	1.0E+00
di-n-butylphthalate	4.5E+06	4.8E+09	1.0E+00
di-n-octylphthalate	6.6E+07	4.8E+09	1.0E+00
endosulfan	1.3E+07	4.8E+09	1.0E+00
endrin	4.7E+07	4.8E+09	1.0E+00
ethyl chloride	5.1E+04	4.8E+09	1.0E+00

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Table C (cont.)
Summary of Unit Risk Characterization
Construction Worker
Via Inhalation of Particulates and Volatiles

	Non-Carcinogenic Calculation		
Compound	CDI (mg/kg-d)	RfD (mg/kg-d)	UH (unitless)
bis(2-chloroethyl)ether	2.5E-09	NA	NA
bis(2-ethylhexyl)phthalate	1.9E-11	NA	NA
bromodichloromethane	5.3E-09	2.0E-02	2.7E-07
bromoform	4.7E-09	2.0E-02	2.3E-07
bromomethane	1.1E-07	NA	NA
cadmium	4.1E-13	5.0E-04	8.2E-10
carbazole	2.9E-11	NA	NA
carbon disulfide	4.9E-08	2.0E-01	2.4E-07
carbon tetrachloride	2.3E-08	NA	NA
chlordane	2.4E-10	6.0E-05	4.1E-06
chlorobenzene	1.3E-08	NA	NA
chloroform	2.5E-08	1.0E-02	2.5E-06
chloromethane	1.9E-07	NA	NA
chromium iii	4.1E-13	1.0E+00	4.1E-13
chromium vi	4.1E-13	2.0E-02	2.0E-11
chrysene	2.8E-12	NA	NA
cis-1,2-dichloroethene	3.3E-08	1.0E-01	3.3E-07
copper	4.1E-13	3.7E-02	1.1E-11
cumene	5.9E-09	2.6E-02	2.3E-07
cyanide	4.1E-13	2.0E-02	2.0E-11
dibenzo(a,h)anthracene	4.7E-13	NA	NA
dibromochloromethane	2.8E-08	2.0E-01	1.4E-07
dichlorodifluoromethane	4.4E-07	5.7E-01	7.7E-07
dieldrin	1.7E-10	5.0E-05	3.4E-06
diethyl phthalate	3.2E-10	8.0E+00	4.0E-11
di-n-butylphthalate	4.3E-10	1.0E+00	4.3E-10
di-n-octylphthalate	3.0E-11	2.0E-02	1.5E-09
endosulfan	1.5E-10	6.0E-03	2.5E-08
endrin	4.2E-11	3.0E-04	1.4E-07
ethyl chloride	3.8E-08	2.9E+00	1.3E-08

	Carcinogenic Calculation		
Compound	CDI (mg/kg-d)	CSF (mg/kg-d)-1	UR (unitless)
bis(2-chloroethyl)ether	3.0E-12	2.5E+00	7.4E-12
bis(2-ethylhexyl)phthalate	2.3E-14	8.4E-03	1.9E-16
bromodichloromethane	6.3E-12	1.3E-01	8.2E-13
bromoform	5.5E-12	3.9E-03	2.1E-14
bromomethane	1.3E-10	NA	NA
cadmium	4.8E-16	1.5E+01	7.2E-15
carbazole	3.4E-14	2.0E-02	6.8E-16
carbon disulfide	5.7E-11	NA	NA
carbon tetrachloride	2.8E-11	1.5E-01	4.1E-12
chlordane	2.9E-13	1.2E+00	3.4E-13
chlorobenzene	1.5E-11	NA	NA
chloroform	2.9E-11	1.9E-02	5.5E-13
chloromethane	2.2E-10	6.3E-03	1.4E-12
chromium iii	4.8E-16	NA	NA
chromium vi	4.8E-16	5.1E+02	2.4E-13
chrysene	3.2E-15	3.9E-02	1.3E-16
cis-1,2-dichloroethene	3.8E-11	NA	NA
copper	4.8E-16	NA	NA
cumene	7.0E-12	NA	NA
cyanide	4.8E-16	NA	NA
dibenzo(a,h)anthracene	5.6E-16	4.1E+00	2.3E-15
dibromochloromethane	3.3E-11	9.4E-02	3.1E-12
dichlorodifluoromethane	5.2E-10	NA	NA
dieldrin	2.0E-13	1.6E+01	3.2E-12
diethyl phthalate	3.8E-13	NA	NA
di-n-butylphthalate	5.1E-13	NA	NA
di-n-octylphthalate	3.5E-14	NA	NA
endosulfan	1.7E-13	NA	NA
endrin	4.9E-14	NA	NA
ethyl chloride	4.5E-11	NA	NA

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Table D
Summary of Unit Risk Calculations
Construction Worker

Chemicals of Concern	Unit Hazard Quotient Soil Inhalation (unitless)	Unit Hazard Quotient Soil Dermal (unitless)	Unit Hazard Quotient Soil Ingestion (unitless)	Unit Hazard Quotient Soil Total (unitless)	Unit Incremental Lifetime Cancer Risk Soil Inhalation (unitless)	Unit Incremental Lifetime Cancer Risk Soil Dermal (unitless)	Unit Incremental Lifetime Cancer Risk Soil Ingestion (unitless)	Unit Incremental Lifetime Cancer Risk Soil Total (unitless)
bis(2-chloroethyl)ether	NA	NA	NA	NA	7.39E-12	1.48E-09	1.10E-09	2.59E-09
bis(2-ethylhexyl)phthalate	NA	NA	NA	NA	1.92E-16	4.96E-12	3.70E-12	8.66E-12
bromodichloromethane	2.67E-07	2.52E-05	1.87E-05	4.42E-05	8.17E-13	7.68E-11	5.72E-11	1.35E-10
bromoform	2.34E-07	2.52E-05	1.87E-05	4.41E-05	2.15E-14	4.69E-12	3.49E-12	8.20E-12
bromomethane	NA	NA	NA	NA	NA	NA	NA	NA
cadmium	8.18E-10	1.81E-04	7.50E-04	9.31E-04	7.20E-15	NA	NA	7.20E-15
carbazole	NA	NA	NA	NA	6.83E-16	1.18E-11	8.80E-12	2.06E-11
carbon disulfide	2.43E-07	5.03E-06	3.75E-06	9.02E-06	NA	NA	NA	NA
carbon tetrachloride	NA	NA	NA	NA	4.14E-12	8.86E-11	6.60E-11	1.59E-10
chlordane	4.05E-06	8.39E-03	6.25E-03	1.46E-02	3.43E-13	7.09E-10	5.28E-10	1.24E-09
chlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA
chloroform	2.48E-06	4.53E-05	3.75E-05	8.53E-05	5.53E-13	1.65E-11	1.36E-11	3.07E-11
chloromethane	NA	NA	NA	NA	1.39E-12	7.68E-12	5.72E-12	1.48E-11
chromium iii	4.09E-13	1.01E-07	3.75E-07	4.76E-07	NA	NA	NA	NA
chromium vi	2.04E-11	5.03E-08	1.87E-05	1.88E-05	2.45E-13	4.96E-13	1.85E-10	1.86E-10
chrysene	NA	NA	NA	NA	1.27E-16	1.06E-10	5.28E-11	1.59E-10
cis-1,2-dichloroethene	3.28E-07	5.03E-06	3.75E-06	9.11E-06	NA	NA	NA	NA
copper	1.11E-11	2.04E-06	1.01E-05	1.22E-05	NA	NA	NA	NA
cumene	2.30E-07	1.26E-06	9.37E-07	2.43E-06	NA	NA	NA	NA
cyanide	2.04E-11	3.15E-06	1.87E-05	2.19E-05	NA	NA	NA	NA
dibenzo(a,h)anthracene	NA	NA	NA	NA	2.28E-15	3.63E-09	1.80E-09	5.44E-09
dibromochloromethane	1.39E-07	2.52E-06	1.87E-06	4.53E-06	3.08E-12	5.55E-11	4.14E-11	1.00E-10
dichlorodifluoromethane	7.71E-07	5.59E-07	4.17E-07	1.75E-06	NA	NA	NA	NA
dieldrin	3.44E-06	5.03E-03	7.50E-03	1.25E-02	3.23E-12	4.73E-09	7.04E-09	1.18E-08
diethyl phthalate	4.03E-11	6.29E-08	4.69E-08	1.10E-07	NA	NA	NA	NA
di-n-butylphthalate	4.32E-10	5.03E-07	3.75E-07	8.79E-07	NA	NA	NA	NA
di-n-octylphthalate	1.50E-09	2.52E-05	1.87E-05	4.39E-05	NA	NA	NA	NA
endosulfan	2.47E-08	4.19E-05	6.25E-05	1.04E-04	NA	NA	NA	NA
endrin	1.39E-07	8.39E-04	1.25E-03	2.09E-03	NA	NA	NA	NA
ethyl chloride	1.35E-08	NA	NA	1.35E-08	NA	NA	NA	NA

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Table E
Summary of Health-Based Soil Concentrations
Via Construction Worker Scenario

Chemicals of Concern	Hazard Quotient: Soil (mg/kg) Total Unit HQ (unitless)	Hazard Quotient: Soil (mg/kg) Scaled Soil Concentration HQ=0.2	Hazard Quotient: Soil (mg/kg) Risk based Concentration HQ=0.2	Incremental Lifetime Cancer Risk: Soil (mg/kg) Total Unit ILCR (unitless)	Incremental Lifetime Cancer Risk: Soil (mg/kg) Scaled Soil Concentration ILCR=1E-06	Incremental Lifetime Cancer Risk: Soil (mg/kg) Risk based Concentration ILCR=1E-06
bis(2-chloroethyl)ether	NA	NA	NA	2.59E-09	3.87E+02	3.87E+02
bis(2-ethylhexyl)phthalate	NA	NA	NA	8.66E-12	1.15E+05	1.15E+05
bromodichloromethane	4.42E-05	4.53E+03	4.53E+03	1.35E-10	7.42E+03	7.42E+03
bromoform	4.41E-05	4.53E+03	4.53E+03	8.20E-12	1.22E+05	1.22E+05
bromomethane	NA	NA	NA	NA	NA	NA
cadmium	9.31E-04	2.15E+02	2.15E+02	7.20E-15	1.39E+08	1.39E+08
carbazole	NA	NA	NA	2.06E-11	4.85E+04	4.85E+04
carbon disulfide	9.02E-06	2.22E+04	2.22E+04	NA	NA	NA
carbon tetrachloride	NA	NA	NA	1.59E-10	6.30E+03	6.30E+03
chlordane	1.46E-02	1.37E+01	1.37E+01	1.24E-09	8.08E+02	8.08E+02
chlorobenzene	NA	NA	NA	NA	NA	NA
chloroform	8.53E-05	2.35E+03	2.35E+03	3.07E-11	3.26E+04	3.26E+04
chloromethane	NA	NA	NA	1.48E-11	6.76E+04	6.76E+04
chromium iii	4.76E-07	4.21E+05	4.21E+05	NA	NA	NA
chromium vi	1.88E-05	1.06E+04	1.06E+04	1.86E-10	5.39E+03	5.39E+03
chrysene	NA	NA	NA	1.59E-10	6.28E+03	6.28E+03
cis-1,2-dichloroethene	9.11E-06	2.20E+04	2.20E+04	NA	NA	NA
copper	1.22E-05	1.64E+04	1.64E+04	NA	NA	NA
cumene	2.43E-06	8.24E+04	8.24E+04	NA	NA	NA
cyanide	2.19E-05	9.14E+03	9.14E+03	NA	NA	NA
dibenzo(a,h)anthracene	NA	NA	NA	5.44E-09	1.84E+02	1.84E+02
dibromochloromethane	4.53E-06	4.41E+04	4.41E+04	1.00E-10	1.00E+04	1.00E+04
dichlorodifluoromethane	1.75E-06	1.14E+05	1.14E+05	NA	NA	NA
dieldrin	1.25E-02	1.60E+01	1.60E+01	1.18E-08	8.49E+01	8.49E+01
diethyl phthalate	1.10E-07	1.82E+06	1.82E+06	NA	NA	NA
di-n-butylphthalate	8.79E-07	2.28E+05	2.28E+05	NA	NA	NA
di-n-octylphthalate	4.39E-05	4.55E+03	4.55E+03	NA	NA	NA
endosulfan	1.04E-04	1.91E+03	1.91E+03	NA	NA	NA
endrin	2.09E-03	9.58E+01	9.58E+01	NA	NA	NA
ethyl chloride	1.35E-08	1.49E+07	1.49E+07	NA	NA	NA

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Table A
Summary of Unit Risk Characterization
Construction Worker
Via Incidental Ingestion of Soils

Intake Equation = $\frac{CS \times EF \times ED \times CF \times IR}{BW \times AT}$

IRs	Ingestion rate of soil (RAGS, 1989)	480	mg/day
CF	Conversion factor	1.0E-06	kg/mg
EF	Exposure frequency	20	d/year
EDn	Exposure duration for non-carcinogens	0.082	year
EDc	Exposure duration for carcinogens	0.082	year
BW	Body weight	70	kg
ATc	Average time for carcinogens (lifetime)	25550	day
ATn	Average time for non-carcinogens (EDn x 365)	30	day
CS	Concentration of chemicals in soil	(see table below)	

Chemical Concentrations

Compound	Concentration
ethylbenzene	1.0E+00
fluoranthene	1.0E+00
fluorene	1.0E+00
gamma-bhc	1.0E+00
heptachlor	1.0E+00
heptachlor epoxide	1.0E+00
hexachlorobenzene	1.0E+00
hexachlorobutadiene	1.0E+00
hexachlorocyclopentadiene	1.0E+00
hexachloroethane	1.0E+00
indeno(1,2,3-cd)pyrene	1.0E+00
isobutyl alcohol	1.0E+00
isophorone	1.0E+00
mercury	1.0E+00
methoxychlor	1.0E+00
methyl methacrylate	1.0E+00

Compound	Concentration
methylene bromide	1.0E+00
methylene chloride	1.0E+00
methyl-tert-butyl ether	1.0E+00
molybdenum	1.0E+00
n-butylbenzyl phthalate	1.0E+00
nickel	1.0E+00
nitroaniline, o-	1.0E+00
nitrobenzene	1.0E+00
nitrosodiphenylamine, p-	1.0E+00
n-nitrosodimethylamine	1.0E+00
n-nitroso-di-n-propylamine	1.0E+00
n-nitrosodiphenylamine	1.0E+00
o-chlorotoluene	1.0E+00
p-chloro-m-cresol	1.0E+00

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Table A (cont.)
Summary of Unit Risk Characterization
Construction Worker
Via Incidental Ingestion of Soils

	Non-Carcinogenic Calculation		
Compound	CDI (mg/kg-d)	RfD (mg/kg-d)	UH (unitless)
ethylbenzene	3.75E-07	NA	NA
fluoranthene	3.75E-07	4.00E-01	9.37E-07
fluorene	3.75E-07	4.00E-01	9.37E-07
gamma-bhc	3.75E-07	3.00E-03	1.25E-04
heptachlor	3.75E-07	5.00E-04	7.50E-04
heptachlor epoxide	3.75E-07	1.30E-05	2.88E-02
hexachlorobenzene	3.75E-07	NA	NA
hexachlorobutadiene	3.75E-07	NA	NA
hexachlorocyclopentadiene	3.75E-07	7.00E-02	5.36E-06
hexachloroethane	3.75E-07	1.00E-02	3.75E-05
indeno(1,2,3-cd)pyrene	3.75E-07	NA	NA
isobutyl alcohol	3.75E-07	3.00E+00	1.25E-07
isophorone	3.75E-07	2.00E+00	1.87E-07
mercury	3.75E-07	3.00E-04	1.25E-03
methoxychlor	3.75E-07	5.00E-03	7.50E-05
methyl methacrylate	3.75E-07	8.00E-02	4.69E-06
methylene bromide	3.75E-07	1.00E-01	3.75E-06
methylene chloride	3.75E-07	6.00E-02	6.25E-06
methyl-tert-butyl ether	3.75E-07	NA	NA
molybdenum	3.75E-07	4.00E-02	9.37E-06
n-butylbenzyl phthalate	3.75E-07	2.00E-01	1.87E-06
nickel	3.75E-07	2.00E-02	1.87E-05
nitroaniline, o-	3.75E-07	NA	NA
nitrobenzene	3.75E-07	5.00E-03	7.50E-05
nitrosodiphenylamine, p-	3.75E-07	NA	NA
n-nitrosodimethylamine	3.75E-07	NA	NA
n-nitroso-di-n-propylamine	3.75E-07	NA	NA
n-nitrosodiphenylamine	3.75E-07	NA	NA
o-chlorotoluene	3.75E-07	2.00E-01	1.87E-06
p-chloro-m-cresol	3.75E-07	2.00E+00	1.87E-07

	Carcinogenic Calculation		
Compound	CDI (mg/kg-d)	CSF $(mg/kg\text{-}d)^{-1}$	UR (unitless)
ethylbenzene	4.40E-10	NA	NA
fluoranthene	4.40E-10	NA	NA
fluorene	4.40E-10	NA	NA
gamma-bhc	4.40E-10	1.10E+00	4.84E-10
heptachlor	4.40E-10	5.70E+00	2.51E-09
heptachlor epoxide	4.40E-10	1.30E+01	5.72E-09
hexachlorobenzene	4.40E-10	1.80E+00	7.92E-10
hexachlorobutadiene	4.40E-10	7.80E-02	3.43E-11
hexachlorocyclopentadiene	4.40E-10	NA	NA
hexachloroethane	4.40E-10	3.90E-02	1.72E-11
indeno(1,2,3-cd)pyrene	4.40E-10	1.20E+00	5.28E-10
isobutyl alcohol	4.40E-10	NA	NA
isophorone	4.40E-10	9.50E-04	4.18E-13
mercury	4.40E-10	NA	NA
methoxychlor	4.40E-10	NA	NA
methyl methacrylate	4.40E-10	NA	NA
methylene bromide	4.40E-10	NA	NA
methylene chloride	4.40E-10	1.40E-02	6.16E-12
methyl-tert-butyl ether	4.40E-10	NA	NA
molybdenum	4.40E-10	NA	NA
n-butylbenzyl phthalate	4.40E-10	NA	NA
nickel	4.40E-10	NA	NA
nitroaniline, o-	4.40E-10	NA	NA
nitrobenzene	4.40E-10	NA	NA
nitrosodiphenylamine, p-	4.40E-10	2.20E-02	9.68E-12
n-nitrosodimethylamine	4.40E-10	1.60E+01	7.04E-09
n-nitroso-di-n-propylamine	4.40E-10	7.00E+00	3.08E-09
n-nitrosodiphenylamine	4.40E-10	9.00E-03	3.96E-12
o-chlorotoluene	4.40E-10	NA	NA
p-chloro-m-cresol	4.40E-10	NA	NA

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Table B
Summary of Unit Risk Characterization
Construction Worker
Via Dermal Contact with Soils

Intake Equation = $\frac{CS \times CF \times EF \times ED \times AF \times ABS \times SA}{BW \times AT}$

SA	Surface area of exposed skin (50th percentile, hands only)	5800	cm^2/day
AF	Adherence Factor	1	mg/cm^2
ABS	Absorption factor (see table below)	csv	
CF	Conversion factor	1.0E-06	kg/mg
EF	Exposure frequency	20	d/year
EDn	Exposure duration for non-carcinogens	0	year
EDc	Exposure duration for carcinogens	0	year
BW	Body weight	70	kg
ATc	Average time for carcinogens (lifetime)	25550	day
ATn	Average time for non-carcinogens (EDn x 365)	30	day
CS	Concentration of chemicals in soil (see table below)	csv	

Chemical Concentrations

Compound	ABS (unitless)	Concentration (mg/kg)
ethylbenzene	1.00E-01	1.00E+00
fluoranthene	1.00E-01	1.00E+00
fluorene	1.00E-01	1.00E+00
gamma-bhc	5.00E-02	1.00E+00
heptachlor	5.00E-02	1.00E+00
heptachlor epoxide	5.00E-02	1.00E+00
hexachlorobenzene	1.00E-01	1.00E+00
hexachlorobutadiene	1.00E-01	1.00E+00
hexachlorocyclopentadiene	1.00E-01	1.00E+00
hexachloroethane	1.00E-01	1.00E+00
indeno(1,2,3-cd)pyrene	1.00E-01	1.00E+00
isobutyl alcohol	1.00E-01	1.00E+00
isophorone	1.00E-01	1.00E+00
mercury	1.00E-02	1.00E+00
methoxychlor	1.00E-01	1.00E+00
methyl methacrylate	1.00E-01	1.00E+00

Compound	ABS (unitless)	Concentration (mg/kg)
methylene bromide	1.00E-01	1.00E+00
methylene chloride	1.00E-01	1.00E+00
methyl-tert-butyl ether	1.00E-01	1.00E+00
molybdenum	1.00E-02	1.00E+00
n-butylbenzyl phthalate	1.00E-01	1.00E+00
nickel	1.00E-02	1.00E+00
nitroaniline, o-	1.00E-01	1.00E+00
nitrobenzene	1.00E-01	1.00E+00
nitrosodiphenylamine, p-	1.00E-01	1.00E+00
n-nitrosodimethylamine	1.00E-01	1.00E+00
n-nitroso-di-n-propylamine	1.00E-01	1.00E+00
n-nitrosodiphenylamine	1.00E-01	1.00E+00
o-chlorotoluene	1.00E-01	1.00E+00
p-chloro-m-cresol	1.00E-01	1.00E+00

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Table B (cont.)
Summary of Unit Risk Characterization
Construction Worker
Via Dermal Contact with Soils

	Non-Carcinogenic Calculation		
Compound	CDI (mg/kg-d)	RfD (mg/kg-d)	UH (unitless)
ethylbenzene	4.53E-07	NA	NA
fluoranthene	4.53E-07	3.60E-01	1.26E-06
fluorene	4.53E-07	3.60E-01	1.26E-06
gamma-bhc	2.26E-07	2.94E-03	7.70E-05
heptachlor	2.26E-07	2.00E-04	1.13E-03
heptachlor epoxide	2.26E-07	1.17E-05	1.94E-02
hexachlorobenzene	4.53E-07	NA	NA
hexachlorobutadiene	4.53E-07	NA	NA
hexachlorocyclopentadiene	4.53E-07	6.30E-02	7.19E-06
hexachloroethane	4.53E-07	9.00E-03	5.03E-05
indeno(1,2,3-cd)pyrene	4.53E-07	NA	NA
isobutyl alcohol	4.53E-07	2.70E+00	1.68E-07
isophorone	4.53E-07	1.80E+00	2.52E-07
mercury	4.53E-08	4.50E-05	1.01E-03
methoxychlor	4.53E-07	4.50E-03	1.01E-04
methyl methacrylate	4.53E-07	7.20E-02	6.29E-06
methylene bromide	4.53E-07	9.00E-02	5.03E-06
methylene chloride	4.53E-07	6.00E-02	7.55E-06
methyl-tert-butyl ether	4.53E-07	NA	NA
molybdenum	4.53E-08	1.52E-02	2.98E-06
n-butylbenzyl phthalate	4.53E-07	1.80E-01	2.52E-06
nickel	4.53E-08	1.00E-03	4.53E-05
nitroaniline, o-	4.53E-07	NA	NA
nitrobenzene	4.53E-07	4.50E-03	1.01E-04
nitrosodiphenylamine, p-	4.53E-07	NA	NA
n-nitrosodimethylamine	4.53E-07	NA	NA
n-nitroso-di-n-propylamine	4.53E-07	NA	NA
n-nitrosodiphenylamine	4.53E-07	NA	NA
o-chlorotoluene	4.53E-07	1.80E-01	2.52E-06
p-chloro-m-cresol	4.53E-07	1.80E+00	2.52E-07

	Carcinogenic Calculation		
Compound	CDI (mg/kg-d)	CSF $(mg/kg\text{-}d)^{-1}$	UR (unitless)
ethylbenzene	5.32E-10	NA	NA
fluoranthene	5.32E-10	NA	NA
fluorene	5.32E-10	NA	NA
gamma-bhc	2.66E-10	1.12E+00	2.98E-10
heptachlor	2.66E-10	1.43E+01	3.79E-09
heptachlor epoxide	2.66E-10	1.44E+01	3.84E-09
hexachlorobenzene	5.32E-10	2.00E+00	1.06E-09
hexachlorobutadiene	5.32E-10	8.67E-02	4.61E-11
hexachlorocyclopentadiene	5.32E-10	NA	NA
hexachloroethane	5.32E-10	4.33E-02	2.30E-11
indeno(1,2,3-cd)pyrene	5.32E-10	1.33E+00	7.09E-10
isobutyl alcohol	5.32E-10	NA	NA
isophorone	5.32E-10	1.06E-03	5.61E-13
mercury	5.32E-11	NA	NA
methoxychlor	5.32E-10	NA	NA
methyl methacrylate	5.32E-10	NA	NA
methylene bromide	5.32E-10	NA	NA
methylene chloride	5.32E-10	1.40E-02	7.45E-12
methyl-tert-butyl ether	5.32E-10	NA	NA
molybdenum	5.32E-11	NA	NA
n-butylbenzyl phthalate	5.32E-10	NA	NA
nickel	5.32E-11	NA	NA
nitroaniline, o-	5.32E-10	NA	NA
nitrobenzene	5.32E-10	NA	NA
nitrosodiphenylamine, p-	5.32E-10	2.44E-02	1.30E-11
n-nitrosodimethylamine	5.32E-10	1.78E+01	9.45E-09
n-nitroso-di-n-propylamine	5.32E-10	7.78E+00	4.14E-09
n-nitrosodiphenylamine	5.32E-10	1.00E-02	5.32E-12
o-chlorotoluene	5.32E-10	NA	NA
p-chloro-m-cresol	5.32E-10	NA	NA

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Table C
Summary of Unit Risk Characterization
Construction Worker
Via Inhalation of Particulates and Volatiles

Intake Equation = $\frac{CS \times (1/VF + 1/PEF) \times EF \times ED \times ET \times IR}{BW \times AT}$

IR	Inhalation rate of gases (RAGS, 1989)	2.5E+00	m3/h
EF	Exposure frequency	2.0E+01	days/year
EDn	Exposure duration for non-carcinogens	8.2E-02	year
EDc	Exposure duration for carcinogens	8.2E-02	year
BW	Body weight	7.0E+01	kg
ATc	Average time for carcinogens (lifetime)	2.6E+04	days
ATn	Average time for non-carcinogens (EDn x 365)	3.0E+01	days
ET	Exposure time	1.0E+00	h/d
CS	Concentration of chemicals in soil	(see table below)	
VF	Volatilization Factor	(see table below)	
PEF	Particulate Emission Factor	(see table below)	

Chemical Concentrations

Compound	VF (m3/kg)	PEF (m3/kg)	Cs (mg/kg)
ethylbenzene	1.1E+05	4.8E+09	1.0E+00
fluoranthene	6.1E+07	4.8E+09	1.0E+00
fluorene	4.1E+06	4.8E+09	1.0E+00
gamma-bhc	1.0E+07	4.8E+09	1.0E+00
heptachlor	1.9E+06	4.8E+09	1.0E+00
heptachlor epoxide	2.5E+06	4.8E+09	1.0E+00
hexachlorobenzene	1.3E+06	4.8E+09	1.0E+00
hexachlorobutadiene	1.4E+06	4.8E+09	1.0E+00
hexachlorocyclopentadiene	4.9E+05	4.8E+09	1.0E+00
hexachloroethane	1.8E+06	4.8E+09	1.0E+00
indeno(1,2,3-cd)pyrene	4.1E+09	4.8E+09	1.0E+00
isobutyl alcohol	2.0E+05	4.8E+09	1.0E+00
isophorone	3.1E+06	4.8E+09	1.0E+00
mercury	NA	4.8E+09	1.0E+00
methoxychlor	3.8E+07	4.8E+09	1.0E+00
methyl methacrylate	5.7E+04	4.8E+09	1.0E+00

Compound	VF (m3/kg)	PEF (m3/kg)	Cs (mg/kg)
methylene bromide	1.2E+05	4.8E+09	1.0E+00
methylene chloride	3.8E+04	4.8E+09	1.0E+00
methyl-tert-butyl ether	8.8E+04	4.8E+09	1.0E+00
molybdenum	NA	4.8E+09	1.0E+00
n-butylbenzyl phthalate	1.3E+07	4.8E+09	1.0E+00
nickel	NA	4.8E+09	1.0E+00
nitroaniline, o-	1.4E+07	4.8E+09	1.0E+00
nitrobenzene	1.2E+06	4.8E+09	1.0E+00
nitrosodiphenylamine, p-	8.9E+06	4.8E+09	1.0E+00
n-nitrosodimethylamine	5.5E+03	4.8E+09	1.0E+00
n-nitroso-di-n-propylamine	1.0E+06	4.8E+09	1.0E+00
n-nitrosodiphenylamine	1.2E+08	4.8E+09	1.0E+00
o-chlorotoluene	1.6E+05	4.8E+09	1.0E+00
p-chloro-m-cresol	6.2E+06	4.8E+09	1.0E+00

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Table C (cont.)
Summary of Unit Risk Characterization
Construction Worker
Via Inhalation of Particulates and Volatiles

	Non-Carcinogenic Calculation		
Compound	CDI (mg/kg-d)	RfD (mg/kg-d)	UH (unitless)
ethylbenzene	1.8E-08	NA	NA
fluoranthene	3.3E-11	4.0E-01	8.1E-11
fluorene	4.7E-10	4.0E-01	1.2E-09
gamma-bhc	1.9E-10	3.0E-03	6.5E-08
heptachlor	1.0E-09	5.0E-04	2.1E-06
heptachlor epoxide	7.9E-10	1.3E-05	6.1E-05
hexachlorobenzene	1.5E-09	NA	NA
hexachlorobutadiene	1.4E-09	NA	NA
hexachlorocyclopentadiene	4.0E-09	2.0E-04	2.0E-05
hexachloroethane	1.1E-09	1.0E-02	1.1E-07
indeno(1,2,3-cd)pyrene	8.9E-13	NA	NA
isobutyl alcohol	9.6E-09	3.0E+00	3.2E-09
isophorone	6.3E-10	2.0E+00	3.1E-10
mercury	4.1E-13	8.6E-05	4.8E-09
methoxychlor	5.2E-11	5.0E-03	1.0E-08
methyl methacrylate	3.4E-08	8.0E-02	4.3E-07
methylene bromide	1.7E-08	1.0E-01	1.7E-07
methylene chloride	5.2E-08	8.6E-01	6.1E-08
methyl-tert-butyl ether	2.2E-08	NA	NA
molybdenum	4.1E-13	4.0E-02	1.0E-11
n-butylbenzyl phthalate	1.6E-10	2.0E-01	7.8E-10
nickel	4.1E-13	2.0E-02	2.0E-11
nitroaniline, o-	1.4E-10	5.7E-04	2.4E-07
nitrobenzene	1.6E-09	5.7E-03	2.8E-07
nitrosodiphenylamine, p-	2.2E-10	NA	NA
n-nitrosodimethylamine	3.6E-07	NA	NA
n-nitroso-di-n-propylamine	1.9E-09	NA	NA
n-nitrosodiphenylamine	1.6E-11	NA	NA
o-chlorotoluene	1.2E-08	2.0E-01	6.1E-08
p-chloro-m-cresol	3.2E-10	2.0E+00	1.6E-10

	Carcinogenic Calculation		
Compound	CDI (mg/kg-d)	CSF (mg/kg-d)-1	UR (unitless)
ethylbenzene	2.1E-11	NA	NA
fluoranthene	3.8E-14	NA	NA
fluorene	5.6E-13	NA	NA
gamma-bhc	2.3E-13	1.1E+00	2.5E-13
heptachlor	1.2E-12	5.7E+00	7.0E-12
heptachlor epoxide	9.3E-13	1.3E+01	1.2E-11
hexachlorobenzene	1.7E-12	1.8E+00	3.1E-12
hexachlorobutadiene	1.6E-12	7.8E-02	1.3E-13
hexachlorocyclopentadiene	4.7E-12	NA	NA
hexachloroethane	1.3E-12	3.9E-02	5.0E-14
indeno(1,2,3-cd)pyrene	1.0E-15	3.9E-01	4.1E-16
isobutyl alcohol	1.1E-11	NA	NA
isophorone	7.4E-13	9.5E-04	7.0E-16
mercury	4.8E-16	NA	NA
methoxychlor	6.1E-14	NA	NA
methyl methacrylate	4.0E-11	NA	NA
methylene bromide	2.0E-11	NA	NA
methylene chloride	6.1E-11	3.5E-03	2.1E-13
methyl-tert-butyl ether	2.6E-11	NA	NA
molybdenum	4.8E-16	NA	NA
n-butylbenzyl phthalate	1.8E-13	NA	NA
nickel	4.8E-16	9.1E-01	4.4E-16
nitroaniline, o-	1.6E-13	NA	NA
nitrobenzene	1.9E-12	NA	NA
nitrosodiphenylamine, p-	2.6E-13	2.2E-02	5.7E-15
n-nitrosodimethylamine	4.2E-10	1.6E+01	6.7E-09
n-nitroso-di-n-propylamine	2.2E-12	7.0E+00	1.5E-11
n-nitrosodiphenylamine	1.9E-14	9.0E-03	1.7E-16
o-chlorotoluene	1.4E-11	NA	NA
p-chloro-m-cresol	3.7E-13	NA	NA

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Table D
Summary of Unit Risk Calculations
Construction Worker

Chemicals of Concern	Unit Hazard Quotient Soil Inhalation (unitless)	Unit Hazard Quotient Soil Dermal (unitless)	Unit Hazard Quotient Soil Ingestion (unitless)	Unit Hazard Quotient Soil Total (unitless)	Unit Incremental Lifetime Cancer Risk Soil Inhalation (unitless)	Unit Incremental Lifetime Cancer Risk Soil Dermal (unitless)	Unit Incremental Lifetime Cancer Risk Soil Ingestion (unitless)	Unit Incremental Lifetime Cancer Risk Soil Total (unitless)
ethylbenzene	NA	NA	NA	NA	NA	NA	NA	NA
fluoranthene	8.13E-11	1.26E-06	9.37E-07	2.20E-06	NA	NA	NA	NA
fluorene	1.18E-09	1.26E-06	9.37E-07	2.20E-06	NA	NA	NA	NA
gamma-bhc	6.49E-08	7.70E-05	1.25E-04	2.02E-04	2.52E-13	2.98E-10	4.84E-10	7.83E-10
heptachlor	2.08E-06	1.13E-03	7.50E-04	1.88E-03	6.95E-12	3.79E-09	2.51E-09	6.31E-09
heptachlor epoxide	6.08E-05	1.94E-02	2.88E-02	4.83E-02	1.21E-11	3.84E-09	5.72E-09	9.58E-09
hexachlorobenzene	NA	NA	NA	NA	3.11E-12	1.06E-09	7.92E-10	1.86E-09
hexachlorobutadiene	NA	NA	NA	NA	1.28E-13	4.61E-11	3.43E-11	8.06E-11
hexachlorocyclopentadiene	2.00E-05	7.19E-06	5.36E-06	3.25E-05	NA	NA	NA	NA
hexachloroethane	1.08E-07	5.03E-05	3.75E-05	8.79E-05	4.97E-14	2.30E-11	1.72E-11	4.03E-11
indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	4.06E-16	7.09E-10	5.28E-10	1.24E-09
isobutyl alcohol	3.20E-09	1.68E-07	1.25E-07	2.96E-07	NA	NA	NA	NA
isophorone	3.14E-10	2.52E-07	1.87E-07	4.39E-07	7.01E-16	5.61E-13	4.18E-13	9.80E-13
mercury	4.77E-09	1.01E-03	1.25E-03	2.26E-03	NA	NA	NA	NA
methoxychlor	1.04E-08	1.01E-04	7.50E-05	1.76E-04	NA	NA	NA	NA
methyl methacrylate	4.26E-07	6.29E-06	4.69E-06	1.14E-05	NA	NA	NA	NA
methylene bromide	1.69E-07	5.03E-06	3.75E-06	8.95E-06	NA	NA	NA	NA
methylene chloride	6.05E-08	7.55E-06	6.25E-06	1.39E-05	2.13E-13	7.45E-12	6.16E-12	1.38E-11
methyl-tert-butyl ether	NA	NA	NA	NA	NA	NA	NA	NA
molybdenum	1.02E-11	2.98E-06	9.37E-06	1.24E-05	NA	NA	NA	NA
n-butylbenzyl phthalate	7.76E-10	2.52E-06	1.87E-06	4.39E-06	NA	NA	NA	NA
nickel	2.04E-11	4.53E-05	1.87E-05	6.40E-05	4.37E-16	NA	NA	4.37E-16
nitroaniline, o-	2.37E-07	NA	NA	2.37E-07	NA	NA	NA	NA
nitrobenzene	2.77E-07	1.01E-04	7.50E-05	1.76E-04	NA	NA	NA	NA
nitrosodiphenylamine, p-	NA	NA	NA	NA	5.69E-15	1.30E-11	9.68E-12	2.27E-11
n-nitrosodimethylamine	NA	NA	NA	NA	6.70E-09	9.45E-09	7.04E-09	2.32E-08
n-nitroso-di-n-propylamine	NA	NA	NA	NA	1.54E-11	4.14E-09	3.08E-09	7.23E-09
n-nitrosodiphenylamine	NA	NA	NA	NA	1.73E-16	5.32E-12	3.96E-12	9.28E-12
o-chlorotoluene	6.11E-08	2.52E-06	1.87E-06	4.45E-06	NA	NA	NA	NA
p-chloro-m-cresol	1.59E-10	2.52E-07	1.87E-07	4.39E-07	NA	NA	NA	NA

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Table E
Summary of Health-Based Soil Concentrations
Via Construction Worker Scenario

Chemicals of Concern	Hazard Quotient: Total Unit HQ (unitless)	Hazard Quotient: Soil (mg/kg) Scaled Soil Concentration HQ=0.2	Hazard Quotient: Soil (mg/kg) Risk based Concentration HQ=0.2	Incremental Lifetime Cancer Risk: Total Unit ILCR (unitless)	Incremental Lifetime Cancer Risk: Soil (mg/kg) Scaled Soil Concentration ILCR=1E-06	Incremental Lifetime Cancer Risk: Soil (mg/kg) Risk based Concentration ILCR=1E-06
ethylbenzene	NA	NA	NA	NA	NA	NA
fluoranthene	2.20E-06	9.11E+04	9.11E+04	NA	NA	NA
fluorene	2.20E-06	9.11E+04	9.11E+04	NA	NA	NA
gamma-bhc	2.02E-04	9.90E+02	9.90E+02	7.83E-10	1.28E+03	1.28E+03
heptachlor	1.88E-03	1.06E+02	1.06E+02	6.31E-09	1.59E+02	1.59E+02
heptachlor epoxide	4.83E-02	4.14E+00	4.14E+00	9.58E-09	1.04E+02	1.04E+02
hexachlorobenzene	NA	NA	NA	1.86E-09	5.38E+02	5.38E+02
hexachlorobutadiene	NA	NA	NA	8.06E-11	1.24E+04	1.24E+04
hexachlorocyclopentadiene	3.25E-05	6.15E+03	6.15E+03	NA	NA	NA
hexachloroethane	8.79E-05	2.27E+03	2.27E+03	4.03E-11	2.48E+04	2.48E+04
indeno(1,2,3-cd)pyrene	NA	NA	NA	1.24E-09	8.08E+02	8.08E+02
isobutyl alcohol	2.96E-07	6.76E+05	6.76E+05	NA	NA	NA
isophorone	4.39E-07	4.55E+05	4.55E+05	9.80E-13	1.02E+06	1.02E+06
mercury	2.26E-03	8.86E+01	8.86E+01	NA	NA	NA
methoxychlor	1.76E-04	1.14E+03	1.14E+03	NA	NA	NA
methyl methacrylate	1.14E-05	1.75E+04	1.75E+04	NA	NA	NA
methylene bromide	8.95E-06	2.23E+04	2.23E+04	NA	NA	NA
methylene chloride	1.39E-05	1.44E+04	1.44E+04	1.38E-11	7.24E+04	7.24E+04
methyl-tert-butyl ether	NA	NA	NA	NA	NA	NA
molybdenum	1.24E-05	1.62E+04	1.62E+04	NA	NA	NA
n-butylbenzyl phthalate	4.39E-06	4.55E+04	4.55E+04	NA	NA	NA
nickel	6.40E-05	3.12E+03	3.12E+03	4.37E-16	2.29E+09	2.29E+09
nitroaniline, o-	2.37E-07	8.43E+05	8.43E+05	NA	NA	NA
nitrobenzene	1.76E-04	1.14E+03	1.14E+03	NA	NA	NA
nitrosodiphenylamine, p-	NA	NA	NA	2.27E-11	4.41E+04	4.41E+04
n-nitrosodimethylamine	NA	NA	NA	2.32E-08	4.31E+01	4.31E+01
n-nitroso-di-n-propylamine	NA	NA	NA	7.23E-09	1.38E+02	1.38E+02
n-nitrosodiphenylamine	NA	NA	NA	9.28E-12	1.08E+05	1.08E+05
o-chlorotoluene	4.45E-06	4.49E+04	4.49E+04	NA	NA	NA
p-chloro-m-cresol	4.39E-07	4.55E+05	4.55E+05	NA	NA	NA

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Table A
Summary of Unit Risk Characterization
Construction Worker
Via Incidental Ingestion of Soils

Intake Equation = $\frac{CS \times EF \times ED \times CF \times IR}{BW \times AT}$

IRs	Ingestion rate of soil (RAGS, 1989)	480	mg/day
CF	Conversion factor	1.0E-06	kg/mg
EF	Exposure frequency	20	d/year
EDn	Exposure duration for non-carcinogens	0.082	year
EDc	Exposure duration for carcinogens	0.082	year
BW	Body weight	70	kg
ATc	Average time for carcinogens (lifetime)	25550	day
ATn	Average time for non-carcinogens (EDn x 365)	30	day
CS	Concentration of chemicals in soil	(see table below)	

Chemical Concentrations

Compound	Concentration	Compound	Concentration
pentachlorophenol	1.0E+00	zinc	1.0E+00
phenol	1.0E+00		
pyrene	1.0E+00		
selenium	1.0E+00		
silver	1.0E+00		
styrene	1.0E+00		
tetrachloroethene	1.0E+00		
toluene	1.0E+00		
toxaphene	1.0E+00		
trans-1,2-dichloroethene	1.0E+00		
trichloroethene	1.0E+00		
trichlorofluoromethane	1.0E+00		
vanadium	1.0E+00		
vinyl acetate	1.0E+00		
vinyl chloride	1.0E+00		
xylenes	1.0E+00		

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Table A (cont.)
Summary of Unit Risk Characterization
Construction Worker
Via Incidental Ingestion of Soils

	Non-Carcinogenic Calculation		
Compound	CDI (mg/kg-d)	RfD (mg/kg-d)	UH (unitless)
pentachlorophenol	3.75E-07	3.00E-02	1.25E-05
phenol	3.75E-07	6.00E-01	6.25E-07
pyrene	3.75E-07	3.00E-01	1.25E-06
selenium	3.75E-07	5.00E-03	7.50E-05
silver	3.75E-07	5.00E-03	7.50E-05
styrene	3.75E-07	NA	NA
tetrachloroethene	3.75E-07	1.00E-01	3.75E-06
toluene	3.75E-07	2.00E+00	1.87E-07
toxaphene	3.75E-07	NA	NA
trans-1,2-dichloroethene	3.75E-07	2.00E-01	1.87E-06
trichloroethene	3.75E-07	NA	NA
trichlorofluoromethane	3.75E-07	7.00E-01	5.36E-07
vanadium	3.75E-07	7.00E-03	5.36E-05
vinyl acetate	3.75E-07	1.00E+00	3.75E-07
vinyl chloride	3.75E-07	NA	NA
xylenes	3.75E-07	2.00E+00	1.87E-07
zinc	3.75E-07	3.00E-01	1.25E-06
	NA	NA	NA
	NA	NA	NA
	NA	NA	NA
	NA	NA	NA
	NA	NA	NA
	NA	NA	NA
	NA	NA	NA
	NA	NA	NA
	NA	NA	NA
	NA	NA	NA
	NA	NA	NA
	NA	NA	NA
	NA	NA	NA

	Carcinogenic Calculation		
Compound	CDI (mg/kg-d)	CSF (mg/kg-d)-1	UR (unitless)
pentachlorophenol	4.40E-10	1.80E-02	7.92E-12
phenol	4.40E-10	NA	NA
pyrene	4.40E-10	NA	NA
selenium	4.40E-10	NA	NA
silver	4.40E-10	NA	NA
styrene	4.40E-10	NA	NA
tetrachloroethene	4.40E-10	5.10E-02	2.24E-11
toluene	4.40E-10	NA	NA
toxaphene	4.40E-10	1.20E+00	5.28E-10
trans-1,2-dichloroethene	4.40E-10	NA	NA
trichloroethene	4.40E-10	1.50E-02	6.60E-12
trichlorofluoromethane	4.40E-10	NA	NA
vanadium	4.40E-10	NA	NA
vinyl acetate	4.40E-10	NA	NA
vinyl chloride	4.40E-10	2.70E-01	1.19E-10
xylenes	4.40E-10	NA	NA
zinc	4.40E-10	NA	NA
	NA	NA	NA
	NA	NA	NA
	NA	NA	NA
	NA	NA	NA
	NA	NA	NA
	NA	NA	NA
	NA	NA	NA
	NA	NA	NA
	NA	NA	NA
	NA	NA	NA
	NA	NA	NA
	NA	NA	NA
	NA	NA	NA

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Table B
Summary of Unit Risk Characterization
Construction Worker
Via Dermal Contact with Soils

Intake Equation = $\frac{CS \times CF \times EF \times ED \times AF \times ABS \times SA}{BW \times AT}$

SA	Surface area of exposed skin (50th percentile, hands only)	5800	cm^2/day
AF	Adherence Factor	1	mg/cm^2
ABS	Absorption factor (see table below)	csv	
CF	Conversion factor	1.0E-06	kg/mg
EF	Exposure frequency	20	d/year
EDn	Exposure duration for non-carcinogens	0	year
EDc	Exposure duration for carcinogens	0	year
BW	Body weight	70	kg
ATc	Average time for carcinogens (lifetime)	25550	day
ATn	Average time for non-carcinogens (EDn x 365)	30	day
CS	Concentration of chemicals in soil (see table below)	csv	

Chemical Concentrations

Compound	ABS (unitless)	Concentration (mg/kg)
pentachlorophenol	2.50E-01	1.00E+00
phenol	1.00E-01	1.00E+00
pyrene	1.50E-01	1.00E+00
selenium	1.00E-02	1.00E+00
silver	1.00E-02	1.00E+00
styrene	1.00E-01	1.00E+00
tetrachloroethene	1.00E-01	1.00E+00
toluene	1.00E-01	1.00E+00
toxaphene	1.00E-01	1.00E+00
trans-1,2-dichloroethene	1.00E-01	1.00E+00
trichloroethene	1.00E-01	1.00E+00
trichlorofluoromethane	1.00E-01	1.00E+00
vanadium	1.00E-02	1.00E+00
vinyl acetate	1.00E-01	1.00E+00
vinyl chloride	1.00E-01	1.00E+00
xylenes	1.00E-01	1.00E+00

Compound	ABS (unitless)	Concentration (mg/kg)
zinc	1.00E-02	1.00E+00
NA	NA	NA
NA	NA	NA
NA	NA	NA
NA	NA	NA
NA	NA	NA
NA	NA	NA
NA	NA	NA
NA	NA	NA
NA	NA	NA
NA	NA	NA
NA	NA	NA
NA	NA	NA
NA	NA	NA

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Table B (cont.)
Summary of Unit Risk Characterization
Construction Worker
Via Dermal Contact with Soils

	Non-Carcinogenic Calculation		
Compound	CDI (mg/kg-d)	RfD (mg/kg-d)	UH (unitless)
pentachlorophenol	1.13E-06	3.00E-02	3.77E-05
phenol	4.53E-07	5.40E-01	8.39E-07
pyrene	6.79E-07	1.29E-01	5.27E-06
selenium	4.53E-08	4.85E-03	9.34E-06
silver	4.53E-08	1.05E-03	4.31E-05
styrene	4.53E-07	NA	NA
tetrachloroethene	4.53E-07	9.00E-02	5.03E-06
toluene	4.53E-07	2.00E+00	2.26E-07
toxaphene	4.53E-07	NA	NA
trans-1,2-dichloroethene	4.53E-07	1.80E-01	2.52E-06
trichloroethene	4.53E-07	NA	NA
trichlorofluoromethane	4.53E-07	6.30E-01	7.19E-07
vanadium	4.53E-08	3.50E-04	1.29E-04
vinyl acetate	4.53E-07	9.00E-01	5.03E-07
vinyl chloride	4.53E-07	NA	NA
xylenes	4.53E-07	1.80E+00	2.52E-07
zinc	4.53E-08	9.00E-02	5.03E-07
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA

	Carcinogenic Calculation		
Compound	CDI (mg/kg-d)	CSF $(mg/kg\text{-}d)^{-1}$	UR (unitless)
pentachlorophenol	1.33E-09	1.80E-02	2.39E-11
phenol	5.32E-10	NA	NA
pyrene	7.98E-10	NA	NA
selenium	5.32E-11	NA	NA
silver	5.32E-11	NA	NA
styrene	5.32E-10	NA	NA
tetrachloroethene	5.32E-10	5.67E-02	3.01E-11
toluene	5.32E-10	NA	NA
toxaphene	5.32E-10	1.33E+00	7.09E-10
trans-1,2-dichloroethene	5.32E-10	NA	NA
trichloroethene	5.32E-10	1.53E-02	8.14E-12
trichlorofluoromethane	5.32E-10	NA	NA
vanadium	5.32E-11	NA	NA
vinyl acetate	5.32E-10	NA	NA
vinyl chloride	5.32E-10	3.00E-01	1.60E-10
xylenes	5.32E-10	NA	NA
zinc	5.32E-11	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA

BOE-C6-0093702

Table C
Summary of Unit Risk Characterization
Construction Worker
Via Inhalation of Particulates and Volatiles

Intake Equation = $\frac{CS \times (1/VF + 1/PEF) \times EF \times ED \times ET \times IR}{BW \times AT}$

IR	Inhalation rate of gases (RAGS, 1989)	2.5E+00	m3/h
EF	Exposure frequency	2.0E+01	days/year
EDn	Exposure duration for non-carcinogens	8.2E-02	year
EDc	Exposure duration for carcinogens	8.2E-02	year
BW	Body weight	7.0E+01	kg
ATc	Average time for carcinogens (lifetime)	2.6E+04	days
ATn	Average time for non-carcinogens (EDn x 365)	3.0E+01	days
ET	Exposure time	1.0E+00	h/d
CS	Concentration of chemicals in soil	(see table below)	
VF	Volatilization Factor	(see table below)	
PEF	Particulate Emission Factor	(see table below)	

Chemical Concentrations

Compound	VF (m3/kg)	PEF (m3/kg)	Cs (mg/kg)
pentachlorophenol	1.4E+07	4.8E+09	1.0E+00
phenol	5.1E+06	4.8E+09	1.0E+00
pyrene	8.2E+07	4.8E+09	1.0E+00
selenium	NA	4.8E+09	1.0E+00
silver	NA	4.8E+09	1.0E+00
styrene	3.6E+05	4.8E+09	1.0E+00
tetrachloroethene	2.3E+05	4.8E+09	1.0E+00
toluene	1.0E+05	4.8E+09	1.0E+00
toxaphene	6.2E+06	4.8E+09	1.0E+00
trans-1,2-dichloroethene	5.9E+04	4.8E+09	1.0E+00
trichloroethene	6.9E+04	4.8E+09	1.0E+00
trichlorofluoromethane	3.3E+04	4.8E+09	1.0E+00
vanadium	NA	4.8E+09	1.0E+00
vinyl acetate	1.4E+05	4.8E+09	1.0E+00
vinyl chloride	1.5E+03	4.8E+09	1.0E+00
xylenes	2.5E+05	4.8E+09	1.0E+00

Compound	VF (m3/kg)	PEF (m3/kg)	Cs (mg/kg)
zinc	NA	4.8E+09	1.0E+00
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA

BOE-C6-0093703

Table C (cont.)
Summary of Unit Risk Characterization
Construction Worker
Via Inhalation of Particulates and Volatiles

	Non-Carcinogenic Calculation		
Compound	CDI (mg/kg-d)	RfD (mg/kg-d)	UH (unitless)
pentachlorophenol	1.4E-10	3.0E-02	4.7E-09
phenol	3.9E-10	6.0E-01	6.4E-10
pyrene	2.4E-11	3.0E-01	8.1E-11
selenium	4.1E-13	5.0E-03	8.2E-11
silver	4.1E-13	5.0E-03	8.2E-11
styrene	5.4E-09	8.6E-01	6.3E-09
tetrachloroethene	8.3E-09	1.0E-01	8.3E-08
toluene	1.9E-08	2.0E+00	9.7E-09
toxaphene	3.2E-10	NA	NA
trans-1,2-dichloroethene	3.3E-08	2.0E-01	1.7E-07
trichloroethene	2.8E-08	NA	NA
trichlorofluoromethane	5.9E-08	2.0E+00	3.0E-08
vanadium	4.1E-13	7.0E-03	5.8E-11
vinyl acetate	1.4E-08	5.7E-02	2.4E-07
vinyl chloride	1.3E-06	NA	NA
xylenes	7.7E-09	2.0E+00	3.9E-09
zinc	4.1E-13	3.0E-01	1.4E-12
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA

	Carcinogenic Calculation		
Compound	CDI (mg/kg-d)	CSF (mg/kg-d)-1	UR (unitless)
pentachlorophenol	1.7E-13	1.8E-02	3.0E-15
phenol	4.5E-13	NA	NA
pyrene	2.9E-14	NA	NA
selenium	4.8E-16	NA	NA
silver	4.8E-16	NA	NA
styrene	6.4E-12	NA	NA
tetrachloroethene	9.8E-12	2.1E-02	2.1E-13
toluene	2.3E-11	NA	NA
toxaphene	3.7E-13	1.2E+00	4.5E-13
trans-1,2-dichloroethene	3.9E-11	NA	NA
trichloroethene	3.3E-11	1.0E-02	3.3E-13
trichlorofluoromethane	7.0E-11	NA	NA
vanadium	4.8E-16	NA	NA
vinyl acetate	1.6E-11	NA	NA
vinyl chloride	1.5E-09	2.7E-01	4.1E-10
xylenes	9.1E-12	NA	NA
zinc	4.8E-16	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA

BOE-C6-0093704

Table D
Summary of Unit Risk Calculations
Construction Worker

Chemicals of Concern	Unit Hazard Quotient Soil Inhalation (unitless)	Unit Hazard Quotient Soil Dermal (unitless)	Unit Hazard Quotient Soil Ingestion (unitless)	Unit Hazard Quotient Soil Total (unitless)	Unit Incremental Lifetime Cancer Risk Soil Inhalation (unitless)	Unit Incremental Lifetime Cancer Risk Soil Dermal (unitless)	Unit Incremental Lifetime Cancer Risk Soil Ingestion (unitless)	Unit Incremental Lifetime Cancer Risk Soil Total (unitless)
pentachlorophenol	4.69E-09	3.77E-05	1.25E-05	5.02E-05	2.97E-15	2.39E-11	7.92E-12	3.19E-11
phenol	6.45E-10	8.39E-07	6.25E-07	1.46E-06	NA	NA	NA	NA
pyrene	8.10E-11	5.27E-06	1.25E-06	6.52E-06	NA	NA	NA	NA
selenium	8.18E-11	9.34E-06	7.50E-05	8.43E-05	NA	NA	NA	NA
silver	8.18E-11	4.31E-05	7.50E-05	1.18E-04	NA	NA	NA	NA
styrene	6.34E-09	NA	NA	6.34E-09	NA	NA	NA	NA
tetrachloroethene	8.34E-08	5.03E-06	3.75E-06	8.86E-06	2.06E-13	3.01E-11	2.24E-11	5.28E-11
toluene	9.68E-09	2.26E-07	1.87E-07	4.24E-07	NA	NA	NA	NA
toxaphene	NA	NA	NA	NA	4.45E-13	7.09E-10	5.28E-10	1.24E-09
trans-1,2-dichloroethene	1.66E-07	2.52E-06	1.87E-06	4.56E-06	NA	NA	NA	NA
trichloroethene	NA	NA	NA	NA	3.35E-13	8.14E-12	6.60E-12	1.51E-11
trichlorofluoromethane	2.97E-08	7.19E-07	5.36E-07	1.28E-06	NA	NA	NA	NA
vanadium	5.84E-11	1.29E-04	5.36E-05	1.83E-04	NA	NA	NA	NA
vinyl acetate	2.44E-07	5.03E-07	3.75E-07	1.12E-06	NA	NA	NA	NA
vinyl chloride	NA	NA	NA	NA	4.06E-10	1.60E-10	1.19E-10	6.85E-10
xylenes	3.87E-09	2.52E-07	1.87E-07	4.43E-07	NA	NA	NA	NA
zinc	1.36E-12	5.03E-07	1.25E-06	1.75E-06	NA	NA	NA	NA
	NA	NA	NA	NA	NA	NA	NA	NA
	NA	NA	NA	NA	NA	NA	NA	NA
	NA	NA	NA	NA	NA	NA	NA	NA
	NA	NA	NA	NA	NA	NA	NA	NA
	NA	NA	NA	NA	NA	NA	NA	NA
	NA	NA	NA	NA	NA	NA	NA	NA
	NA	NA	NA	NA	NA	NA	NA	NA
	NA	NA	NA	NA	NA	NA	NA	NA
	NA	NA	NA	NA	NA	NA	NA	NA
	NA	NA	NA	NA	NA	NA	NA	NA
	NA	NA	NA	NA	NA	NA	NA	NA
	NA	NA	NA	NA	NA	NA	NA	NA
	NA	NA	NA	NA	NA	NA	NA	NA
	NA	NA	NA	NA	NA	NA	NA	NA

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Table E
Summary of Health-Based Soil Concentrations
Via Construction Worker Scenario

Chemicals of Concern	Hazard Quotient: Soil (mg/kg) Total Unit HQ (unitless)	Hazard Quotient: Soil (mg/kg) Scaled Soil Concentration HQ=0.2	Hazard Quotient: Soil (mg/kg) Risk based Concentration HQ=0.2	Incremental Lifetime Cancer Risk: Soil (mg/kg) Total Unit ILCR (unitless)	Incremental Lifetime Cancer Risk: Soil (mg/kg) Scaled Soil Concentration ILCR=1E-06	Incremental Lifetime Cancer Risk: Soil (mg/kg) Risk based Concentration ILCR=1E-06
pentachlorophenol	5.02E-05	3.98E+03	3.98E+03	3.19E-11	3.14E+04	3.14E+04
phenol	1.46E-06	1.37E+05	1.37E+05	NA	NA	NA
pyrene	6.52E-06	3.07E+04	3.07E+04	NA	NA	NA
selenium	8.43E-05	2.37E+03	2.37E+03	NA	NA	NA
silver	1.18E-04	1.69E+03	1.69E+03	NA	NA	NA
styrene	6.34E-09	3.16E+07	3.16E+07	NA	NA	NA
tetrachloroethene	8.86E-06	2.26E+04	2.26E+04	5.28E-11	1.89E+04	1.89E+04
toluene	4.24E-07	4.72E+05	4.72E+05	NA	NA	NA
toxaphene	NA	NA	NA	1.24E-09	8.08E+02	8.08E+02
trans-1,2-dichloroethene	4.56E-06	4.39E+04	4.39E+04	NA	NA	NA
trichloroethene	NA	NA	NA	1.51E-11	6.63E+04	6.63E+04
trichlorofluoromethane	1.28E-06	1.56E+05	1.56E+05	NA	NA	NA
vanadium	1.83E-04	1.09E+03	1.09E+03	NA	NA	NA
vinyl acetate	1.12E-06	1.78E+05	1.78E+05	NA	NA	NA
vinyl chloride	NA	NA	NA	6.85E-10	1.46E+03	1.46E+03
xylenes	4.43E-07	4.52E+05	4.52E+05	NA	NA	NA
zinc	1.75E-06	1.14E+05	1.14E+05	NA	NA	NA
	NA	NA	NA	NA	NA	NA
	NA	NA	NA	NA	NA	NA
	NA	NA	NA	NA	NA	NA
	NA	NA	NA	NA	NA	NA
	NA	NA	NA	NA	NA	NA
	NA	NA	NA	NA	NA	NA
	NA	NA	NA	NA	NA	NA
	NA	NA	NA	NA	NA	NA
	NA	NA	NA	NA	NA	NA
	NA	NA	NA	NA	NA	NA
	NA	NA	NA	NA	NA	NA
	NA	NA	NA	NA	NA	NA
	NA	NA	NA	NA	NA	NA
	NA	NA	NA	NA	NA	NA

BOE-C6-0093706

Application for
Facility Permit / Waste Discharge
Supplemental Documentation
Boeing Realty Corporation
C-6 Facility

Attachment 2

Waste Profile Sheets

Analytical Data Summary
Remedial Excavation OA1-RE-1 Stockpile A

Analyte	EPA Method	Sample Number and Collection Date OA1-RE1-SP1 7/15/97	Regulatory Levels TTLC (mg/kg)	 STLC (mg/L)
TRPH (mg/kg)	418.1	2,100		
Title 22 Metals (mg/kg)				
Antimony	6010	<5.0	500	15
Arsenic	6010	<1.0	500	5
Barium	6010	100	10,000	100
Beryllium	6010	<0.1	75	0.75
Cadmium	6010	<0.1	100	1
Chromium (VI)	7196	<0.5	500	5
Chromium (total)	6010	80 (2)(3)	2,500	5
Cobalt	6010	7.4	8,000	80
Copper	6010	12	2,500	25
Lead (total)	6010	190 (4)(5)	1,000	5
Mercury	7471	<0.01	20	0.2
Molybdenum	6010	<0.5	3,500	350
Nickel	6010	11	2,000	20
Selenium	6010	<1.0	100	1
Silver	6010	<0.1	500	5
Thallium	6010	<5.0	700	7
Vanadium	6010	33	2,400	24
Zinc	6010	44	5,000	250
VOCs (1) (mg/kg)				
1,3,5-Trimethylbenzene	8260	0.130		
1,2,4-Trimethylbenzene	8260	0.160		
n-Butylbenzene	8260	0.031		
Naphthalene	8260	0.100		
SVOCs (1) (mg/kg)				
Acenaphthene	8270	2.900		
Anthracene	8270	1.700		
Benzo (a) Anthracene	8270	72.000		
Benzo (b) Fluoranthene	8270	76.000		
Benzo (k) Fluoranthene	8270	33.000		
Benzo (a) Pyrene	8270	40.000		
Benzo (g,h,i) Perylene	8270	28.000		
Chrysene	8270	200.000		
Dibenz (a,h) Anthracene	8270	9.700		
Fluoranthene	8270	180.000		
Fluorene	8270	11.000		
Indeno (1,2,3-cd)Pyrene	8270	19.000		
2-Methylnaphthalene	8270	85.000		
Naphthalene	8270	18.000		
Phenanthrene	8270	95.000		
Pyrene	8270	220.000		
Carbon Chain Range (mg/kg)	8015m	--		
PCBs (mg/kg)	8080	--		

mg/kg = milligrams per kilogram
mg/L = milligrams per liter
– = not analyzed
ND = not detected
VOCs = Volatile Organic Compounds
SVOCs = Semi-volatile Organic Compounds
TRPH = Total Recoverable Petroleum Hydrocarbons
PCBs = Polychlorinated biphenyls
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration

(1) VOCs and SVOCs not listed were not detected
(2) Waste Extraction Test performed on this sample. Result was 0.27 mg/L.
(3) TCLP analysis performed on this sample. Result was <0.1 mg/L.
(4) Waste Extraction Test performed on this sample. Result was <1.0 mg/L.
(5) TCLP analysis performed on this sample. Result was <1.0 mg/L.

Analytical Data Summary
Remedial Excavation OA1-RE-1 Stockpile B

Analyte	EPA Method	Sample Number and Collection Date OA1-RE1-SP2 7/15/97	Regulatory Levels TTLC (mg/kg)	 STLC (mg/L)
TRPH (mg/kg)	418.1	1,000		
Title 22 Metals (mg/kg)				
Antimony	6010	<5.0	500	15
Arsenic	6010	<1.0	500	5
Barium	6010	110	10,000	100
Beryllium	6010	<0.1	75	0.75
Cadmium	6010	<0.1	100	1
Chromium (VI)	7196	<0.5	500	5
Chromium (total)	6010	87 (2)(3)	2,500	5
Cobalt	6010	7.3	8,000	80
Copper	6010	14	2,500	25
Lead (total)	6010	220 (4)(5)	1,000	5
Mercury	7471	<0.01	20	0.2
Molybdenum	6010	<0.5	3,500	350
Nickel	6010	12	2,000	20
Selenium	6010	<1.0	100	1
Silver	6010	<0.1	500	5
Thallium	6010	<5.0	700	7
Vanadium	6010	34	2,400	24
Zinc	6010	60	5,000	250
VOCs (1) (mg/kg)				
1,3,5-Trimethylbenzene	8260	0.044		
1,2,4-Trimethylbenzene	8260	0.110		
n-Butylbenzene	8260	0.040		
Naphthalene	8260	1.000		
SVOCs (1) (mg/kg)				
Acenaphthene	8270	0.620		
Anthracene	8270	1.800		
Benzo (a) Anthracene	8270	5.100		
Benzo (b) Fluoranthene	8270	6.200		
Benzo (k) Fluoranthene	8270	2.200		
Benzo (a) Pyrene	8270	3.700		
Benzo (g,h,i) Perylene	8270	3.000		
Chrysene	8270	9.900		
Dibenz (a,h) Anthracene	8270	1.000		
Fluoranthene	8270	9.900		
Fluorene	8270	1.700		
Indeno (1,2,3-cd)Pyrene	8270	1.900		
2-Methylnaphthalene	8270	8.600		
Naphthalene	8270	1.000		
Phenanthrene	8270	12.000		
Pyrene	8270	20.000		
Carbon Chain Range (mg/kg)	8015m	--		
PCBs (mg/kg)	8080	--		

mg/kg = milligrams per kilogram
mg/L = milligrams per liter
-- = not analyzed
ND = not detected
VOCs = Volatile Organic Compounds
SVOCs = Semi-volatile Organic Compounds
TRPH = Total Recoverable Petroleum Hydrocarbons
PCBs = Polychlorinated biphenyls
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration

(1) VOCs and SVOCs not listed were not detected
(2) Waste Extraction Test performed on this sample. Result was 1.8 mg/L.
(3) TCLP analysis performed on this sample. Result was 0.13 mg/L.
(4) Waste Extraction Test performed on this sample. Result was 4.5 mg/L.
(5) TCLP analysis performed on this sample. Result was <1.0 mg/L.

Analytical Data Summary
Remedial Excavation OA1-RE-1 Stockpile G

Analyte	EPA Method	Sample Number and Collection Date OA1-RE1-SP7 7/15/97	Regulatory Levels TTLC (mg/kg)	 STLC (mg/L)
TRPH (mg/kg)	418.1	3,100		
Title 22 Metals (mg/kg)				
Antimony	6010	<5.0	500	15
Arsenic	6010	<1.0	500	5
Barium	6010	110	10,000	100
Beryllium	6010	<0.1	75	0.75
Cadmium	6010	<0.1	100	1
Chromium (VI)	7196	<0.5	500	5
Chromium (total)	6010	110 (2)(3)	2,500	5
Cobalt	6010	7.0	8,000	80
Copper	6010	20	2,500	25
Lead (total)	6010	14	1,000	5
Mercury	7471	<0.01	20	0.2
Molybdenum	6010	<0.5	3,500	350
Nickel	6010	13	2,000	20
Selenium	6010	<1.0	100	1
Silver	6010	<0.1	500	5
Thallium	6010	<5.0	700	7
Vanadium	6010	36	2,400	24
Zinc	6010	65	5,000	250
VOCs (1) (mg/kg)				
Ethylbenzene	8260	1.700		
Total Xylenes	8260	13.000		
n-Propylbenzene	8260	0.920		
1,3,5-Trimethylbenzene	8260	9.600		
1,2,4-Trimethylbenzene	8260	23.000		
n-Butylbenzene	8260	1.100		
Naphthalene	8260	64.000		
SVOCs (1) (mg/kg)				
Acenaphthene	8270	3.500		
Anthracene	8270	7.500		
Benzo (a) Anthracene	8270	14.000		
Benzo (b) Fluoranthene	8270	12.000		
Benzo (g,h,i) Perylene	8270	10.000		
Chrysene	8270	31.000		
Fluoranthene	8270	18.000		
Fluorene	8270	10.000		
2-Methylnaphthalene	8270	160.000		
Naphthalene	8270	41.000		
Phenanthrene	8270	59.000		
Pyrene	8270	55.000		
Carbon Chain Range (mg/kg)	8015m	--		
PCBs (mg/kg)	8080	--		

mg/kg = milligrams per kilogram
mg/L = milligrams per liter
-- = not analyzed
ND = not detected
VOCs = Volatile Organic Compounds
SVOCs = Semi-volatile Organic Compounds
TRPH = Total Recoverable Petroleum Hydrocarbons
PCBs = Polychlorinated biphenyls
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration

(1) VOCs and SVOCs not listed were not detected
(2) Waste Extraction Test performed on this sample. Result was 0.56 mg/L.
(3) TCLP analysis performed on this sample. Result was <0.1 mg/L.

Analytical Data Summary
Remedial Excavation OA1-RE-1 Stockpile I

Analyte	EPA Method	Sample Number and Collection Date OA1-RE1-SP9 7/16/97	Regulatory Levels TTLC (mg/kg)	Regulatory Levels STLC (mg/L)
TRPH (mg/kg)	418.1	700		
Title 22 Metals (mg/kg)				
Antimony	6010	<5.0	500	15
Arsenic	6010	<1.0	500	5
Barium	6010	110	10,000	100
Beryllium	6010	<0.1	75	0.75
Cadmium	6010	<0.1	100	1
Chromium (VI)	7196	<0.5	500	5
Chromium (total)	6010	31	2,500	5
Cobalt	6010	8.3	8,000	80
Copper	6010	12	2,500	25
Lead (total)	6010	<1.0	1,000	5
Mercury	7471	<0.01	20	0.2
Molybdenum	6010	<0.5	3,500	350
Nickel	6010	13	2,000	20
Selenium	6010	<1.0	100	1
Silver	6010	<0.1	500	5
Thallium	6010	<5.0	700	7
Vanadium	6010	36	2,400	24
Zinc	6010	45	5,000	250
VOCs (1) (mg/kg)				
n-Propylbenzene	8260	0.063		
1,2,4-Trimethylbenzene	8260	0.110		
n-Butylbenzene	8260	0.110		
Naphthalene	8260	4.300		
SVOCs (1) (mg/kg)				
Acenaphthene	8270	0.890		
Anthracene	8270	1.900		
Benzo (a) Anthracene	8270	2.800		
Benzo (b) Fluoranthene	8270	2.100		
Benzo (k) Fluoranthene	8270	0.790		
Benzo (a) Pyrene	8270	2.800		
Benzo (g,h,i) Perylene	8270	2.000		
Chrysene	8270	3.700		
Fluoranthene	8270	2.500		
Fluorene	8270	1.600		
Indeno (1,2,3-cd)Pyrene	8270	0.980		
2-Methylnaphthalene	8270	31.000		
Naphthalene	8270	6.800		
Phenanthrene	8270	14.000		
Pyrene	8270	13.000		
Carbon Chain Range (mg/kg)	8015m	--		
PCBs (mg/kg)	8080	--		

(1) VOCs and SVOCs not listed were not detected

mg/kg = milligrams per kilogram
mg/L = milligrams per liter
-- = not analyzed
ND = not detected
VOCs = Volatile Organic Compounds
SVOCs = Semi-volatile Organic Compounds
TRPH = Total Recoverable Petroleum Hydrocarbons
PCBs = Polychlorinated biphenyls
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration

Analytical Data Summary
Remedial Excavation OA1-RE-1 Stockpile J

Analyte	EPA Method	Sample Number and Collection Date: OA1-RE1-SP10 7/16/97	Sample Number and Collection Date: PL-GS-1-2.5' 6/3/97	Regulatory Levels: TTLC (mg/kg)	Regulatory Levels: STLC (mg/L)
TRPH (mg/kg)	418.1	13,000	16,000		
TPHd (mg/kg)	8015M	--	38,000		
TPHg (mg/kg)	8015M	--	100		
Title 22 Metals (mg/kg)					
Antimony	6010	<5.0	<5.0	500	15
Arsenic	6010	<1.0	<1.0	500	5
Barium	6010	95	96	10,000	100
Beryllium	6010	<0.1	<0.1	75	0.75
Cadmium	6010	<0.1	1.4	100	1
Chromium (VI)	7196	<0.5	<0.5	500	5
Chromium (total)	6010	38	250 (2)	2,500	5
Cobalt	6010	6.6	6.0	8,000	80
Copper	6010	11	28	2,500	25
Lead (total)	6010	21	290 (3)	1,000	5
Mercury	7471	<0.01	<0.01	20	0.2
Molybdenum	6010	<0.5	<0.5	3,500	350
Nickel	6010	11	15	2,000	20
Selenium	6010	<1.0	<1.0	100	1
Silver	6010	<0.1	<0.1	500	5
Thallium	6010	<5.0	<5.0	700	7
Vanadium	6010	28	28	2,400	24
Zinc	6010	41	94	5,000	250
VOCs (1) (mg/kg)					
Ethylbenzene	8260	<0.0025	0.270		
Total Xylenes	8260	<0.0025	0.140		
Isopropylbenzene	8260	<0.0025	0.100		
n-Propylbenzene	8260	<0.0025	0.190		
1,3,5-Trimethylbenzene	8260	0.110	0.210		
1,2,4-Trimethylbenzene	8260	<0.0025	0.350		
sec-Butylbenzene	8260	<0.0025	0.130		
Naphthalene	8260	0.860	1.300		
SVOCs (1) (mg/kg)					
Acenaphthene	8270	4.300	2.100		
Anthracene	8270	11.000	5.600		
Benzo (a) Anthracene	8270	26.000	15.000		
Benzo (b) Fluoranthene	8270	28.000	23.000		
Benzo (k) Fluoranthene	8270	12.000	7.200		
Benzo (a) Pyrene	8270	22.000	13.000		
Benzo (g,h,i) Perylene	8270	14.000	10.000		
Chrysene	8270	48.000	30.000		
Fluoranthene	8270	53.000	30.000		
Fluorene	8270	13.000	5.600		
Indeno (1,2,3-cd)Pyrene	8270	6.800	6.300		
2-Methylnaphthalene	8270	160.000	8.200		
Naphthalene	8270	41.000	1.400		
Phenanthrene	8270	80.000	36.000		
Pyrene	8270	120.000	72.000		
Carbon Chain Range (mg/kg)					
Up to and including C12	8015m	480	1,500		
C13-C22	8015m	7,600	31,000		
C23 and higher	8015m	2,100	7,900		
PCBs (mg/kg)	8080	ND	ND		

mg/kg = milligrams per kilogram
mg/L = milligrams per liter
-- = not analyzed
ND = not detected
VOCs = Volatile Organic Compounds
SVOCs = Semi-volatile Organic Compounds
TRPH = Total Recoverable Petroleum Hydrocarbons
PCBs = Polychlorinated biphenyls
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration

(1) VOCs and SVOCs not listed were not detected
(2) Waste Extraction Test performed on this sample. Result was 4.5 mg/L.
(3) Waste Extraction Test performed on this sample. Result was 1.8 mg/L.
TPHd = Total Petroleum Hydrocarbons as diesel
TPHg = Total Petroleum Hydrocarbons as gasoline

Analytical Data Summary
Remedial Excavation OA1-RE-2 Stockpile A1/A2

Analyte	EPA Method	Sample Number and Collection Date: OA1-RE2-SP1A 7/16/97	OA1-RE2-SP1B 7/16/97	Regulatory Levels: TTLC (mg/kg)	STLC (mg/L)
TRPH (mg/kg)	418.1	8,300	83		
Title 22 Metals (mg/kg)					
Antimony	6010	<5.0	<5.0	500	15
Arsenic	6010	<1.0	<1.0	500	5
Barium	6010	81	110	10,000	100
Beryllium	6010	<0.1	<0.1	75	0.75
Cadmium	6010	<0.1	<0.1	100	1
Chromium (VI)	7196	<0.5	<0.5	500	5
Chromium (total)	6010	43	29	2,500	5
Cobalt	6010	5.9	8.1	8,000	80
Copper	6010	9.6	11	2,500	25
Lead (total)	6010	4.2	5.0	1,000	5
Mercury	7471	<0.01	<0.01	20	0.2
Molybdenum	6010	<0.5	<0.5	3,500	350
Nickel	6010	8.6	14	2,000	20
Selenium	6010	<1.0	<1.0	100	1
Silver	6010	<0.1	<0.1	500	5
Thallium	6010	<5.0	<5.0	700	7
Vanadium	6010	25	27	2,400	24
Zinc	6010	29	48	5,000	250
VOCs (1) (mg/kg)					
Ethylbenzene	8260	2.500	<0.0025		
Total Xylenes	8260	4.200	<0.0025		
n-Propylbenzene	8260	1.600	<0.0025		
1,3,5-Trimethylbenzene	8260	0.580	<0.0025		
1,2,4-Trimethylbenzene	8260	36.000	<0.0025		
n-Butylbenzene	8260	2.700	<0.0025		
Naphthalene	8260	110.000	0.017		
SVOCs (1) (mg/kg)					
Acenaphthene	8270	6.200	<0.100		
Anthracene	8270	16.000	0.160		
Benzo (a) Anthracene	8270	43.000	0.790		
Benzo (b) Fluoranthene	8270	55.000	1.200		
Benzo (k) Fluoranthene	8270	19.000	<0.250		
Benzo (a) Pyrene	8270	40.000	0.570		
Benzo (g,h,i) Perylene	8270	26.000	0.420		
Chrysene	8270	64.000	2.100		
Dibenz (a,h) Anthracene	8270	6.200	<0.100		
Fluoranthene	8270	95.000	1.700		
Fluorene	8270	19.000	<0.100		
Indeno (1,2,3-cd)Pyrene	8270	15.000	0.300		
2-Methylnaphthalene	8270	300.000	0.430		
Naphthalene	8270	87.000	<0.100		
Phenanthrene	8270	130.000	0.970		
Pyrene	8270	200.000	2.200		
Carbon Chain Range (mg/kg)	8015m	--	--		
PCBs (mg/kg)	8080	--	--		

mg/kg = milligrams per kilogram
mg/L = milligrams per liter
-- = not analyzed
ND = not detected
VOCs = Volatile Organic Compounds
SVOCs = Semi-volatile Organic Compounds
TRPH = Total Recoverable Petroleum Hydrocarbons
PCBs = Polychlorinated biphenyls
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration

(1) VOCs and SVOCs not listed were not detected

Analytical Data Summary
Remedial Excavation OA1-RE-2 Stockpile C

Analyte	EPA Method	Sample Number and Collection Date OA1-RE2-SP3 7/16/97	Regulatory Levels TTLC (mg/kg)	 STLC (mg/L)
TRPH (mg/kg)	418.1	240		
Title 22 Metals (mg/kg)				
Antimony	6010	<5.0	500	15
Arsenic	6010	<1.0	500	5
Barium	6010	77	10,000	100
Beryllium	6010	<0.1	75	0.75
Cadmium	6010	<0.1	100	1
Chromium (VI)	7196	<0.5	500	5
Chromium (total)	6010	21	2,500	5
Cobalt	6010	6.1	8,000	80
Copper	6010	9.5	2,500	25
Lead (total)	6010	<1.0	1,000	5
Mercury	7471	<0.01	20	0.2
Molybdenum	6010	<0.5	3,500	350
Nickel	6010	7.5	2,000	20
Selenium	6010	<1.0	100	1
Silver	6010	<0.1	500	5
Thallium	6010	<5.0	700	7
Vanadium	6010	25	2,400	24
Zinc	6010	28	5,000	250
VOCs (1) (mg/kg)				
1,3,5-Trimethylbenzene	8260	0.026		
1,2,4-Trimethylbenzene	8260	0.054		
n-Butylbenzene	8260	0.0083		
Naphthalene	8260	0.260		
SVOCs (1) (mg/kg)				
Anthracene	8270	16.000		
Benzo (a) Anthracene	8270	62.000		
Benzo (b) Fluoranthene	8270	64.000		
Benzo (k) Fluoranthene	8270	25.000		
Benzo (a) Pyrene	8270	32.000		
Benzo (g,h,i) Perylene	8270	18.000		
Chrysene	8270	63.000		
Dibenz (a,h) Anthracene	8270	5.800		
Dibenzofuran	8270	4.100		
Fluoranthene	8270	180.000		
Fluorene	8270	12.000		
Indeno (1,2,3-cd)Pyrene	8270	15.000		
2-Methylnaphthalene	8270	5.000		
Phenanthrene	8270	120.000		
Pyrene	8270	170.000		
Carbon Chain Range (mg/kg)	8015m	--		
PCBs (mg/kg)	8080	--		

mg/kg = milligrams per kilogram
mg/L = milligrams per liter
-- = not analyzed
ND = not detected
VOCs = Volatile Organic Compounds
SVOCs = Semi-volatile Organic Compounds
TRPH = Total Recoverable Petroleum Hydrocarbons
PCBs = Polychlorinated biphenyls
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration

(1) VOCs and SVOCs not listed were not detected

Analytical Data Summary
Remedial Excavation OA1-RE-2 Stockpile D

Analyte	EPA Method	Sample Number and Collection Date OA1-RE2-SP4 7/17/97	Regulatory Levels TTLC (mg/kg)	 STLC (mg/L)
TRPH (mg/kg)	418.1	14,000		
Title 22 Metals (mg/kg)				
Antimony	6010	<5.0	500	15
Arsenic	6010	<1.0	500	5
Barium	6010	110	10,000	100
Beryllium	6010	<0.1	75	0.75
Cadmium	6010	1.8	100	1
Chromium (VI)	7196	<0.5	500	5
Chromium (total)	6010	27	2,500	5
Cobalt	6010	6.7	8,000	80
Copper	6010	17	2,500	25
Lead (total)	6010	30	1,000	5
Mercury	7471	<0.01	20	0.2
Molybdenum	6010	<0.5	3,500	350
Nickel	6010	22	2,000	20
Selenium	6010	<1.0	100	1
Silver	6010	<0.1	500	5
Thallium	6010	<5.0	700	7
Vanadium	6010	41	2,400	24
Zinc	6010	64	5,000	250
VOCs (1) (mg/kg)				
Total Xylenes	8260	0.170		
1,3,5-Trimethylbenzene	8260	0.210		
1,2,4-Trimethylbenzene	8260	0.490		
Naphthalene	8260	2.200		
SVOCs (1) (mg/kg)				
Acenaphthene	8270	6.200		
Anthracene	8270	17.000		
Benzo (a) Anthracene	8270	79.000		
Benzo (b) Fluoranthene	8270	110.000		
Benzo (k) Fluoranthene	8270	33.000		
Benzo (a) Pyrene	8270	57.000		
Benzo (g,h,i) Perylene	8270	44.000		
Chrysene	8270	190.000		
Dibenz (a,h) Anthracene	8270	12.000		
Fluoranthene	8270	140.000		
Fluorene	8270	17.000		
Indeno (1,2,3-cd)Pyrene	8270	30.000		
2-Methylnaphthalene	8270	180.000		
Naphthalene	8270	42.000		
Phenanthrene	8270	110.000		
Pyrene	8270	260.000		
Carbon Chain Range (mg/kg)				
Up to and including C12	8015m	870		
C13-C22	8015m	15,000		
C23 and higher	8015m	5,500		
PCBs (mg/kg)	8080	--		

mg/kg = milligrams per kilogram
mg/L = milligrams per liter
-- = not analyzed
ND = not detected
VOCs = Volatile Organic Compounds
SVOCs = Semi-volatile Organic Compounds
TRPH = Total Recoverable Petroleum Hydrocarbons
PCBs = Polychlorinated biphenyls
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration

(1) VOCs and SVOCs not listed were not detected

Analytical Data Summary
Remedial Excavation OA1-RE-2 Stockpile F

Analyte	EPA Method	Sample Number and Collection Date OA1-RE2-SP6 7/17/97	Regulatory Levels TTLC (mg/kg)	 STLC (mg/L)
TRPH (mg/kg)	418.1	2,300		
Title 22 Metals (mg/kg)				
Antimony	6010	<5.0	500	15
Arsenic	6010	<1.0	500	5
Barium	6010	90	10,000	100
Beryllium	6010	<0.1	75	0.75
Cadmium	6010	1.3	100	1
Chromium (VI)	7196	<0.5	500	5
Chromium (total)	6010	29	2,500	5
Cobalt	6010	7.2	8,000	80
Copper	6010	13	2,500	25
Lead (total)	6010	9.7	1,000	5
Mercury	7471	<0.01	20	0.2
Molybdenum	6010	<0.5	3,500	350
Nickel	6010	16	2,000	20
Selenium	6010	<1.0	100	1
Silver	6010	<0.1	500	5
Thallium	6010	<5.0	700	7
Vanadium	6010	42	2,400	24
Zinc	6010	40	5,000	250
VOCs (1) (mg/kg)				
Ethylbenzene	8260	0.390		
Total Xylenes	8260	1.500		
n-Propylbenzene	8260	0.220		
1,3,5-Trimethylbenzene	8260	2.000		
1,2,4-Trimethylbenzene	8260	6.200		
n-Butylbenzene	8260	0.340		
Naphthalene	8260	17.000		
SVOCs (1) (mg/kg)				
Anthracene	8270	270.000		
Benzo (a) Anthracene	8270	1,300.000		
Benzo (b) Fluoranthene	8270	1,900.000		
Benzo (k) Fluoranthene	8270	430.000		
Benzo (a) Pyrene	8270	760.000		
Benzo (g,h,i) Perylene	8270	470.000		
Chrysene	8270	1,500.000		
Dibenz (a,h) Anthracene	8270	160.000		
Fluoranthene	8270	4,000.000		
Fluorene	8270	110.000		
Indeno (1,2,3-cd)Pyrene	8270	470.000		
Phenanthrene	8270	1,800.000		
Pyrene	8270	3,600.000		
Carbon Chain Range (mg/kg)	8015m	--		
PCBs (mg/kg)	8080	--		

mg/kg = milligrams per kilogram
mg/L = milligrams per liter
-- = not analyzed
ND = not detected
VOCs = Volatile Organic Compounds
SVOCs = Semi-volatile Organic Compounds
TRPH = Total Recoverable Petroleum Hydrocarbons
PCBs = Polychlorinated biphenyls
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration

(1) VOCs and SVOCs not listed were not detected

Analytical Data Summary
Remedial Excavation OA1-RE-2 Stockpile H

Analyte	EPA Method	Sample Number and Collection Date: OA1-RE2-SP8 7/17/97	Sample Number and Collection Date: RR-GS-37-4' 6/5/97	Regulatory Levels: TTLC (mg/kg)	Regulatory Levels: STLC (mg/L)
TRPH (mg/kg)	418.1	4,600	<8.0		
TPHd (mg/kg)	8015M	--	<8.0		
TPHg (mg/kg)	8015M	--	<5.0		
Title 22 Metals (mg/kg)					
Antimony	6010	<5.0	<5.0	500	15
Arsenic	6010	<1.0	<1.0	500	5
Barium	6010	91	99	10,000	100
Beryllium	6010	<0.1	<0.1	75	0.75
Cadmium	6010	<0.1	<0.1	100	1
Chromium (VI)	7196	<0.5	<0.5	500	5
Chromium (total)	6010	49	25	2,500	5
Cobalt	6010	6.7	6.8	8,000	80
Copper	6010	12	9.5	2,500	25
Lead (total)	6010	27	<1.0	1,000	5
Mercury	7471	<0.01	<0.01	20	0.2
Molybdenum	6010	<0.5	<0.5	3,500	350
Nickel	6010	13	10	2,000	20
Selenium	6010	<1.0	<1.0	100	1
Silver	6010	<0.1	<0.1	500	5
Thallium	6010	<5.0	<5.0	700	7
Vanadium	6010	30	28	2,400	24
Zinc	6010	110	32	5,000	250
VOCs (1) (mg/kg)					
Total Xylenes	8260	0.150	<0.0025		
1,3,5-Trimethylbenzene	8260	0.330	<0.0025		
1,2,4-Trimethylbenzene	8260	0.970	<0.0025		
n-Butylbenzene	8260	0.120	<0.0025		
Naphthalene	8260	5.500	<0.0025		
SVOCs (1) (mg/kg)					
Acenaphthene	8270	1.100	<0.100		
Anthracene	8270	3.000	<0.100		
Benzo (a) Anthracene	8270	8.300	<0.100		
Benzo (b) Fluoranthene	8270	14.000	<0.250		
Benzo (k) Fluoranthene	8270	4.000	<0.250		
Benzo (a) Pyrene	8270	7.900	<0.250		
Benzo (g,h,i) Perylene	8270	6.000	<0.250		
Chrysene	8270	15.000	<0.100		
Dibenz (a,h) Anthracene	8270	1.300	<0.100		
Fluoranthene	8270	16.000	<0.100		
Fluorene	8270	3.400	<0.100		
Indeno (1,2,3-cd)Pyrene	8270	3.900	<0.250		
2-Methylnaphthalene	8270	40.000	<0.100		
Naphthalene	8270	9.800	<0.100		
Phenanthrene	8270	21.000	<0.100		
Pyrene	8270	34.000	<0.100		
Carbon Chain Range (mg/kg)	8015m	--	ND		
PCBs (mg/kg)	8080	--	ND		

mg/kg = milligrams per kilogram
mg/L = milligrams per liter
-- = not analyzed
ND = not detected
VOCs = Volatile Organic Compounds
SVOCs = Semi-volatile Organic Compounds
TRPH = Total Recoverable Petroleum Hydrocarbons
PCBs = Polychlorinated biphenyls
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration

(1) VOCs and SVOCs not listed were not detected
TPHd = Total Petroleum Hydrocarbons as diesel
TPHg = Total Petroleum Hydrocarbons as gasoline

Analytical Data Summary
Remedial Excavation OA1-RE-2 Stockpile I

Analyte	EPA Method	Sample Number and Collection Date OA1-RE2-SP9 7/18/97	Regulatory Levels TTLC (mg/kg)	 STLC (mg/L)
TRPH (mg/kg)	418.1	1,300		
Title 22 Metals (mg/kg)				
Antimony	6010	<5.0	500	15
Arsenic	6010	<1.0	500	5
Barium	6010	100	10,000	100
Beryllium	6010	<0.1	75	0.75
Cadmium	6010	<0.1	100	1
Chromium (VI)	7196	<0.5	500	5
Chromium (total)	6010	37	2,500	5
Cobalt	6010	7.6	8,000	80
Copper	6010	16	2,500	25
Lead (total)	6010	34	1,000	5
Mercury	7471	<0.01	20	0.2
Molybdenum	6010	<0.5	3,500	350
Nickel	6010	14	2,000	20
Selenium	6010	<1.0	100	1
Silver	6010	<0.1	500	5
Thallium	6010	<5.0	700	7
Vanadium	6010	35	2,400	24
Zinc	6010	35	5,000	250
VOCs (1) (mg/kg)				
1,2,4-Trimethylbenzene	8260	0.0039		
Naphthalene	8260	0.023		
SVOCs (1) (mg/kg)				
Anthracene	8270	3.000		
Benzo (a) Anthracene	8270	20.000		
Benzo (b) Fluoranthene	8270	39.000		
Benzo (k) Fluoranthene	8270	11.000		
Benzo (a) Pyrene	8270	17.000		
Benzo (g,h,i) Perylene	8270	18.000		
Chrysene	8270	46.000		
Dibenz (a,h) Anthracene	8270	4.700		
Fluoranthene	8270	46.000		
Indeno (1,2,3-cd)Pyrene	8270	15.000		
Phenanthrene	8270	12.000		
Pyrene	8270	57.000		
Carbon Chain Range (mg/kg)	8015m	--		
PCBs (mg/kg)	8080	--		

mg/kg = milligrams per kilogram
mg/L = milligrams per liter
-- = not analyzed
ND = not detected
VOCs = Volatile Organic Compounds
SVOCs = Semi-volatile Organic Compounds
TRPH = Total Recoverable Petroleum Hydrocarbons
PCBs = Polychlorinated biphenyls
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration

(1) VOCs and SVOCs not listed were not detected

Analytical Data Summary
Remedial Excavation OA1-RE-2 Stockpile J

Analyte	EPA Method	Sample Number and Collection Date OA1-RE2-SP10 7/18/97	Regulatory Levels TTLC (mg/kg)	Regulatory Levels STLC (mg/L)
TRPH (mg/kg)	418.1	420		
Title 22 Metals (mg/kg)				
Antimony	6010	<5.0	500	15
Arsenic	6010	<1.0	500	5
Barium	6010	100	10,000	100
Beryllium	6010	<0.1	75	0.75
Cadmium	6010	<0.1	100	1
Chromium (VI)	7196	<0.5	500	5
Chromium (total)	6010	25	2,500	5
Cobalt	6010	7.1	8,000	80
Copper	6010	11	2,500	25
Lead (total)	6010	<1.0	1,000	5
Mercury	7471	<0.01	20	0.2
Molybdenum	6010	<0.5	3,500	350
Nickel	6010	11	2,000	20
Selenium	6010	<1.0	100	1
Silver	6010	<0.1	500	5
Thallium	6010	<5.0	700	7
Vanadium	6010	32	2,400	24
Zinc	6010	40	5,000	250
VOCs (1) (mg/kg)				
Total Xylenes	8260	0.0052		
1,3,5-Trimethylbenzene	8260	0.0085		
1,2,4-Trimethylbenzene	8260	0.029		
Naphthalene	8260	0.110		
SVOCs (1) (mg/kg)				
Anthracene	8270	0.940		
Benzo (a) Anthracene	8270	5.500		
Benzo (b) Fluoranthene	8270	8.800		
Benzo (k) Fluoranthene	8270	2.000		
Benzo (a) Pyrene	8270	3.600		
Benzo (g,h,i) Perylene	8270	4.000		
Chrysene	8270	13.000		
Dibenz (a,h) Anthracene	8270	1.100		
Fluoranthene	8270	13.000		
Fluorene	8270	0.230		
Indeno (1,2,3-cd)Pyrene	8270	3.400		
2-Methylnaphthalene	8270	3.000		
Naphthalene	8270	0.770		
Phenanthrene	8270	3.900		
Pyrene	8270	12.000		
Carbon Chain Range (mg/kg)	8015m	--		
PCBs (mg/kg)	8080	--		

mg/kg = milligrams per kilogram
mg/L = milligrams per liter
-- = not analyzed
ND = not detected
VOCs = Volatile Organic Compounds
SVOCs = Semi-volatile Organic Compounds
TRPH = Total Recoverable Petroleum Hydrocarbons
PCBs = Polychlorinated biphenyls
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration

(1) VOCs and SVOCs not listed were not detected

Analytical Data Summary
Remedial Excavation OA1-RE-3 Stockpile B

Analyte	EPA Method	Sample Number and Collection Date OA1-RE3-SP2 7/18/97	Regulatory Levels TTLC (mg/kg)	Regulatory Levels STLC (mg/L)
TRPH (mg/kg)	418.1	1,500		
Title 22 Metals (mg/kg)				
Antimony	6010	<5.0	500	15
Arsenic	6010	<1.0	500	5
Barium	6010	120	10,000	100
Beryllium	6010	<0.1	75	0.75
Cadmium	6010	<0.1	100	1
Chromium (VI)	7196	<0.5	500	5
Chromium (total)	6010	28	2,500	5
Cobalt	6010	7.8	8,000	80
Copper	6010	12	2,500	25
Lead (total)	6010	<1.0	1,000	5
Mercury	7471	<0.01	20	0.2
Molybdenum	6010	<0.5	3,500	350
Nickel	6010	12	2,000	20
Selenium	6010	<1.0	100	1
Silver	6010	<0.1	500	5
Thallium	6010	<5.0	700	7
Vanadium	6010	34	2,400	24
Zinc	6010	40	5,000	250
VOCs (1) (mg/kg)				
Ethylbenzene	8260	0.300		
n-Propylbenzene	8260	0.310		
1,3,5-Trimethylbenzene	8260	1.500		
1,2,4-Trimethylbenzene	8260	2.500		
n-Butylbenzene	8260	0.420		
Naphthalene	8260	20.000		
SVOCs (1) (mg/kg)				
Acenaphthene	8270	1.400		
Anthracene	8270	3.200		
Benzo (a) Anthracene	8270	6.300		
Benzo (b) Fluoranthene	8270	7.600		
Benzo (k) Fluoranthene	8270	1.700		
Benzo (a) Pyrene	8270	5.100		
Benzo (g,h,i) Perylene	8270	3.700		
Chrysene	8270	9.500		
Fluoranthene	8270	11.000		
Fluorene	8270	3.400		
Indeno (1,2,3-cd)Pyrene	8270	2.300		
2-Methylnaphthalene	8270	45.000		
Naphthalene	8270	14.000		
Phenanthrene	8270	20.000		
Pyrene	8270	18.000		
Carbon Chain Range (mg/kg)	8015m	--		
PCBs (mg/kg)	8080	--		

mg/kg = milligrams per kilogram
mg/L = milligrams per liter
-- = not analyzed
ND = not detected
VOCs = Volatile Organic Compounds
SVOCs = Semi-volatile Organic Compounds
TRPH = Total Recoverable Petroleum Hydrocarbons
PCBs = Polychlorinated biphenyls
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration

(1) VOCs and SVOCs not listed were not detected

Analytical Data Summary
Remedial Excavation OA1-RE-3 Stockpile C

Analyte	EPA Method	Sample Number and Collection Date OA1-RE3-SP3 7/18/97	Regulatory Levels TTLC (mg/kg)	Regulatory Levels STLC (mg/L)
TRPH (mg/kg)	418.1	1,700		
Title 22 Metals (mg/kg)				
Antimony	6010	<5.0	500	15
Arsenic	6010	<1.0	500	5
Barium	6010	110	10,000	100
Beryllium	6010	<0.1	75	0.75
Cadmium	6010	<0.1	100	1
Chromium (VI)	7196	<0.5	500	5
Chromium (total)	6010	25	2,500	5
Cobalt	6010	7.3	8,000	80
Copper	6010	12	2,500	25
Lead (total)	6010	<1.0	1,000	5
Mercury	7471	<0.01	20	0.2
Molybdenum	6010	<0.5	3,500	350
Nickel	6010	11	2,000	20
Selenium	6010	<1.0	100	1
Silver	6010	<0.1	500	5
Thallium	6010	<5.0	700	7
Vanadium	6010	34	2,400	24
Zinc	6010	40	5,000	250
VOCs (1) (mg/kg)				
Ethylbenzene	8260	0.130		
1,3,5-Trimethylbenzene	8260	0.590		
1,2,4-Trimethylbenzene	8260	1.000		
n-Butylbenzene	8260	0.260		
Naphthalene	8260	14.000		
SVOCs (1) (mg/kg)				
Acenaphthene	8270	1.200		
Anthracene	8270	2.600		
Benzo (a) Anthracene	8270	4.000		
Benzo (b) Fluoranthene	8270	4.000		
Benzo (k) Fluoranthene	8270	1.400		
Benzo (a) Pyrene	8270	3.900		
Benzo (g,h,i) Perylene	8270	3.000		
Chrysene	8270	6.800		
Fluoranthene	8270	5.100		
Fluorene	8270	2.800		
Indeno (1,2,3-cd)Pyrene	8270	1.300		
2-Methylnaphthalene	8270	52.000		
Naphthalene	8270	14.000		
Phenanthrene	8270	16.000		
Pyrene	8270	20.000		
Carbon Chain Range (mg/kg)	8015m	--		
PCBs (mg/kg)	8080	ND		

mg/kg = milligrams per kilogram
mg/L = milligrams per liter
-- = not analyzed
ND = not detected
VOCs = Volatile Organic Compounds
SVOCs = Semi-volatile Organic Compounds
TRPH = Total Recoverable Petroleum Hydrocarbons
PCBs = Polychlorinated biphenyls
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration

(1) VOCs and SVOCs not listed were not detected

Analytical Data Summary
Remedial Excavation OA1-RE-3 Stockpile E

Analyte	EPA Method	Sample Number and Collection Date OA1-RE3-SP5 7/21/97	Regulatory Levels TTLC (mg/kg)	 STLC (mg/L)
TRPH (mg/kg)	418.1	47		
Title 22 Metals (mg/kg)				
Antimony	6010	<5.0	500	15
Arsenic	6010	<1.0	500	5
Barium	6010	110	10,000	100
Beryllium	6010	<0.1	75	0.75
Cadmium	6010	<0.1	100	1
Chromium (VI)	7196	<0.5	500	5
Chromium (total)	6010	43	2,500	5
Cobalt	6010	7.7	8,000	80
Copper	6010	14	2,500	25
Lead (total)	6010	5.0	1,000	5
Mercury	7471	<0.01	20	0.2
Molybdenum	6010	<0.5	3,500	350
Nickel	6010	11	2,000	20
Selenium	6010	<1.0	100	1
Silver	6010	<0.1	500	5
Thallium	6010	<5.0	700	7
Vanadium	6010	28	2,400	24
Zinc	6010	79	5,000	250
VOCs (mg/kg)	8260	ND		
SVOCs (1) (mg/kg)				
Anthracene	8270	0.660		
Benzo (a) Anthracene	8270	2.200		
Benzo (b) Fluoranthene	8270	2.700		
Benzo (k) Fluoranthene	8270	0.830		
Benzo (a) Pyrene	8270	1.300		
Benzo (g,h,i) Perylene	8270	0.780		
Chrysene	8270	3.200		
Dibenz (a,h) Anthracene	8270	0.220		
bis (2-Ethylhexyl)Phthalate	8270	0.110		
Fluoranthene	8270	8.400		
Fluorene	8270	0.330		
Indeno (1,2,3-cd)Pyrene	8270	0.630		
Phenanthrene	8270	4.300		
Pyrene	8270	7.500		
Carbon Chain Range (mg/kg)	8015m	--		
PCBs (mg/kg)	8080	--		

mg/kg = milligrams per kilogram
mg/L = milligrams per liter
-- = not analyzed
ND = not detected
VOCs = Volatile Organic Compounds
SVOCs = Semi-volatile Organic Compounds
TRPH = Total Recoverable Petroleum Hydrocarbons
PCBs = Polychlorinated biphenyls
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration

(1) SVOCs not listed were not detected

Analytical Data Summary
Remedial Excavation OA1-RE-4 Stockpile A

Analyte	EPA Method	Sample Number and Collection Date: OA1-RE4-SP1 7/22/97	Sample Number and Collection Date: PL-GS-3-3' 6/3/97	Regulatory Levels: TTLC (mg/kg)	Regulatory Levels: STLC (mg/L)
TRPH (mg/kg)	418.1	1,300	18,000		
TPHd (mg/kg)	8015M	--	28,000		
TPHg (mg/kg)	8015M	--	47		
Title 22 Metals (mg/kg)					
Antimony	6010	<5.0	<5.0	500	15
Arsenic	6010	<1.0	<1.0	500	5
Barium	6010	110	100	10,000	100
Beryllium	6010	<0.1	<0.1	75	0.75
Cadmium	6010	<0.1	<0.1	100	1
Chromium (VI)	7196	<0.5	<0.5	500	5
Chromium (total)	6010	160 (2)(3)	120 (4)	2,500	5
Cobalt	6010	7.1	6.0	8,000	80
Copper	6010	36	28	2,500	25
Lead (total)	6010	41	<1.0	1,000	5
Mercury	7471	<0.01	<0.01	20	0.2
Molybdenum	6010	<0.5	<0.5	3,500	350
Nickel	6010	15	10	2,000	20
Selenium	6010	<1.0	<1.0	100	1
Silver	6010	<0.1	<0.1	500	5
Thallium	6010	<5.0	<5.0	700	7
Vanadium	6010	33	24	2,400	24
Zinc	6010	280	60	5,000	250
VOCs (1) (mg/kg)					
Total Xylenes	8260	0.054	<0.100		
1,3,5-Trimethylbenzene	8260	0.053	0.240		
1,2,4-Trimethylbenzene	8260	0.170	0.640		
sec-Butylbenzene	8260	0.028	0.200		
p-Isopropyltoluene	8260		0.190		
n-Butylbenzene	8260	0.039	<0.100		
Naphthalene	8260	0.430	3.800		
SVOCs (1) (mg/kg)					
Benzo (a) Anthracene	8270	0.130	1.600		
Chrysene	8270	0.200	2.600		
bis (2-Ethylhexyl)Phthalate	8270	1.400	<1.000		
Butylbenzylphthalate	8270	0.190	<1.000		
Fluoranthene	8270	0.190	<1.000		
Fluorene	8270	0.280	3.700		
2-Methylnaphthalene	8270	1.900	8.900		
Naphthalene	8270	0.390	1.000		
Phenanthrene	8270	0.990	11.000		
Pyrene	8270	0.400	5.600		
Carbon Chain Range (mg/kg)					
Up to and including C12	8015m	--	2,000		
C13-C22	8015m	--	23,000		
C23 and higher	8015m	--	3,100		
PCBs (1) (mg/kg)					
PCB-1260	8080	0.035	ND		

mg/kg = milligrams per kilogram
mg/L = milligrams per liter
-- = not analyzed
ND = not detected
VOCs = Volatile Organic Compounds
SVOCs = Semi-volatile Organic Compounds
TRPH = Total Recoverable Petroleum Hydrocarbons
PCBs = Polychlorinated biphenyls
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration

(1) VOCs, SVOCs, and PCBs not listed were not detected
(2) Waste Extraction Test performed on this sample. Result was 2.2 mg/L.
(3) TCLP analysis performed on this sample. Result was <0.1 mg/L.
(4) Waste Extraction Test performed on this sample. Result was 2.8 mg/L.

Analytical Data Summary
Remedial Excavation OA1-RE-6 Stockpile J

Analyte	EPA Method	Sample Number and Collection Date: OA1-RE6-SP3 7/29/97	Sample Number and Collection Date: PL-GS-9-3.5' 7/2/97	Regulatory Levels: TTLC (mg/kg)	Regulatory Levels: STLC (mg/L)
TRPH (mg/kg)	418.1	4,700	16,000		
TPHd (mg/kg)	8015M	--	15,000		
TPHg (mg/kg)	8015M	--	250		
Title 22 Metals (mg/kg)					
Antimony	6010	<5.0	<5.0	500	15
Arsenic	6010	<1.0	<1.0	500	5
Barium	6010	98	110	10,000	100
Beryllium	6010	<0.1	<0.1	75	0.75
Cadmium	6010	<0.1	<0.1	100	1
Chromium (VI)	7196	<0.5	<0.5	500	5
Chromium (total)	6010	38	32	2,500	5
Cobalt	6010	7.2	7.0	8,000	80
Copper	6010	24	20	2,500	25
Lead (total)	6010	<1.0	<1.0	1,000	5
Mercury	7471	<0.01	<0.01	20	0.2
Molybdenum	6010	<0.5	<0.5	3,500	350
Nickel	6010	12	14	2,000	20
Selenium	6010	<1.0	<1.0	100	1
Silver	6010	<0.1	<0.1	500	5
Thallium	6010	<5.0	<5.0	700	7
Vanadium	6010	31	37	2,400	24
Zinc	6010	110	81	5,000	250
VOCs (1) (mg/kg)					
Ethylbenzene	8260	0.180	<0.100		
Trichloroethene	8260	0.085	<0.100		
Total Xylenes	8260	0.420	<0.100		
Isopropylbenzene	8260	0.230	0.100		
n-Propylbenzene	8260	0.370	<0.100		
1,3,5-Trimethylbenzene	8260	0.470	0.370		
1,2,4-Trimethylbenzene	8260	2.500	0.210		
sec-Butylbenzene	8260	0.350	0.410		
p-Isopropyltoluene	8260	0.470	0.570		
n-Butylbenzene	8260	0.460	0.280		
Naphthalene	8260	2.600	1.100		
SVOCs (1) (mg/kg)					
Acenaphthene	8270	<0.400	1.000		
Anthracene	8270	0.800	<0.800		
Benzo (a) Anthracene	8270	<0.400	1.000		
Chrysene	8270	<0.400	1.600		
Fluoranthene	8270	0.570	1.300		
Fluorene	8270	2.100	1.300		
2-Methylnaphthalene	8270	10.000	7.200		
Naphthalene	8270	3.700	1.500		
Phenanthrene	8270	5.300	6.000		
Pyrene	8270	0.620	1.900		
Carbon Chain Range (mg/kg)					
Up to and including C12	8015m	--	1,200		
C13-C22	8015m	--	12,000		
C23 and higher	8015m	--	3,100		
PCBs (mg/kg)	8080	--	ND		

mg/kg = milligrams per kilogram
mg/L = milligrams per liter
-- = not analyzed
ND = not detected
VOCs = Volatile Organic Compounds
SVOCs = Semi-volatile Organic Compounds
TRPH = Total Recoverable Petroleum Hydrocarbons
PCBs = Polychlorinated biphenyls
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration

(1) VOCs and SVOCs not listed were not detected
TPHd = Total Petroleum Hydrocarbons as diesel
TPHg = Total Petroleum Hydrocarbons as gasoline

Analytical Data Summary
Remedial Excavation OA1-RE-8 Stockpile I

Analyte	EPA Method	Sample Number and Collection Date: OA1-RE8-SP5 8/4/97	Sample Number and Collection Date: OA1-GS-12-5' 7/22/97	Regulatory Levels: TTLC (mg/kg)	Regulatory Levels: STLC (mg/L)
TRPH (mg/kg)	418.1	400	9,800		
Title 22 Metals (mg/kg)					
Antimony	6010	<5.0	<5.0	500	15
Arsenic	6010	<1.0	<1.0	500	5
Barium	6010	100	120	10,000	100
Beryllium	6010	<0.1	<0.1	75	0.75
Cadmium	6010	<0.1	<0.1	100	1
Chromium (VI)	7196	<0.5	<0.5	500	5
Chromium (total)	6010	24	29	2,500	5
Cobalt	6010	7.2	9.0	8,000	80
Copper	6010	9.0	12	2,500	25
Lead (total)	6010	<1.0	<1.0	1,000	5
Mercury	7471	<0.01	<0.01	20	0.2
Molybdenum	6010	<0.5	<0.5	3,500	350
Nickel	6010	9.9	14	2,000	20
Selenium	6010	<1.0	<1.0	100	1
Silver	6010	<0.1	<0.1	500	5
Thallium	6010	<5.0	<5.0	700	7
Vanadium	6010	26	37	2,400	24
Zinc	6010	46	40	5,000	250
VOCs (1) (mg/kg)					
Ethylbenzene	8260	<0.050	2.500		
n-Propylbenzene	8260	<0.050	1.700		
1,3,5-Trimethylbenzene	8260	<0.050	11.000		
1,2,4-Trimethylbenzene	8260	<0.050	36.000		
p-Isopropyltoluene	8260	0.069	<1.000		
n-Butylbenzene	8260	<0.050	2.600		
Naphthalene	8260	0.500	120.000		
SVOCs (1) (mg/kg)					
Acenaphthene	8270	0.240	<1.000		
Anthracene	8270	0.270	4.900		
Benzo (a) Anthracene	8270	0.670	6.600		
Benzo (g,h,i) Perylene	8270	<0.500	3.900		
Benzo (a) Pyrene	8270	0.730	5.800		
Chrysene	8270	1.100	10.000		
Fluoranthene	8270	0.670	8.700		
Fluorene	8270	0.600	7.500		
2-Methylnaphthalene	8270	8.000	130.000		
Naphthalene	8270	1.900	37.000		
Phenanthrene	8270	2.700	40.000		
Pyrene	8270	2.200	28.000		
Carbon Chain Range (mg/kg)	8015m	--	--		
PCBs (mg/kg)	8080	--	--		

mg/kg = milligrams per kilogram
mg/L = milligrams per liter
-- = not analyzed
ND = not detected
VOCs = Volatile Organic Compounds
SVOCs = Semi-volatile Organic Compounds
TRPH = Total Recoverable Petroleum Hydrocarbons
PCBs = Polychlorinated biphenyls
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration

(1) VOCs and SVOCs not listed were not detected

Analytical Data Summary
Remedial Excavation OA1-RE-9 Stockpile A

Analyte	EPA Method	Sample Number and Collection Date: OA1-RE9-SP1 8/5/97	Sample Number and Collection Date: OA1-GS-13-9' 7/22/97	Regulatory Levels: TTLC (mg/kg)	Regulatory Levels: STLC (mg/L)
TRPH (mg/kg)	418.1	290	5,400		
Title 22 Metals (mg/kg)					
Antimony	6010	<5.0	<5.0	500	15
Arsenic	6010	<1.0	<1.0	500	5
Barium	6010	93	100	10,000	100
Beryllium	6010	<0.1	<0.1	75	0.75
Cadmium	6010	<0.1	<0.1	100	1
Chromium (VI)	7196	<0.5	<0.5	500	5
Chromium (total)	6010	23	28	2,500	5
Cobalt	6010	6.9	7.2	8,000	80
Copper	6010	8.5	9.9	2,500	25
Lead (total)	6010	<1.0	<1.0	1,000	5
Mercury	7471	<0.01	<0.01	20	0.2
Molybdenum	6010	<0.5	<0.5	3,500	350
Nickel	6010	9.8	13	2,000	20
Selenium	6010	<1.0	<1.0	100	1
Silver	6010	<0.1	<0.1	500	5
Thallium	6010	<5.0	<5.0	700	7
Vanadium	6010	24	36	2,400	24
Zinc	6010	42	44	5,000	250
VOCs (1) (mg/kg)					
Ethylbenzene	8260	<0.050	1.700		
Total Xylenes	8260	0.150	4.800		
n-Propylbenzene	8260	<0.050	1.500		
1,3,5-Trimethylbenzene	8260	0.330	5.900		
1,2,4-Trimethylbenzene	8260	0.970	22.000		
n-Butylbenzene	8260	0.064	2.600		
Naphthalene	8260	2.700	97.000		
SVOCs (1) (mg/kg)					
Acenaphthene	8270	0.600	<2.000		
Anthracene	8270	1.100	6.200		
Benzo (a) Anthracene	8270	4.500	9.200		
Benzo (b) Fluoranthene	8270	5.100	<5.000		
Benzo (k) Fluoranthene	8270	3.100	<5.000		
Benzo (g,h,i) Perylene	8270	3.800	<5.000		
Benzo (a) Pyrene	8270	6.000	7.800		
Chrysene	8270	5.800	14.000		
Fluoranthene	8270	6.600	11.000		
Fluorene	8270	1.800	8.400		
Indeno (1,2,3-cd)Pyrene	8270	3.200	<5.000		
2-Methylnaphthalene	8270	17.000	160.000		
Naphthalene	8270	3.900	46.000		
Phenanthrene	8270	8.900	50.000		
Pyrene	8270	10.000	44.000		
Carbon Chain Range (mg/kg)	8015m	--	--		
PCBs (mg/kg)	8080	--	--		

mg/kg = milligrams per kilogram
mg/L = milligrams per liter
-- = not analyzed
ND = not detected
VOCs = Volatile Organic Compounds
SVOCs = Semi-volatile Organic Compounds
TRPH = Total Recoverable Petroleum Hydrocarbons
PCBs = Polychlorinated biphenyls
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration

(1) VOCs and SVOCs not listed were not detected

Analytical Data Summary
Remedial Excavation OA1-RE-9 Stockpile B

Analyte	EPA Method	Sample Number and Collection Date			Regulatory Levels	
		OA1-RE9-SP2 8/5/97	OA1-GS-6-3' 7/22/97	RR-GS-31-4' 6/4/97	TTLC (mg/kg)	STLC (mg/L)
TRPH (mg/kg)	418.1	1,100	13	86		
Title 22 Metals (mg/kg)						
Antimony	6010	<5.0	<5.0	<5.0	500	15
Arsenic	6010	<1.0	<1.0	<1.0	500	5
Barium	6010	110	86	140	10,000	100
Beryllium	6010	<0.1	<0.1	<0.1	75	0.75
Cadmium	6010	<0.1	<0.1	<0.1	100	1
Chromium (VI)	7196	<0.5	<0.5	<0.5	500	5
Chromium (total)	6010	22	22	36	2,500	5
Cobalt	6010	9.0	6.4	8.4	8,000	80
Copper	6010	12	9.3	12	2,500	25
Lead (total)	6010	<1.0	<1.0	<1.0	1,000	5
Mercury	7471	<0.01	<0.01	<0.01	20	0.2
Molybdenum	6010	<0.5	<0.5	<0.5	3,500	350
Nickel	6010	12	8.3	13	2,000	20
Selenium	6010	<1.0	<1.0	<1.0	100	1
Silver	6010	<0.1	<0.1	<0.1	500	5
Thallium	6010	<5.0	<5.0	<5.0	700	7
Vanadium	6010	27	28	41	2,400	24
Zinc	6010	40	30	46	5,000	250
VOCs (1) (mg/kg)						
Ethylbenzene	8260	0.210	<0.0025	--		
Total Xylenes	8260	0.430	<0.0025	--		
n-Propylbenzene	8260	0.220	<0.0025	--		
1,3,5-Trimethylbenzene	8260	1.300	<0.0025	--		
1,2,4-Trimethylbenzene	8260	4.200	<0.0025	--		
n-Butylbenzene	8260	0.390	<0.0025	--		
Naphthalene	8260	16.000	<0.0025	--		
SVOCs (1) (mg/kg)						
Acenaphthene	8270	0.940	<0.800	--		
Anthracene	8270	1.200	<0.800	--		
Benzo (a) Anthracene	8270	1.900	27.000	--		
Benzo (b) Fluoranthene	8270	<1.000	46.000	--		
Benzo (k) Fluoranthene	8270	<1.000	9.400	--		
Benzo (g,h,i) Perylene	8270	<1.000	11.000	--		
Benzo (a) Pyrene	8270	2.200	16.000	--		
Chrysene	8270	3.600	29.000	--		
Dibenz (a,h) Anthracene	8270	<0.400	3.400	--		
Fluoranthene	8270	0.890	41.000	--		
Fluorene	8270	2.700	<0.800	--		
Indeno (1,2,3-cd)Pyrene	8270	<1.000	11.000	--		
2-Methylnaphthalene	8270	38.000	<0.800	--		
Naphthalene	8270	10.000	<0.800	--		
Phenanthrene	8270	12.000	<0.800	--		
Pyrene	8270	8.200	48.000	--		
Carbon Chain Range (mg/kg)	8015m	--	--	--		
PCBs (mg/kg)	8080	--	--	ND		

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