UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

February 25, 2020

Mr. James Foster
Assistant Chief of Staff for Installation Management
Base Realignment and Closure Division (ACSIM-ODB)
2530 Crystal Drive (Taylor Building), Room 5000
Arlington, VA 22202-3940

Dear Mr. Foster:

The U.S. Environmental Protection Agency (EPA) has reviewed the U. S. Department of Army, Defense Depot of Memphis Tennessee (DDMT), December 2019 Final Garden Soil Sampling Report for the Main Installation.

EPA's Scientific Support Services (SSS) Risk Assessor (RA) reviewed the above mentioned report and compared soil samples to Residential and Industrial Regional Screening Levels (RSLs). No analytes exceeded the industrial RSLs, however there were detections above residential RSLs. EPA SSS RA modeled a 'worst-case' (most conservative) scenario, regardless of soil sample location which resulted in risks that are within EPA's acceptable carcinogenic risk range and a Hazard Index of 1.

However, as previously discussed with the U. S. Army, the Tennessee Department of Environmental and Conservation (TDEC) and EPA, any future activities within DDMT LUC boundaries should be limited to industrial uses only and should not include any youth or child centered activities.

EPA appreciates the U. S. Army's proactive sampling, analyses and reporting on the Garden Plot that was previously utilized by Barnhart Crane's youth workforce development program for the surrounding local community. Furthermore, EPA appreciates and recognizes that the U. S. Army's proactive education of current and any future tenants on the DDMT property to ensure that the DDMT LUCs are implemented properly throughout the lifecycle of the DDMT Site.

EPA has prepared 2 comments that require U. S. Army response within 30 days. Should you have any questions or concerns, please feel free to call me at on my cell number 404-229-9500.

Sincerely,

Diedre Lloyd
Remedial Project Manager
Restoration & Sustainability Branch
Superfund Division

cc: Mr. James Foster, (Signed Original), United Parcel Service, Return Receipt
Mr. Jamie A. Woods, PG, Tennessee, Department of Environment and Conservation, Memphis Environmental Field Office, 8383 Wolf Lake Drive, Bartlett, TN 38133-4119
Ms. Joan Hutton, CALIBRE, 3898 Mountain View Road, Kennesaw, GA 30152
Mr. Thomas Holmes, HDR Environmental, P.O. Box 728, Highlands, NC 28741

enc: EPA Memorandum, EPA Scientific Support Section
Site-specific Resident Equation Inputs for Soil

Above Letter was also emailed to list below and can be found at the e-file location noted below.

ec: james.foster.civ@mail.mil; jamie.woods@tn.gov; joan.hutton@calibresys.com; thomas.holmes@hdrinc.com;

e-bbc: Terrell.tina@epa.gov

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EPA COMMENTS on the

FINAL GARDEN SOIL SAMPLING REPORT

DDMT MAIN INSTALLATION

DATED DECEMBER, 2019

EPA Comments:

1) EPA recommends that the U. S. Army consider development of a fact sheet to inform the community of the Final Garden Soil Sampling Report results since concern was expressed by the community.

2) EPA requests that the Final Garden Soil Sampling Report results be included in the Annual December mailing of the EnviroNews newsletter and expects this action (Garden results in EnviroNews) to be captured in the Site Management Plan (SMP) that is currently under review by EPA.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
61 Forsyth Street, SW
Atlanta, GA 30303-8960

February 24, 2020

MEMORANDUM

SUBJECT: Final Garden Soil Sampling Report
Defense Depot of Memphis Tennessee
Memphis, Tennessee

FROM: Sydney Chan, Life Scientist
Scientific Support Section

TO: Diedre Lloyd, RPM
Restoration and Sustainability Section

THRU: Ben Bentkowski, Acting Chief
Scientific Support Section

Per your request, the Scientific Support Section (SSS) has reviewed the *Final Garden Soil Sampling Report*, Defense Depot Memphis, Memphis, TN dated December 2019. This memorandum replaces the memorandum dated January 27, 2020. The following is provided for your consideration.

Soil samples were collected in three defined areas of the "garden" section within the Defense Depot property. SSS compared soil samples to Residential and Industrial Regional Screening Levels (RSLs). No analytes exceeded the industrial RSLs, but there were detections above residential RSLs.

Using the online RSL calculator, SSS modeled a "worst-case" scenario using the highest detections of analytes, regardless of location. Using worst-case assumptions resulted in risks that are within EPA's acceptable carcinogenic risk range and a Hazard Index below 1. See attached PDF.

Please contact me at 404-562-8907 or chan.sydney@epa.gov if you have any comments or questions regarding this review.

Site-specific
Resident Equation Inputs for Soil

*** Inputted values different from Resident defaults are highlighted.**

Variable	Resident Soil Default Value	Form-input Value
A (PEF Dispersion Constant)	16.2302	16.2302
A (VF Dispersion Constant)	11.911	11.911
A (VF Dispersion Constant - Mass Limit)	11.911	11.911
B (PEF Dispersion Constant)	18.7762	18.7762
B (VF Dispersion Constant)	18.4385	18.4385
B (VF Dispersion Constant - Mass Limit)	18.4385	18.4385
City (PEF Climate Zone) Selection	Default	Default
City (VF Climate Zone) Selection	Default	Default
C (PEF Dispersion Constant)	216.108	216.108
C (VF Dispersion Constant)	209.7845	209.7845
C (VF Dispersion Constant - Mass Limit)	209.7845	209.7845
foc (fraction organic carbon in soil) g/g	0.006	0.006
F(x) (function dependent on U_m/U_t) unitless	0.194	0.194
n (total soil porosity) L_{pore}/L_{soil}	0.43396	0.43396
p_h (dry soil bulk density) g/cm ^{3}	1.5	1.5
p_b (dry soil bulk density - mass limit) g/cm ^{3}	1.5	1.5
PEF (particulate emission factor) m ^{3}/kg	1359344438	1359344438
p_s (soil particle density) g/cm ^{3}	2.65	2.65
Q/C_{wind} (g/m^2-s per kg/m^3)	93.77	93.77
Q/C_{vol} (g/m^2-s per kg/m^3)	68.18	68.18
Q/C_{vol} (g/m^2-s per kg/m^3)	68.18	68.18
A_s (PEF acres)	0.5	0.5
A_s (VF acres)	0.5	0.5
A_s (VF mass-limit acres)	0.5	0.5
AF_{0-2} (mutagenic skin adherence factor) mg/cm ^{2}	0.2	0.2
AF_{2-6} (mutagenic skin adherence factor) mg/cm ^{2}	0.2	0.2
AF_{6-16} (mutagenic skin adherence factor) mg/cm ^{2}	0.07	0.07
AF_{16-26} (mutagenic skin adherence factor) mg/cm ^{2}	0.07	0.07
AF_{res-a} (skin adherence factor - adult) mg/cm ^{2}	0.07	0.07
AF_{res-c} (skin adherence factor - child) mg/cm ^{2}	0.2	0.2

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Site-specific
Resident Equation Inputs for Soil

*** Inputted values different from Resident defaults are highlighted.**

Variable	Resident Soil Default Value	Form-input Value
AT_{res} (averaging time - resident carcinogenic)	365	365
BW_{0-2} (mutagenic body weight) kg	15	15
BW_{2-6} (mutagenic body weight) kg	15	15
BW_{6-16} (mutagenic body weight) kg	80	80
BW_{16-26} (mutagenic body weight) kg	80	80
BW_{res-a} (body weight - adult) kg	80	80
BW_{res-c} (body weight - child) kg	15	15
$DFS_{res-adj}$ (age-adjusted soil dermal factor) mg/kg	103390	103390
$DFSM_{res-adj}$ (mutagenic age-adjusted soil dermal factor) mg/kg	428260	428260
ED_{res} (exposure duration) years	26	26
ED_{0-2} (mutagenic exposure duration) years	2	2
ED_{2-6} (mutagenic exposure duration) years	4	4
ED_{6-16} (mutagenic exposure duration) years	10	10
ED_{16-26} (mutagenic exposure duration) years	10	10
ED_{res-a} (exposure duration - adult) years	20	20
ED_{res-c} (exposure duration - child) years	6	6
EF_{res} (exposure frequency) days/year	350	350
EF_{0-2} (mutagenic exposure frequency) days/year	350	350
EF_{2-6} (mutagenic exposure frequency) days/year	350	350
EF_{6-16} (mutagenic exposure frequency) days/year	350	350
EF_{16-26} (mutagenic exposure frequency) days/year	350	350
EF_{res-a} (exposure frequency - adult) days/year	350	350
EF_{res-c} (exposure frequency - child) days/year	350	350
ET_{res} (exposure time) hours/day	24	24
ET_{0-2} (mutagenic exposure time) hours/day	24	24
ET_{2-6} (mutagenic exposure time) hours/day	24	24
ET_{6-16} (mutagenic exposure time) hours/day	24	24
ET_{16-26} (mutagenic exposure time) hours/day	24	24
ET_{res-a} (adult exposure time) hours/day	24	24
ET_{res-c} (child exposure time) hours/day	24	24

Site-specific
Resident Equation Inputs for Soil

*** Inputted values different from Resident defaults are highlighted.**

Variable	Resident Soil Default Value	Form-input Value
THQ (target hazard quotient) unitless	0.1	0.1
$IFS_{res\text{-}adj}$ (age-adjusted soil ingestion factor) mg/kg	36750	36750
$IFSM_{res\text{-}adj}$ (mutagenic age-adjusted soil ingestion factor) mg/kg	166833.3	166833.3
$IRS_{0\text{-}2}$ (mutagenic soil intake rate) mg/day	200	200
$IRS_{2\text{-}6}$ (mutagenic soil intake rate) mg/day	200	200
$IRS_{6\text{-}16}$ (mutagenic soil intake rate) mg/day	100	100
$IRS_{16\text{-}26}$ (mutagenic soil intake rate) mg/day	100	100
$IRS_{res\text{-}a}$ (soil intake rate - adult) mg/day	100	100
$IRS_{res\text{-}c}$ (soil intake rate - child) mg/day	200	200
LT (lifetime) years	70	70
$SA_{0\text{-}2}$ (mutagenic skin surface area) cm^2/day	2373	2373
$SA_{2\text{-}6}$ (mutagenic skin surface area) cm^2/day	2373	2373
$SA_{6\text{-}16}$ (mutagenic skin surface area) cm^2/day	6032	6032
$SA_{16\text{-}26}$ (mutagenic skin surface area) cm^2/day	6032	6032
$SA_{res\text{-}a}$ (skin surface area - adult) cm^2/day	6032	6032
$SA_{res\text{-}c}$ (skin surface area - child) cm^2/day	2373	2373
TR (target risk) unitless	1.0E-06	1.0E-06
T_w (groundwater temperature) Celsius	25	25
$Theta_a$ (air-filled soil porosity) L_{air}/L_{soil}	0.28396	0.28396
$Theta_w$ (water-filled soil porosity) L_{water}/L_{soil}	0.15	0.15
T (exposure interval) s	819936000	819936000
T (exposure interval) yr	26	26
U_m (mean annual wind speed) m/s	4.69	4.69
U_t (equivalent threshold value)	11.32	11.32
V (fraction of vegetative cover) unitless	0.5	0.5

Site-specific
Resident Regional Screening Levels (RSL) for Soil

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; G = see user's guide; U = user provided; ca = cancer; nc = noncancer; * = where: nc SL < 100X ca SL; ** = where nc SL < 10X ca SL; SSL values are based on DAF=1; max = ceiling limit exceeded; sat = Csat exceeded.

Chemical	CAS Number	Mutagen?	Volatile?	Chemical Type	SF_o $(mg/kg\text{-}day)^{-1}$	SF_o Ref	IUR $(ug/m^3)^{-1}$	IUR Ref	RfD (mg/kg-day)	RfD Ref	RfC (mg/m^3)	RfC Ref
Acetone	67-64-1	No	Yes	Organics	-		-		9.00E-01	I	3.09E+01	A
Arsenic, Inorganic	7440-38-2	No	No	Inorganics	1.50E+00	I	4.30E-03	I	3.00E-04	I	1.50E-05	C
Benz[a]anthracene	56-55-3	Yes	Yes	Organics	1.00E-01	E	6.00E-05	E	-		-	
Benzene	71-43-2	No	Yes	Organics	5.50E-02	I	7.80E-06	I	4.00E-03	I	3.00E-02	I
Benzo[a]pyrene	50-32-8	Yes	No	Organics	1.00E+00	I	6.00E-04	I	3.00E-04	I	2.00E-06	I
Benzo[b]fluoranthene	205-99-2	Yes	No	Organics	1.00E-01	E	6.00E-05	E	-		-	
Carbon Disulfide	75-15-0	No	Yes	Organics	-		-		1.00E-01	I	7.00E-01	I
Chromium(VI)	18540-29-9	Yes	No	Inorganics	5.00E-01	C	8.40E-02	S	3.00E-03	I	1.00E-04	I
DDE, p,p'-	72-55-9	No	Yes	Organics	3.40E-01	I	9.70E-05	C	3.00E-04	X	-	
Dibenz[a,h]anthracene	53-70-3	Yes	No	Organics	1.00E+00	E	6.00E-04	E	-		-	
Methyl Ethyl Ketone (2-Butanone)	78-93-3	No	Yes	Organics	-		-		6.00E-01	I	5.00E+00	I

Site-specific
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GIABS	ABS	RBA	Soil Saturation Concentration (mg/kg)	S (mg/L)	K_{oc}\ (cm^3/g)	K_d\ (cm^3/g)	HLC (atm-m^3/mole)	Henry's Law Constant Used in Calcs (unitless)	H` and HLC Ref	Normal Boiling Point BP (K)	BP Ref
1	-	1	1.14E+05	1.00E+06	2.36E+00	1.42E-02	3.50E-05	1.43E-03	PHYSPROP	329.15	PHYSPROP
1	0.03	0.6	-	-	-	2.90E+01	-	-		888.15	PHYSPROP
1	0.13	1	-	9.40E-03	1.77E+05	1.06E+03	1.20E-05	4.91E-04	PHYSPROP	710.75	PHYSPROP
1	-	1	1.82E+03	1.79E+03	1.46E+02	8.75E-01	5.55E-03	2.27E-01	PHYSPROP	353.15	PHYSPROP
1	0.13	1	-	1.62E-03	5.87E+05	-	4.57E-07	1.87E-05	PHYSPROP	768.15	PHYSPROP
1	0.13	1	-	1.50E-03	5.99E+05	-	6.57E-07	2.69E-05	PHYSPROP	715.9	EPI
1	-	1	7.38E+02	2.16E+03	2.17E+01	1.30E-01	1.44E-02	5.89E-01	PHYSPROP	319.15	PHYSPROP
0.025	-	1	-	1.69E+06	-	1.90E+01	-	-		-	
1	-	1	-	4.00E-02	1.18E+05	7.05E+02	4.16E-05	1.70E-03	PHYSPROP	609.15	PHYSPROP
1	0.13	1	-	2.49E-03	1.91E+06	-	1.41E-07	5.76E-06	EPI	797.15	PHYSPROP
1	-	1	2.84E+04	2.23E+05	4.51E+00	2.71E-02	5.69E-05	2.33E-03	PHYSPROP	352.65	PHYSPROP

Site-specific
Resident Regional Screening Levels (RSL) for Soil

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; G = see user's guide; U = user provided; ca = cancer; nc = noncancer; * = where: nc SL < 100X ca SL; ** = where nc SL < 10X ca SL; SSL values are based on DAF=1; max = ceiling limit exceeded; sat = Csat exceeded.

Critical Temperature TC (K)	TC Ref	Chemical Type	D_{ia} (cm^2/s)	D_{iw} (cm^2/s)	D_A (cm^2/s)	Particulate Emission Factor (m^3/kg)	Volatilization Factor (m^3/kg)	Ingestion SL TR=1E-06 (mg/kg)	Dermal SL TR=1E-06 (mg/kg)	Inhalation SL TR=1E-06 (mg/kg)
508.1	CRC89	VOC	1.06E-01	1.15E-05	7.12E-05	1.36E+09	1.37E+04	-	-	-
1673	CRC89	INORGANIC	-	-	-	1.36E+09	-	7.72E-01	5.49E+00	8.88E+02
979	YAWS	PAH	2.61E-02	6.75E-06	6.83E-10	1.36E+09	4.41E+06	1.53E+00	4.59E+00	7.43E+01
562	CRC89	VOC	8.95E-02	1.03E-05	1.06E-03	1.36E+09	3.54E+03	1.26E+01	-	1.27E+00
-		PAH	4.76E-02	5.56E-06	-	1.36E+09	-	1.53E-01	4.59E-01	2.30E+03
-		PAH	4.76E-02	5.56E-06	-	1.36E+09	-	1.53E+00	4.59E+00	2.30E+04
552	CRC89	VOC	1.06E-01	1.30E-05	9.77E-03	1.36E+09	1.17E+03	-	-	-
-		INORGANIC	-	-	-	1.36E+09	-	3.06E-01	-	1.64E+01
913.725	Approx. from Tcrit=1.5xTBoil	PEST	2.30E-02	5.86E-06	3.01E-09	1.36E+09	2.10E+06	2.04E+00	-	6.08E+01
-		PAH	4.46E-02	5.21E-06	-	1.36E+09	-	1.53E-01	4.59E-01	2.30E+03
537	CRC89	VOC	9.14E-02	1.02E-05	8.94E-05	1.36E+09	1.22E+04	-	-	-

Site-specific
Resident Regional Screening Levels (RSL) for Soil

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; G = see user's guide; U = user provided; ca = cancer; nc = noncancer; * = where: nc SL < 100X ca SL; ** = where nc SL < 10X ca SL; SSL values are based on DAF=1; max = ceiling limit exceeded; sat = Csat exceeded.

Carcinogenic SL TR=1E-06 (mg/kg)	Ingestion SL Child THQ=0.1 (mg/kg)	Dermal SL Child THQ=0.1 (mg/kg)	Inhalation SL Child THQ=0.1 (mg/kg)	Noncarcinogenic SL Child THI=0.1 (mg/kg)	Ingestion SL Adult THQ=0.1 (mg/kg)	Dermal SL Adult THQ=0.1 (mg/kg)	Inhalation SL Adult THQ=0.1 (mg/kg)	Noncarcinogenic SL Adult THI=0.1 (mg/kg)	Screening Level (mg/kg)
-	7.04E+03	-	4.40E+04	6.07E+03	7.51E+04	-	4.40E+04	2.77E+04	6.07E+03 nc
6.77E-01	3.91E+00	3.30E+01	2.13E+03	3.49E+00	4.17E+01	1.98E+02	2.13E+03	3.39E+01	6.77E-01 ca**
1.13E+00	-	-	-	-	-	-	-	-	1.13E+00 ca
1.16E+00	3.13E+01	-	1.11E+01	8.17E+00	3.34E+02	-	1.11E+01	1.07E+01	1.16E+00 ca**
1.15E-01	2.35E+00	7.61E+00	2.84E+02	1.78E+00	2.50E+01	4.56E+01	2.84E+02	1.53E+01	1.15E-01 ca*
1.15E+00	-	-	-	-	-	-	-	-	1.15E+00 ca
-	7.82E+02	-	8.52E+01	7.68E+01	8.34E+03	-	8.52E+01	8.43E+01	7.68E+01 nc
3.01E-01	2.35E+01	-	1.42E+04	2.34E+01	2.50E+02	-	1.42E+04	2.46E+02	3.01E-01 ca*
1.98E+00	2.35E+00	-	-	2.35E+00	2.50E+01	-	-	2.50E+01	1.98E+00 ca**
1.15E-01	-	-	-	-	-	-	-	-	1.15E-01 ca
-	4.69E+03	-	6.36E+03	2.70E+03	5.01E+04	-	6.36E+03	5.64E+03	2.70E+03 nc

Site-specific
Resident Risk for Soil

Chemical	SF_o (mg/kg-day)$^{-1}$	SF_o Ref	IUR (ug/m^3)$^{-1}$	IUR Ref	RfD (mg/kg-day)	RfD Ref	RfC (mg/m^3)	RfC Ref	GIABS	ABS	RBA	Soil Saturation Concentration (mg/kg)	S (mg/L)
Acetone	-		-		9.00E-01	I	3.09E+01	A	1	-	1	1.14E+05	1.00E+06
Arsenic, Inorganic	1.50E+00	I	4.30E-03	I	3.00E-04	I	1.50E-05	C	1	0.03	0.6	-	-
Benz[a]anthracene	1.00E-01	E	6.00E-05	E	-		-		1	0.13	1	-	9.40E-03
Benzene	5.50E-02	I	7.80E-06	I	4.00E-03	I	3.00E-02	I	1	-	1	1.82E+03	1.79E+03
Benzo[a]pyrene	1.00E+00	I	6.00E-04	I	3.00E-04	I	2.00E-06	I	1	0.13	1	-	1.62E-03
Benzo[b]fluoranthene	1.00E-01	E	6.00E-05	E	-		-		1	0.13	1	-	1.50E-03
Carbon Disulfide	-		-		1.00E-01	I	7.00E-01	I	1	-	1	7.38E+02	2.16E+03
Chromium(VI)	5.00E-01	C	8.40E-02	S	3.00E-03	I	1.00E-04	I	0.025	-	1	-	1.69E+06
DDE, p,p'-	3.40E-01	I	9.70E-05	C	3.00E-04	X	-		1	-	1	-	4.00E-02
Dibenz[a,h]anthracene	1.00E+00	E	6.00E-04	E	-		-		1	0.13	1	-	2.49E-03
Methyl Ethyl Ketone (2-Butanone)	-		-		6.00E-01	I	5.00E+00	I	1	-	1	2.84E+04	2.23E+05
*Total Risk/HI	-		-		-		-		-	-	-	-	-

Site-specific
Resident Risk for Soil

Chemical	K_{oc}\ (cm^3/g)	K_d\ (cm^3/g)	HLC (atm-m^3/mole)	Henry's Law Constant Used in Calcs (unitless)	H` and HLC Ref	Normal Boiling Point BP (K)	BP Ref	Critical Temperature TC (K)	TC Ref
Acetone	2.36E+00	1.42E-02	3.50E-05	1.43E-03	PHYSPROP	329.15	PHYSPROP	508.1	CRC89
Arsenic, Inorganic	-	2.90E+01	-	-		888.15	PHYSPROP	1673	CRC89
Benz[a]anthracene	1.77E+05	1.06E+03	1.20E-05	4.91E-04	PHYSPROP	710.75	PHYSPROP	979	YAWS
Benzene	1.46E+02	8.75E-01	5.55E-03	2.27E-01	PHYSPROP	353.15	PHYSPROP	562	CRC89
Benzo[a]pyrene	5.87E+05	-	4.57E-07	1.87E-05	PHYSPROP	768.15	PHYSPROP	-	
Benzo[b]fluoranthene	5.99E+05	-	6.57E-07	2.69E-05	PHYSPROP	715.9	EPI	-	
Carbon Disulfide	2.17E+01	1.30E-01	1.44E-02	5.89E-01	PHYSPROP	319.15	PHYSPROP	552	CRC89
Chromium(VI)	-	1.90E+01	-	-		-		-	
DDE, p,p'-	1.18E+05	7.05E+02	4.16E-05	1.70E-03	PHYSPROP	609.15	PHYSPROP	913.725	Approx. from Tcrit=1.5xTBoil
Dibenz[a,h]anthracene	1.91E+06	-	1.41E-07	5.76E-06	EPI	797.15	PHYSPROP	-	
Methyl Ethyl Ketone (2-Butanone)	4.51E+00	2.71E-02	5.69E-05	2.33E-03	PHYSPROP	352.65	PHYSPROP	537	CRC89
**Total Risk/HI*	-	-	-	-		-		-	

Site-specific
Resident Risk for Soil

Chemical	Chemical Type	D_{ia} \ (cm^2/s)	D_{iw} \ (cm^2/s)	D_A \ (cm^2/s)	Particulate Emission Factor (m^3/kg)	Volatilization Factor (m^3/kg)	Concentration (mg/kg)	Ingestion Risk	Dermal Risk	Inhalation Risk
Acetone	VOC	1.06E-01	1.15E-05	7.12E-05	1.36E+09	1.37E+04	3.99E-01	-	-	-
Arsenic, Inorganic	INORGANIC	-	-	-	1.36E+09	-	1.69E+01	2.19E-05	3.08E-06	1.90E-08
Benz[a]anthracene	PAH	2.61E-02	6.75E-06	6.83E-10	1.36E+09	4.41E+06	1.48E+00	9.66E-07	3.22E-07	1.99E-08
Benzene	VOC	8.95E-02	1.03E-05	1.06E-03	1.36E+09	3.54E+03	1.00E-03	7.91E-11	-	7.86E-10
Benzo[a]pyrene	PAH	4.76E-02	5.56E-06	-	1.36E+09	-	9.43E-01	6.16E-06	2.05E-06	4.11E-10
Benzo[b]fluoranthene	PAH	4.76E-02	5.56E-06	-	1.36E+09	-	1.39E+00	9.08E-07	3.03E-07	6.05E-11
Carbon Disulfide	VOC	1.06E-01	1.30E-05	9.77E-03	1.36E+09	1.17E+03	6.00E-03	-	-	-
Chromium(VI)	INORGANIC	-	-	-	1.36E+09	-	6.20E-01	2.02E-06	-	3.78E-08
DDE, p,p'-	PEST	2.30E-02	5.86E-06	3.01E-09	1.36E+09	2.10E+06	2.44E+00	1.19E-06	-	4.02E-08
Dibenz[a,h]anthracene	PAH	4.46E-02	5.21E-06	-	1.36E+09	-	1.33E-01	8.68E-07	2.90E-07	5.79E-11
Methyl Ethyl Ketone (2-Butanone)	VOC	9.14E-02	1.02E-05	8.94E-05	1.36E+09	1.22E+04	3.42E-02	-	-	-
*Total Risk/HI		-	-	-	-	-	-	3.40E-05	6.05E-06	1.18E-07

Site-specific
Resident Risk for Soil

Chemical	Carcinogenic Risk	Ingestion Child HQ	Dermal Child HQ	Inhalation Child HQ	Noncarcinogenic Child HI	Ingestion Adult HQ	Dermal Adult HQ	Inhalation Adult HQ	Noncarcinogenic Adult HI
Acetone	-	5.67E-06	-	9.07E-07	6.57E-06	5.31E-07	-	9.07E-07	1.44E-06
Arsenic, Inorganic	2.50E-05	4.32E-01	5.13E-02	7.95E-04	4.84E-01	4.05E-02	8.55E-03	7.95E-04	4.99E-02
Benz[a]anthracene	1.31E-06	-	-	-	-	-	-	-	-
Benzene	8.65E-10	3.20E-06	-	9.04E-06	1.22E-05	3.00E-07	-	9.04E-06	9.34E-06
Benzo[a]pyrene	8.21E-06	4.02E-02	1.24E-02	3.33E-04	5.29E-02	3.77E-03	2.07E-03	3.33E-04	6.17E-03
Benzo[b]fluoranthene	1.21E-06	-	-	-	-	-	-	-	-
Carbon Disulfide	-	7.67E-07	-	7.04E-06	7.81E-06	7.19E-08	-	7.04E-06	7.12E-06
Chromium(VI)	2.06E-06	2.64E-03	-	4.37E-06	2.65E-03	2.48E-04	-	4.37E-06	2.52E-04
DDE, p,p'-	1.23E-06	1.04E-01	-	-	1.04E-01	9.75E-03	-	-	9.75E-03
Dibenz[a,h]anthracene	1.16E-06	-	-	-	-	-	-	-	-
Methyl Ethyl Ketone (2-Butanone)	-	7.29E-07	-	5.38E-07	1.27E-06	6.83E-08	-	5.38E-07	6.06E-07
*Total Risk/HI	4.02E-05	5.79E-01	6.37E-02	1.15E-03	6.44E-01	5.43E-02	1.06E-02	1.15E-03	6.60E-02