MLM Environmental Ltd
7200 Cambridge Research Park
Cambridge

CB5 9TL

FAO James Warth

LABORATORY TEST REPORT

Results of analysis of 8 samples received 17 January 2007

Westminster Kingsway College (WK College)

Chemtest

Report Date 30 January 2007

Login Batch No 52101

Chemtest LIMS ID					AB68860	AB68861	AB68862	AB68863	AB68864	AB68865	AB68866	AB68867
Sample ID					WS1	WS2	WS2	WS3	WS3A	WS4	WS5	WS6
Sample No					D2	D1	D4	D1	D2	D1	D1	D1
Depth					1.0m	0.5m	2.0m	0.5m	1.0m	0.5m	0.5m	0.5m
Matrix					*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
SOP↓	Determinand↓	CAS No↓	Units↓	*								
	Acid Neutralisation Capacity	ANC	mol kg-1	N	0.044	0.034	0.011	0.034	0.043	0.24	0.067	0.060
2610	Loss on ignition		%	N	2.33	2.01	4.49	1.66	1.88	3.08	1.92	1.89
2630	Total Organic Carbon		%	N	1.7	1.3	7.6	1.1	1.4	3.8	3.6	6.4
2675	TPH >C10-C40		mg kg-1	M	43	<20	<20	<20	23	<20	<20	37
2700	Naphthalene	91203	mg kg-1	M	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.6	<0.1
	Acenaphthylene	208968	mg kg-1	M	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Acenaphthene	83329	mg kg-1	M	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	<0.1
	Fluorene	86737	mg kg-1	M	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1
	Phenanthrene	85018	mg kg-1	M	3	4.2	<0.1	<0.1	0.1	0.1	1	0.3
	Anthracene	120127	mg kg-1	M	1.1	0.9	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Fluoranthene	206440	mg kg-1	M	4.9	7.5	<0.1	0.1	0.3	<0.1	1	0.2
	Pyrene	129000	mg kg-1	M	4.3	6.2	<0.1	0.2	0.3	0.2	0.9	0.5
	Benzo[a]anthracene	56553	mg kg-1	M	3.3	3.1	<0.1	<0.1	0.2	<0.1	0.4	0.2
	Chrysene	218019	mg kg-1	M	2.8	3.2	<0.1	<0.1	0.2	<0.1	0.5	0.2
	Benzo[b]fluoranthene	205992	mg kg-1	M	3.7	3.4	<0.1	<0.1	<0.1	<0.1	0.2	0.2
	Benzo[k]fluoranthene	207089	mg kg-1	M	2.1	2.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1
	Benzo[a]pyrene	50328	mg kg-1	M	4.3	4	<0.1	<0.1	0.3	<0.1	0.5	0.6
	Dibenzo[a,h]anthracene	53703	mg kg-1	M	3.8	2.3	<0.1	<0.1	<0.1	<0.1	0.3	<0.1
	Indeno[1,2,3-cd]pyrene	193395	mg kg-1	M	0.9	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Benzo[g,h,i]perylene	191242	mg kg-1	M	3.2	2.3	<0.1	<0.1	0.1	<0.1	0.3	0.2
	Coronene	191071	mg kg-1	N	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Total (of 17) PAHs		mg kg-1	N	38	40	<2	<2	<2	<2	5.9	2.5
2760	Benzene	71432	µg kg-1	M	<1	<1	<1	<1	<1	<1	<1	<1
	Toluene	108883	µg kg-1	M	<1	<1	<1	<1	<1	<1	<1	<1
	Ethyl benzene	100414	µg kg-1	M	<1	<1	<1	<1	<1	<1	<1	<1
	m- & p-Xylene	1330207	µg kg-1	M	<1	<1	<1	<1	<1	<1	<1	<1
	o-Xylene	1330207	µg kg-1	M	<1	<1	<1	<1	<1	<1	<1	<1
2810	2,4,4'-Trichlorobiphenyl	7012375	mg kg-1	N	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	2,2',5,5'-Tetrachlorobiphenyl	35693993	mg kg-1	N	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	2,2',4,5,5'-Pentachlorobiphenyl	37680732	mg kg-1	N	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

All tests undertaken between 19-Jan-2007 and 25-Jan-2007

* Accreditation status

[redacted] *This report should be interpreted in conjunction with the notes on the accompanying cover* [redacted]

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					AB68860	AB68861	AB68862	AB68863	AB68864	AB68865	AB68866	AB68867
					WS1	WS2	WS2	WS3	WS3A	WS4	WS5	WS6
					D2	D1	D4	D1	D2	D1	D1	D1
					1.0m	0.5m	2.0m	0.5m	1.0m	0.5m	0.5m	0.5m
					SOIL	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
2810	2,3,4,4',5-Pentachlorobiphenyl	31508006	mg kg^{-1}	N	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	2,2',3,4,4',5-Hexachlorobiphenyl	35065282	mg kg^{-1}	N	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	2,2',4,4',5,5'-Hexachlorobiphenyl	35065271	mg kg^{-1}	N	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	2,2',3,4,4',5,5'-Heptachlorobiphenyl	35065293	mg kg^{-1}	N	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2010	pH		-	M	9.0	9.9	7.6	8.3	9.6	7.7	8.6	8.1
2180	Asbestos (presence/absence)		-	N							not detected	not detected

All tests undertaken between 19-Jan-2007 and 25-Jan-2007

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This report should be interpreted in conjunction with the notes on the accompanying cover page

Appendix G

Defining Severity of Impact

Defining Severity of Impact

The terms Serious, Moderate or Negligible are used to describe the severity of impact of a given source upon a given receptor in the event of a Source-Pathway-Receptor (SPR) Linkage being realised. These terms are defined as follows:

Serious

a. Death, permanent ill-health or damage will occur to humans, livestock or crops, flora and fauna;
b. Adverse change to a habitat protected under UK or EC law;
c. Contamination of groundwater or surface water with List I and List II substances[1] as such that appropriate guideline action levels are exceeded;
d. Structural failure or substantial damage to buildings.

Moderate

e. Chronic non-fatal harm (recoverable), minor harm, ill-health or impairment of humans, livestock or crops, flora and fauna;
f. Impact to habitats protected under UK or EC law does not cause adverse change;
g. Contamination of groundwater or surface water with List I and List II substances[1] such that appropriate guideline action levels are not exceeded;
h. Minor damage to property or buildings.

Negligible

i. No appreciable harmful effects to humans, livestock or crops, flora and fauna;
j. No impact to a habitat protected under UK or EC law;
k. Groundwater and surface water not contaminated above background (baseline) levels;
l. No damage to property or buildings.

[1] as defined in the dangerous substances directive or any other substance considered as having or likely to increase the polluting effects of controlled waters or other site specific threshold level or acceptance criteria specified and agreed to with the Regulators from which legal action could arise if breached.

Appendix H

Defining Risk

Defining Risk

The terms High, Medium or Low are used to describe the risk associated with a particular SPR Linkage and is defined by the completeness of the SPR Linkage combined with the Severity of Impact (in the event of a linkage being realised). **Recommended Action** is associated with the degree of risk as given below.

These terms are defined as follows:

High An impact event is only defined as high risk if the following occurs:

- The SPR linkage is proven to be complete and the Severity of Impact is Serious and presently being realised (i.e. if there is an ongoing adverse impact upon human health, livestock, crops, buildings, protected ecosystems or controlled waters or there is a similar impact upon the proposed usage for which we are undertaking the risk assessment).

Recommended Action: A high risk must involve remedial action agreed with the Regulators to break the SPR linkage.

Medium An impact event is defined as medium risk if the following occurs:

- The SPR linkage is suspected but not proven where the Severity of Impact would be Serious. The possibility that there may be a high risk should be indicated;
- The SPR linkage is completed but the Severity of Impact is Moderate;
- The SPR linkage is incomplete but the potential exists for the linkage to be completed in the future (e.g. change in site end-use, introduction of a new pathway, etc.) where the Severity of Impact would be either Moderate or Serious.

Recommended Action: A medium risk must involve further action. This action may include investigation, monitoring, further risk assessment or remedial action agreed with the Regulators.

Low An impact event is defined as low risk if the following occurs:

- The SPR linkage is complete but the Severity of Impact is Negligible (i.e. the levels of contamination are below guideline limits posing a hazard for the proposed end use);
- The SPR linkage is incomplete and there is no foreseeable mechanism by which it could be realised.

Recommended Action: A low risk requires no further action.

Appendix I

CLEA Worksheets

CLEA UK MODEL 2005 VERSION Version 1.0

Simulation Date:	07/03/2007
Type of simulation:	Site Specific Assessment Criteria

Company Name:	MLM
Person running Simulation:	MCH
Contact Number:	
Site Name:	721543_WESTMINSTER_KINGSWA
Site Address:	WESTMINSTER KINGSWAY COLLEGE SIDMOUTH STREET LONDON

Chemical	HCV_{ave} compared with which exposure route/s?			HCV_{max} compared with which exposure route/s?			Assessment Criteria ($mg.kg^{-1}$)					Site Specific Soil Concentration ($mg.kg^{-1}$ dry weight soil)	ADE/HCV (dimensionless)	
	oral	dermal	inhal	oral	dermal	inhal	oral & dermal (using HCV_{ave})	20% rule applied?	Inhalation (using $HCV_{ave/max}$)	20% rule applied?	Integrated		oral & dermal	inhalation
arsenic	Yes	Yes	No	No	No	Yes	3.82E+01	No	1.57E+03	No	3.73E+01		1.00E+00	1.00E+00
cadmium	Yes	Yes	No	No	No	Yes	5.98E+01	No	7.87E+02	No	5.56E+01		1.00E+00	1.00E+00
chromium	Yes	Yes	No	No	No	Yes	3.44E+02	No	7.87E+02	No	2.39E+02		1.00E+00	1.00E+00
mercury (inorganic)	Yes	Yes	No	No	No	Yes	2.88E+01	No	2.30E+05	No	2.88E+01		1.00E+00	1.00E+00
nickel	Yes	Yes	No	No	No	Yes	1.35E+02	Yes	9.45E+02	Yes	1.18E+02		1.00E+00	1.00E+00
selenium	Yes	Yes	Yes	No	No	No	4.59E+02	No		No			1.00E+00	

Land-use selected:	residential without plant uptake (CLAN606)

	Land-use Parameters	Age Class 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Exposure Frequency (day.yr^{-1})	direct soil and dust ingestion	1.80E+02	3.65E+02	3.65E+02	3.65E+02	3.65E+02	3.65E+02												
	consumption of home grown produce	2.50E+02	3.65E+02	3.65E+02	3.65E+02	3.65E+02	3.65E+02												
	consumption of soil attached to home grown produce	2.50E+02	3.65E+02	3.65E+02	3.65E+02	3.65E+02	3.65E+02												
	skin contact, indoors	1.80E+02	3.65E+02	3.65E+02	3.65E+02	3.65E+02	3.65E+02												
	skin contact, outdoors	6.50E+01	1.30E+02	1.30E+02	1.30E+02	1.30E+02	1.30E+02												
	inhalation of dust and vapours, indoors	3.65E+02	3.65E+02	3.65E+02	3.65E+02	3.65E+02	3.65E+02												
	inhalation of dust and vapours, outdoors	3.65E+02	3.65E+02	3.65E+02	3.65E+02	3.65E+02	3.65E+02												
Respiration Frequency (hr.day^{-1})	active, indoors	2.00E+00	3.00E+00	3.00E+00	3.00E+00	3.00E+00	2.00E+00												
	active, outdoors	1.00E+00	2.00E+00	2.00E+00	3.00E+00	3.00E+00	2.00E+00												
	passive, indoors	2.00E+01	1.80E+01	1.80E+01	1.80E+01	1.80E+01	1.60E+01												
	passive, outdoors	1.00E+00	1.00E+00	1.00E+00	0.00E+00	0.00E+00	0.00E+00												
Soil Ingestion Rate (mg.day-1)	soil ingestion rate	1.00E+02	1.00E+02	1.00E+02	1.00E+02	1.00E+02	1.00E+02												
Soil-skin adherence factor (mg.cm^2)	indoor	6.00E-02	6.00E-02	6.00E-02	6.00E-02	6.00E-02	6.00E-02												
	outdoor	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00												
Exposed skin fraction (dimensionless)	indoor maximum exposed skin fraction	3.20E-01	3.30E-01	3.20E-01	3.50E-01	3.50E-01	3.30E-01												
	outdoor maximum exposed skin fraction	2.60E-01	2.60E-01	2.50E-01	2.80E-01	2.80E-01	2.60E-01												

Receptor selected:	Female (UK)

Start Age Class	End Age Class	Exposure duration (years)	Averaging Time (years)
1	6	6	6

BUILDING PARAMETERS

Building type selected:	Residential - typical house	
Building Parameter	**Units**	**Input Value**
height of living/working space above ground	cm	4.80E+02
height of cellar space below ground	cm	0.00E+00
enclosed space floor length	cm	6.40E+02
enclosed space floor width	cm	6.40E+02
foundation or slab thickness	cm	1.50E+01
living/working space air exchange	hr^{-1}	5.00E-01
pressure differential between soil and enclosed space	$g.cm^{-1}$	3.00E+01
floor-wall seam crack width	cm	2.00E-01
fixed crack to total area ratio	unitless	1.25E-03
volumetric flow rate of soil gas entering the building	$cm^3.s^{-1}$	3.95E+01
volumetric building ventilation rate from indoor to outdoor air	$cm3.s^{-1}$	2.73E+04

SOIL CHARACTERISTICS

Soil type selected:		sandy - UK
Soil parameter	**Units**	**Input value**
grainsize	cm	5.00E-02
total porosity	$cm^3.cm^{-3}$	4.60E-01
air-filled porosity	$cm^3.cm^{-3}$	3.10E-01
water-filled porosity	$cm^3.cm^{-3}$	1.50E-01
dry bulk density	$g.cm^{-3}$	1.60E+00
enrichment factor	dimensionless	6.00E+00
soil pH	dimensionless	8.00E+00
fraction of organic carbon	dimensionless	2.90E-02
van Genuchten shape parameter	dimensionless	3.47E-01
residual water content	$cm^3.cm^{-3}$	3.00E-02
saturated hydraulic conductivity	$cm.s^{-1}$	6.47E-03
ambient soil/water temperature	K	2.83E+02
intrinsic soil permeability	cm^2	8.63E-08

SITE PARAMETERS

Site Parameter	Units	Input Value
Area of source-zone	cm^2	2.25E+06
Depth below ground to source zone	cm	1.15E+02
Equivalent threshold wind speed (7m)	$m.s^{-1}$	1.13E+01
Fraction of soil in building dust	dimensionless	7.50E-01
Fraction of the site with hard or vegetative cover	dimensionless	5.00E-01
Mean annual windspeed (10m)	$m.s^{-1}$	4.69E+00
Normalised annual average concentration of dust particles	$kg.m^{-3}$ per $g.m^{-2}.s^{-1}$	1.10E-02
Tracked back soil adjustment factor	dimensionless	1.00E+00
Width of contaminated zone in direction of prevailing wind	cm	1.50E+03
Wind speed distribution function	dimensionless	1.94E-01
Wind speed in mixing zone (1-2m)	$m.s^{-1}$	3.00E+00

Exposure Pathways

Chemical	Oral: direct soil and soil derived indoor dust ingestion – ADE % Contribution	Oral: direct soil and soil derived indoor dust ingestion – ADE Mean (ug kg-1 bw day-1)	Oral: consumption of site-grown vegetables – ADE % Contribution	Oral: consumption of site-grown vegetables – ADE Mean (ug kg-1 bw day-1)	Oral: consumption of soil attached to site-grown vegetables – ADE % Contribution	Oral: consumption of soil attached to site-grown vegetables – ADE Mean (ug kg-1 bw day-1)	Dermal: skin contact with soil-derived indoor dust – ADE % Contribution	Dermal: skin contact with soil-derived indoor dust – ADE Mean (ug kg-1 bw day-1)	Dermal: skin contact with soil – ADE % Contribution	Dermal: skin contact with soil – ADE Mean (ug kg-1 bw day-1)	Inhalation: inhalation of soil derived indoor dust – ADE % Contribution	Inhalation: inhalation of soil derived indoor dust – ADE Mean (ug kg-1 bw day-1)	Inhalation: inhalation of soil dust – ADE % Contribution	Inhalation: inhalation of soil dust – ADE Mean (ug kg-1 bw day-1)	Inhalation: inhalation of vapours indoors – ADE % Contribution	Inhalation: inhalation of vapours indoors – ADE Mean (ug kg-1 bw day-1)	Inhalation: inhalation of vapours outdoors – ADE % Contribution	Inhalation: inhalation of vapours outdoors – ADE Mean (ug kg-1 bw day-1)	Inhalation: vapour model calculated values – soil air diffusion coefficient (cm2.s-1)	Inhalation: vapour model calculated values – soil-vapour to indoor air attenuation coefficient (dimensionless)	Inhalation: dispersion factor for ambient air – young child (cm.s-1)	Inhalation: dispersion factor for ambient air – older child (cm.s-1)	Inhalation: dispersion factor for ambient air – adult (cm.s-1)	background exposure (oral) – ADE Mean (ug kg-1 bw day-1)	background exposure (inhalation) – ADE Mean (ug kg-1 bw day-1)
arsenic	9.40E+01	2.51E-01	N/A	N/A	N/A	N/A	8.26E-01	2.21E-03	5.20E+00	1.39E-02	1.32E-02	3.54E-05	4.47E-03	1.20E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.10E+00	N/A	N/A	0.00E+00	0.00E+00
cadmium	9.93E+01	3.75E-01	N/A	N/A	N/A	N/A	2.92E-02	1.10E-04	1.84E-01	6.92E-04	1.40E-02	5.28E-05	4.74E-03	1.79E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.10E+00	N/A	N/A	5.55E-01	0.00E+00
chromium	1.00E+02	1.62E+00	N/A	N/A	N/A	N/A	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.41E-02	2.27E-04	4.75E-03	7.65E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.10E+00	N/A	N/A	4.51E-01	0.00E+00
mercury (inorganic)	1.00E+02	1.94E-01	N/A	N/A	N/A	N/A	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.41E-02	2.73E-05	4.75E-03	9.23E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.10E+00	N/A	N/A	3.68E-02	7.45E-03
nickel	1.00E+02	7.97E-01	N/A	N/A	N/A	N/A	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.41E-02	1.12E-04	4.75E-03	3.79E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.10E+00	N/A	N/A	0.00E+00	0.00E+00
selenium	1.00E+02	3.10E+00	N/A	N/A	N/A	N/A	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.41E-02	4.36E-04	4.75E-03	1.47E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.10E+00	N/A	N/A	1.60E+00	0.00E+00

HEALTH CRITERIA VALUES

Chemical	TDI (ug.kg-1 bw.day-1)		ID (ug.kg-1 bw.day-1)		MDI (ug day-1)	
	oral	inhalation	oral	inhalation	oral	inhalation
arsenic	none	none	3.00E-01	2.00E-03	0.00E+00	0.00E+00
cadmium	1.00E+00	none	none	1.00E-03	1.60E+01	0.00E+00
chromium	3.00E+00	none	none	1.00E-03	1.30E+01	0.00E+00
mercury (inorganic)	3.00E-01	3.00E-01	none	none	2.50E+00	3.00E-01
nickel	1.00E+00	1.20E-03	none	none	0.00E+00	0.00E+00
selenium	5.00E+00	none	none	none	4.60E+01	0.00E+00

PHYSICO-CHEMICAL PROPERTIES

Chemical	Henry's Law Constant (dimensionless)	Reference Temperature (K)	Henry's Law Constant (atm.m3.mol-1)	Reference Temperature (K)	Henry's Law Constant at ambient temperature (dimensionless)	Enthalpy of vaporisation at boiling point (cal.mol-1)	Boiling Point (K)	Critical Temperature (K)	Air diffusion coefficient (m2.s-1)	Water diffusion coefficient (m2.s-1)	Relative atomic (molecular) mass (g.mol)	Vapour pressure at 10°C (Pa)	Aqueous solubility at 10°C (mg.L-1)	Organic carbon - water distribution coefficient, log Koc (log(cm3 water g-1 oc))	Octanol-water distribution coefficient, log Kow (dimensionless)	Soil-water distribution coefficient, Kd (cm3 water g-1 soil)	Total soil concentration to pore water concentration ratio (cm3 water g-1 soil)	Dermal absorption fraction (dimensionless)	Type of soil-to-plant concentration factor, dry or fresh weight? (leafy) (dimensionless)	Type of soil-to-plant concentration factor, dry or fresh weight? (root) (dimensionless)	Soil-to-plant concentration factor (leafy) (mg g-1 FW plant over mg cm-3 soil solution)	Soil-to-plant concentration factor (root) (mg g-1 FW plant over mg cm-3 soil solution)	Dust Enrichment Factor used?
arsenic	N/A	N/A	N/A	N/A	0.00E+00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.41E+05	N/A	N/A	1.80E+03	1.80E+03	3.00E-02	dw	dw	9.00E-03	9.00E-03	Yes
cadmium	N/A	N/A	N/A	N/A	0.00E+00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.51E+05	N/A	N/A	2.56E+03	2.56E+03	1.00E-03	dw	dw	1.55E-01	1.36E-01	Yes
chromium	N/A	N/A	N/A	N/A	0.00E+00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.67E+05	N/A	N/A	4.80E+03	4.80E+03	0.00E+00	dw	dw	5.50E-02	2.00E-02	Yes
mercury (inorganic)	N/A	N/A	N/A	N/A	0.00E+00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.90E+04	N/A	N/A	7.50E+03	7.50E+03	0.00E+00	dw	dw	5.19E-02	4.90E-02	Yes
nickel	N/A	N/A	N/A	N/A	0.00E+00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.73E+05	N/A	N/A	2.00E+03	2.00E+03	0.00E+00	dw	dw	4.70E-02	1.80E-02	Yes
selenium	N/A	N/A	N/A	N/A	0.00E+00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.41E+05	N/A	N/A	3.00E+02	3.00E+02	0.00E+00	dw	dw	1.39E-01	9.26E-03	Yes

MEDIA CONCENTRATIONS

Chemical	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
arsenic	3.73E-02	3.73E-02	1.94E-06	0.00E+00	1.00E+02	5.21E-03	0.00E+00	0.00E+00	0.00E+00	N/A	N/A	2.83E-08	2.12E-08	3.19E-05	4.22E-05	3.25E-05	1.34E-05	5.23E-05	7.04E-05	2.07E-02	4.41E+05	4.69E-06	0.00E+00	0.00E+00	N/A
cadmium	5.56E-02	5.56E-02	2.04E-06	0.00E+00	1.00E+02	3.66E-03	0.00E+00	0.00E+00	0.00E+00	N/A	N/A	4.22E-08	3.17E-08	8.18E-04	1.08E-03	7.34E-04	3.44E-04	1.18E-03	1.59E-03	2.17E-02	6.51E+05	3.34E-06	0.00E+00	0.00E+00	N/A
chromium	2.39E-01	2.39E-01	4.67E-06	0.00E+00	1.00E+02	1.95E-03	0.00E+00	0.00E+00	0.00E+00	N/A	N/A	1.82E-07	1.36E-07	1.25E-03	1.66E-03	4.64E-04	5.27E-04	7.47E-04	1.01E-03	4.99E-02	1.67E+05	2.99E-05	0.00E+00	0.00E+00	N/A
mercury (inorganic)	2.38E-02	2.38E-02	3.60E-07	0.00E+00	1.00E+02	1.25E-03	0.00E+00	0.00E+00	0.00E+00	N/A	N/A	2.18E-08	1.64E-08	1.42E-04	1.88E-04	1.37E-04	5.97E-05	2.20E-04	2.96E-04	3.84E-03	6.90E+04	5.56E-06	0.00E+00	0.00E+00	N/A
nickel	1.18E-01	1.18E-01	5.53E-06	0.00E+00	1.00E+02	4.69E-03	0.00E+00	0.00E+00	0.00E+00	N/A	N/A	8.96E-08	6.72E-08	5.27E-04	6.99E-04	2.06E-04	2.22E-04	3.32E-04	4.46E-04	5.90E-02	1.73E+05	3.41E-05	0.00E+00	0.00E+00	N/A
selenium	4.59E-01	4.59E-01	1.43E-04	0.00E+00	1.00E+02	3.13E-02	0.00E+00	0.00E+00	0.00E+00	N/A	N/A	3.48E-07	2.61E-07	6.07E-03	8.05E-03	4.12E-04	2.55E-03	6.63E-04	8.93E-04	1.53E+00	3.41E+05	4.49E-04	0.00E+00	0.00E+00	N/A

CLEA UK MODEL 2005 VERSION Version 1.0

Simulation Date:	06/03/2007
Type of simulation:	Site Specific Assessment Criteria

Company Name:	MLM EL
Person running Simulation:	MCH
Contact Number:	
Site Name:	721543_KINGSWAY_COLLEGE_CO
Site Address:	WESTMINSTER KINGSWAY COLLEGE SIDMOUTH STREET LONDON

Chemical	HCV_{ora} compared with which exposure route/s?			HCV_{inhal} compared with which exposure route/s?			Assessment Criteria ($mg.kg^{-1}$)					Site Specific Soil Concentration ($mg.kg^{-1}$ dry weight soil)	ADE/HCV (dimensionless)	
	oral	dermal	inhal	oral	dermal	inhal	oral & dermal (using HCV_{oral})	20% rule applied?	inhalation (using $HCV_{inhalation}$)	20% rule applied?	integrated		oral & dermal	inhalation
arsenic	Yes	Yes	No	No	No	Yes	5.28E+02	No	1.93E+04	No	5.14E+02		1.00E+00	1.00E+00
benzene	Yes	Yes	No	No	No	Yes	5.28E+02	No	9.22E+00	No	9.06E+00		1.00E+00	1.00E+00
benzo[a]pyrene	Yes	Yes	Yes	Yes	Yes	Yes	3.11E+01	No	1.14E-01	No	1.13E-01		1.00E+00	1.00E+00
cadmium	Yes	Yes	No	No	No	Yes	1.41E+03	No	9.66E+03	No	1.23E+03		1.00E+00	1.00E+00
chromium	Yes	Yes	No	No	No	Yes	5.18E+03	No	9.66E+03	No	3.37E+03		1.00E+00	1.00E+00
ethylbenzene	Yes	Yes	No	No	No	Yes	1.55E+05	No	1.00E+06	No			1.00E+00	3.45E-01
mercury (inorganic)	Yes	Yes	No	No	No	Yes	4.86E+02	No	1.00E+06	No			1.00E+00	3.60E-01
nickel	Yes	Yes	No	No	No	Yes	1.84E+03	Yes	1.16E+04	Yes	1.59E+03		1.00E+00	1.00E+00
selenium	Yes	Yes	Yes	No	No	No	7.98E+03	No		No			1.00E+00	
toluene	Yes	Yes	No	No	No	Yes	3.10E+05	No	1.39E+03	No	1.38E+03		1.00E+00	1.00E+00
TPH_Aliphatics_C10-12	Yes	Yes	No	No	No	Yes	1.82E+05	No	1.00E+06	No			1.00E+00	3.20E-02
TPH_Aliphatics_C12-16	Yes	Yes	No	No	No	Yes	1.55E+05	No	1.00E+06	No			1.00E+00	2.85E-03
TPH_Aliphatics_C16-21	Yes	Yes	No	No	No	Yes	1.00E+06	No		No			3.22E-01	
TPH_Aliphatics_C21-35	Yes	Yes	No	No	No	Yes	1.00E+06	No		No			3.22E-01	
TPH_Aliphatics_C5-6	Yes	Yes	No	No	No	Yes	1.00E+06	No	1.00E+06	No			1.29E-01	4.71E-01
TPH_Aliphatics_C6-8	Yes	Yes	No	No	No	Yes	1.00E+06	No	1.00E+06	No			1.29E-01	1.05E-01
TPH_Aliphatics_C8-10	Yes	Yes	No	No	No	Yes	1.55E+05	No	1.00E+06	No			1.00E+00	2.36E-01
TPH_Aromatics_10-12	Yes	Yes	No	No	No	Yes	7.28E+04	No	1.00E+06	No			1.00E+00	7.79E-01
TPH_Aromatics_C12-16	Yes	Yes	No	No	No	Yes	6.21E+04	No	1.00E+06	No			1.00E+00	1.03E-02
TPH_Aromatics_C16-21	Yes	Yes	No	No	No	Yes	4.66E+04	No		No			1.00E+00	
TPH_Aromatics_C21-35	Yes	Yes	No	No	No	Yes	4.66E+04	No		No			1.00E+00	
TPH_Aromatics_C5-7	Yes	Yes	No	No	No	Yes	3.11E+05	No	1.17E+03	No	1.16E+03		1.00E+00	1.00E+00
TPH_Aromatics_C7-8	Yes	Yes	No	No	No	Yes	3.11E+05	No	2.55E+03	No	2.53E+03		1.00E+00	1.00E+00
TPH_Aromatics_C8-10	Yes	Yes	No	No	No	Yes	6.21E+04	No	3.52E+03	No			1.00E+00	1.00E+00
xylene (mixture)	Yes	Yes	No	No	No	Yes	3.25E+05	No	1.50E+03	No			1.00E+00	1.00E+00

Land-use selected:	commercial and industrial

	Land-use Parameter	Age Class 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Exposure Frequency (day yr-1)	direct soil and dust ingestion																	2.30E+02	
	consumption of home grown produce																	0.00E+00	
	consumption of soil attached to home grown produce																	0.00E+00	
	skin contact, indoors																	2.30E+02	
	skin contact, outdoors																	1.70E+02	
	inhalation of dust and vapours, indoors																	2.30E+02	
	inhalation of dust and vapours, outdoors																	1.70E+02	
Respiration Frequency (hr day-1)	active, indoors																	2.00E+00	
	active, outdoors																	6.60E-01	
	passive, indoors																	5.50E+00	
	passive, outdoors																	3.30E-01	
Soil Ingestion Rate (mg day-1)	soil ingestion rate																	4.00E+01	
Soil-skin adherence factor (mg cm-2)	indoor																	1.40E-01	
	outdoor																	1.40E-01	
Exposed skin fraction (dimensionless)	indoor maximum exposed skin fraction																	7.00E-02	
	outdoor maximum exposed skin fraction																	7.00E-02	

Receptor selected:	female (Commercial UK)

Start Age Class	End Age Class	Exposure duration (years)	Averaging Time (years)
17	17	43	43

BUILDING PARAMETERS

Building type selected:	Office with basement	
Building Parameters	**Units**	**Input Value**
height of living/working space above ground	cm	9.60E+02
height of cellar space below ground	cm	2.70E+02
enclosed space floor length	cm	2.45E+03
enclosed space floor width	cm	2.45E+03
foundation or slab thickness	cm	1.50E+01
living/working space air exchange	hr^{-1}	1.00E+00
pressure differential between soil and enclosed space	$g.cm^{-1}$	5.00E+01
floor-wall seam crack width	cm	2.00E-01
fixed crack to total area ratio	unitless	2.27E-04
volumetric flow rate of soil gas entering the building	cm3 s-1	1.59E+02
volumetric building ventilation rate from indoor to outdoor air	cm3 s-1	2.05E+06

SOIL CHARACTERISTICS

Soil type selected:		sandy - UK
Soil parameter	**Units**	**Input value**
grainsize	cm	5.00E-02
total porosity	$cm^3 cm^{-3}$	4.60E-01
air-filled porosity	$cm^3 cm^{-3}$	3.10E-01
water-filled porosity	$cm^3 cm^{-3}$	1.50E-01
dry bulk density	$g cm^{-3}$	1.60E+00
enrichment factor	dimensionless	6.00E+00
soil pH	dimensionless	8.00E+00
fraction of organic carbon	dimensionless	2.90E-02
van Genuchten shape parameter	dimensionless	3.47E-01
residual water content	$cm^3 cm^{-3}$	3.00E-02
saturated hydraulic conductivity	$cm.s^{-1}$	6.47E-03
ambient soil/water temperature	K	2.83E+02
intrinsic soil permeability	cm^2	8.63E-08

SITE PARAMETERS

Site Parameter	Units	Input Value
Area of source-zone	cm^2	2.25E+06
Depth below ground to source zone	cm	1.15E+02
Equivalent threshold wind speed (7m)	$m.s^{-1}$	1.13E+01
Fraction of soil in building dust	dimensionless	7.50E-01
Fraction of the site with hard or vegetative cover	dimensionless	8.00E-01
Mean annual windspeed (10m)	$m.s^{-1}$	4.69E+00
Normalised annual average concentration of dust particles	$kg.m^{-2}$ per $g.m^{-3}.s^{-1}$	1.60E-02
Tracked back soil adjustment factor	dimensionless	1.00E+00
Width of contaminated zone in direction of prevailing wind	cm	1.50E+03
Wind speed distribution function	dimensionless	1.94E-01
Wind speed in mixing zone (1-2m)	$m.s^{-1}$	3.00E+00

Exposure Pathways

Chemical	Oral						Dermal				Inhalation													[illegible]	[illegible]
arsenic	9.41E+01	1.97E-01	N/A	N/A	N/A	N/A	2.97E+00	6.21E-03	2.93E+00	6.12E-03	2.12E-02	4.44E-05	4.20E-03	8.79E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	N/A	N/A	1.62E+01	0.00E+00	0.00E+00
benzene	3.86E-01	3.47E-03	N/A	N/A	N/A	N/A	4.06E-03	3.65E-05	4.01E-03	3.60E-05	1.45E-05	1.30E-07	2.87E-06	2.58E-08	9.82E+01	3.82E-01	1.38E+00	1.24E-02	8.42E-03	4.78E-05	N/A	N/A	1.62E+01	3.50E-02	4.28E-01
benzo(a)pyrene	8.27E+01	4.35E-05	N/A	N/A	N/A	N/A	8.69E+00	4.57E-06	8.58E+00	4.51E-06	3.11E-03	1.63E-09	6.15E-04	3.23E-10	1.98E-02	1.04E-08	2.74E-04	1.44E-10	8.22E-03	4.73E-05	N/A	N/A	1.62E+01	0.00E+00	0.00E+00
cadmium	9.98E+01	4.72E-01	N/A	N/A	N/A	N/A	1.05E-01	4.96E-04	1.03E-01	4.90E-04	2.25E-02	1.06E-04	4.45E-03	2.11E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	N/A	N/A	1.62E+01	2.33E-01	0.00E+00
chromium	1.00E+02	1.29E+00	N/A	N/A	N/A	N/A	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.25E-02	2.91E-04	4.46E-03	5.77E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	N/A	N/A	1.62E+01	1.90E-01	0.00E+00
ethylbenzene	4.62E+01	5.94E+01	N/A	N/A	N/A	N/A	4.86E+00	6.25E+00	4.79E+00	6.16E+00	1.74E-03	2.23E-03	3.44E-04	4.42E-04	4.36E+01	5.61E+01	5.56E-01	7.16E-01	7.17E-03	4.48E-05	N/A	N/A	1.62E+01	7.30E-02	1.90E+00
mercury (inorganic)	1.00E+02	1.86E-01	N/A	N/A	N/A	N/A	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.25E-02	4.20E-05	4.46E-03	8.31E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	N/A	N/A	1.62E+01	3.65E-02	4.38E-03
nickel	1.00E+02	6.10E-01	N/A	N/A	N/A	N/A	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.25E-02	1.37E-04	4.46E-03	2.72E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	N/A	N/A	1.62E+01	0.00E+00	0.00E+00
selenium	1.00E+02	3.06E+00	N/A	N/A	N/A	N/A	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.25E-02	6.89E-04	4.46E-03	1.36E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	N/A	N/A	1.62E+01	6.71E-01	0.00E+00
toluene	7.30E-01	5.29E-01	N/A	N/A	N/A	N/A	7.67E-02	5.56E-02	7.57E-02	5.49E-02	2.74E-05	1.99E-05	5.43E-06	3.94E-06	9.78E+01	7.09E+01	1.36E+00	9.89E-01	8.32E-03	4.76E-05	N/A	N/A	1.62E+01	1.46E-01	1.81E+00
TPH_Aliphatics_C10-12	8.63E+01	6.97E+01	N/A	N/A	N/A	N/A	9.07E-01	7.33E-01	8.95E-01	7.23E-01	3.24E-03	2.62E-03	6.42E-04	5.19E-04	1.17E+01	9.44E+00	1.78E-01	1.44E-01	9.57E-03	5.01E-05	N/A	N/A	1.62E+01	0.00E+00	0.00E+00
TPH_Aliphatics_C12-16	8.18E+01	5.95E+01	N/A	N/A	N/A	N/A	8.60E+00	6.25E+00	8.48E+00	6.17E+00	3.07E-03	2.24E-03	6.09E-04	4.43E-04	1.08E+00	7.87E-01	1.33E-02	9.66E-03	6.70E-03	4.35E-05	N/A	N/A	1.62E+01	0.00E+00	0.00E+00
TPH_Aliphatics_C16-21	8.27E+01	3.83E+02	N/A	N/A	N/A	N/A	8.70E+00	4.03E+01	8.58E+00	3.97E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.70E-03	4.35E-05	N/A	N/A	1.62E+01	0.00E+00	0.00E+00
TPH_Aliphatics_C21-35	8.27E+01	3.83E+02	N/A	N/A	N/A	N/A	8.70E+00	4.03E+01	8.55E+00	3.97E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.70E-03	4.35E-05	N/A	N/A	1.62E+01	0.00E+00	0.00E+00
TPH_Aliphatics_C5-6	1.30E+01	3.83E+02	N/A	N/A	N/A	N/A	1.37E+00	4.03E+01	1.35E+00	3.97E+01	4.00E-04	1.44E-02	9.70E-05	2.85E-03	8.31E+01	2.44E+03	1.10E+00	3.24E+01	7.65E-03	4.60E-05	N/A	N/A	1.62E+01	0.00E+00	0.00E+00
TPH_Aliphatics_C6-8	3.78E+01	3.83E+02	N/A	N/A	N/A	N/A	3.98E+00	4.03E+01	3.92E+00	3.97E+01	1.42E-03	1.44E-02	2.81E-04	2.85E-03	5.36E+01	5.43E+02	7.10E-01	7.19E+00	7.65E-03	4.60E-05	N/A	N/A	1.62E+01	0.00E+00	0.00E+00
TPH_Aliphatics_C8-10	4.27E+01	5.95E+01	N/A	N/A	N/A	N/A	4.49E+00	6.25E+00	4.43E+00	6.17E+00	1.60E-03	2.24E-03	3.18E-04	4.43E-04	4.78E+01	6.66E+01	5.87E-01	8.18E-01	6.70E-03	4.35E-05	N/A	N/A	1.62E+01	0.00E+00	0.00E+00
TPH_Aromatics_10-12	2.62E+01	2.79E+01	N/A	N/A	N/A	N/A	2.76E-01	2.93E-01	2.72E-01	2.89E-01	9.35E-04	1.05E-03	1.95E-04	2.08E-04	7.21E+01	7.67E+01	1.10E+00	1.17E+00	9.57E-03	5.01E-05	N/A	N/A	1.62E+01	0.00E+00	0.00E+00
TPH_Aromatics_C12-16	8.11E+01	2.38E+01	N/A	N/A	N/A	N/A	8.53E+00	2.50E+00	8.41E+00	2.47E+00	3.05E-03	8.94E-04	6.03E-04	1.77E-04	1.91E+00	5.62E-01	2.16E-02	6.34E-03	5.74E-03	4.05E-05	N/A	N/A	1.62E+01	0.00E+00	0.00E+00
TPH_Aromatics_C16-21	8.27E+01	1.78E+01	N/A	N/A	N/A	N/A	8.70E+00	1.88E+00	8.58E+00	1.85E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.76E-03	4.06E-05	N/A	N/A	1.62E+01	0.00E+00	0.00E+00
TPH_Aromatics_C21-35	8.27E+01	1.78E+01	N/A	N/A	N/A	N/A	8.70E+00	1.38E+00	8.58E+00	1.35E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.37E-03	4.97E-05	N/A	N/A	1.62E+01	0.00E+00	0.00E+00
TPH_Aromatics_C5-7	3.90E-01	4.45E-01	N/A	N/A	N/A	N/A	4.10E-02	4.68E-02	4.05E-02	4.62E-02	1.47E-05	1.67E-05	2.90E-06	3.31E-06	9.83E+01	1.12E+02	1.21E+00	1.38E+00	6.70E-03	4.35E-05	N/A	N/A	1.62E+01	0.00E+00	0.00E+00
TPH_Aromatics_C7-8	3.47E-01	9.68E-01	N/A	N/A	N/A	N/A	3.91E-02	1.02E-01	8.79E-02	1.00E-01	3.18E-05	3.64E-05	6.30E-06	7.20E-06	9.78E+01	1.12E+02	1.20E+00	1.37E+00	6.70E-03	4.35E-05	N/A	N/A	1.62E+01	0.00E+00	0.00E+00
TPH_Aromatics_C8-10	2.30E+00	1.35E+00	N/A	N/A	N/A	N/A	2.42E-01	1.42E-01	2.39E-01	1.40E-01	8.65E-05	5.07E-05	1.71E-05	1.00E-05	9.60E+01	5.63E+01	1.18E+00	6.91E-01	6.70E-03	4.35E-05	N/A	N/A	1.62E+01	0.00E+00	0.00E+00
xylene (mixture)	9.29E-01	5.75E-01	N/A	N/A	N/A	N/A	9.76E-03	6.05E-03	9.63E-03	5.97E-03	3.49E-05	2.16E-05	6.91E-06	4.28E-06	9.78E+01	6.06E+01	1.21E+00	7.52E-01	6.83E-03	4.39E-05	N/A	N/A	1.62E+01	2.92E-01	1.63E+00

HEALTH CRITERIA VALUES

Chemical	TDI (ug.kg-1 bw.day-1)		ID (ug.kg-1 bw.day-1)		MDI (µg day-1)	
	oral	inhalation	oral	inhalation	oral	inhalation
arsenic	none	none	3.00E-01	2.00E-03	0.00E+00	0.00E+00
benzene	none	none	2.90E-01	9.10E-01	2.40E+00	2.93E+01
benzo[a]pyrene	none	none	2.00E-02	7.00E-05	0.00E+00	0.00E+00
cadmium	1.00E+00	none	none	1.00E-03	1.60E+01	0.00E+00
chromium	3.00E+00	none	none	1.00E-03	1.30E+01	0.00E+00
ethylbenzene	1.00E+02	1.70E+02	none	none	5.00E+00	1.30E+02
mercury (inorganic)	3.00E-01	3.00E-01	none	none	2.50E+00	3.00E-01
nickel	1.00E+00	1.20E-03	none	none	0.00E+00	0.00E+00
selenium	5.00E+00	none	none	none	4.60E+01	0.00E+00
toluene	2.00E+02	7.40E+01	none	none	1.00E+01	1.24E+02
TPH_Aliphatics_C10-12	1.00E+02	3.00E+02	none	none	0.00E+00	0.00E+00
TPH_Aliphatics_C12-16	1.00E+02	2.86E+02	none	none	0.00E+00	0.00E+00
TPH_Aliphatics_C16-21	2.00E+03	none	none	none	0.00E+00	0.00E+00
TPH_Aliphatics_C21-35	2.00E+03	none	none	none	0.00E+00	0.00E+00
TPH_Aliphatics_C5-6	5.00E+03	5.26E+03	none	none	0.00E+00	0.00E+00
TPH_Aliphatics_C6-8	5.00E+03	5.26E+03	none	none	0.00E+00	0.00E+00
TPH_Aliphatics_C8-10	1.00E+02	2.86E+02	none	none	0.00E+00	0.00E+00
TPH_Aromatics_10-12	4.00E+01	1.00E+02	none	none	0.00E+00	0.00E+00
TPH_Aromatics_C12-16	none	none	4.00E+01	5.70E+01	0.00E+00	0.00E+00
TPH_Aromatics_C16-21	none	none	3.00E+01	none	0.00E+00	0.00E+00
TPH_Aromatics_C21-35	none	none	3.00E+01	none	0.00E+00	0.00E+00
TPH_Aromatics_C5-7	none	none	2.00E+02	1.14E+02	0.00E+00	0.00E+00
TPH_Aromatics_C7-8	none	none	2.00E+02	1.14E+02	0.00E+00	0.00E+00
TPH_Aromatics_C8-10	none	none	4.00E+01	5.70E+01	0.00E+00	0.00E+00
xylene (mixture)	1.79E+02	6.30E+01	none	none	2.00E+01	1.12E+02

PHYSICO-CHEMICAL PROPERTIES

Chemical	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
arsenic	N/A	N/A	N/A	N/A	0.00E+00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.41E+05	N/A	N/A	1.80E+03	1.80E+03	3.00E-02	dw	dw	9.00E-03	9.00E-03	Yes
benzene	N/A	N/A	N/A	N/A	2.27E-01	7.72E+03	3.53E+02	7.91E+02	8.80E-06	9.80E-10	7.81E+01	1.26E+04	1.79E+03	2.21E+00	2.13E+00	4.70E+00	4.70E+00	1.00E-02	briggs	briggs	1.31E+00	2.14E+00	No
benzo[a]pyrene	N/A	N/A	N/A	N/A	1.87E-05	1.90E+04	7.65E+02	9.69E+02	4.30E-06	9.00E-10	2.52E+02	7.00E-07	1.62E-03	4.16E+00	6.04E+00	4.19E+02	4.19E+02	1.00E-01	fw	fw	0.00E+00	0.00E+00	No
cadmium	N/A	N/A	N/A	N/A	0.00E+00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.51E+05	N/A	N/A	2.56E+03	2.56E+03	1.00E-03	dw	dw	1.55E-01	1.36E-01	Yes
chromium	N/A	N/A	N/A	N/A	0.00E+00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.67E+05	N/A	N/A	4.80E+03	4.80E+03	0.00E+00	dw	dw	5.50E-02	2.00E-02	Yes
ethylbenzene	6.55E-03	2.93E+02	6.55E-03	2.93E+02	1.52E-01	8.50E+03	4.09E+02	6.17E+02	7.50E-06	7.80E-10	1.06E+02	6.38E+02	1.80E+02	2.64E+00	3.13E+00	1.27E+01	1.27E+01	1.00E-01	briggs	briggs	3.42E+00	8.58E+00	No
mercury (inorganic)	N/A	N/A	N/A	N/A	0.00E+00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.90E+04	N/A	N/A	7.50E+03	7.50E+03	0.00E+00	dw	dw	5.19E-02	4.90E-02	Yes
nickel	N/A	N/A	N/A	N/A	0.00E+00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.73E+05	N/A	N/A	2.00E+03	2.00E+03	0.00E+00	dw	dw	4.70E-02	1.30E-02	Yes
selenium	N/A	N/A	N/A	N/A	0.00E+00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.41E+05	N/A	N/A	3.00E+02	3.00E+02	0.00E+00	dw	dw	5.36E-01	4.73E-02	Yes
toluene	5.30E-03	2.93E+02	5.30E-03	2.93E+02	1.31E-01	7.93E+03	3.84E+02	5.92E+02	8.70E-06	8.60E-10	9.22E+01	2.00E+03	6.00E+02	2.25E+00	2.65E+00	5.16E+00	5.16E+00	1.00E-01	briggs	briggs	2.16E+00	4.14E+00	No
TPH_Aliphatics_C10-12	N/A	N/A	N/A	N/A	1.20E+02	N/A	N/A	N/A	1.00E-05	1.00E-09	1.60E+02	6.38E+01	3.40E-02	5.40E+00	5.61E+00	7.28E+03	7.28E+03	1.00E-02	fw	fw	0.00E+00	0.00E+00	No
TPH_Aliphatics_C12-16	N/A	N/A	N/A	N/A	6.90E+01	N/A	N/A	N/A	7.00E-06	5.97E-10	2.00E+02	4.90E+00	7.60E-04	6.70E+00	6.70E+00	1.45E+05	1.45E+05	1.00E-01	fw	fw	0.00E+00	0.00E+00	No
TPH_Aliphatics_C16-21	N/A	N/A	N/A	N/A	8.50E+01	N/A	N/A	N/A	7.00E-06	5.97E-10	2.70E+02	1.10E-01	2.50E-06	8.80E+00	8.80E+00	1.83E+07	1.83E+07	1.00E-01	fw	fw	0.00E+00	0.00E+00	No
TPH_Aliphatics_C21-35	N/A	N/A	N/A	N/A	8.50E+01	N/A	N/A	N/A	7.00E-06	5.97E-10	2.70E+02	1.10E-01	2.50E-06	8.80E+00	8.80E+00	1.83E+07	1.83E+07	1.00E-01	fw	fw	0.00E+00	0.00E+00	No
TPH_Aliphatics_C5-6	N/A	N/A	N/A	N/A	4.70E+01	N/A	N/A	N/A	8.00E-06	7.77E-10	8.10E+01	3.55E+04	3.60E+01	2.90E+00	2.90E+00	2.30E+01	2.30E+01	1.00E-01	fw	fw	0.00E+00	0.00E+00	No
TPH_Aliphatics_C6-8	N/A	N/A	N/A	N/A	5.00E+01	N/A	N/A	N/A	8.00E-06	7.77E-10	1.00E+02	6.38E+03	5.40E+00	3.60E+00	3.60E+00	1.15E+02	1.15E+02	1.00E-01	fw	fw	0.00E+00	0.00E+00	No
TPH_Aliphatics_C8-10	N/A	N/A	N/A	N/A	5.50E+01	N/A	N/A	N/A	7.00E-06	5.97E-10	1.30E+02	6.38E+02	4.30E-01	4.50E+00	4.50E+00	9.17E+02	9.17E+02	1.00E-01	fw	fw	0.00E+00	0.00E+00	No
TPH_Aromatics_10-12	N/A	N/A	N/A	N/A	1.40E-01	N/A	N/A	N/A	1.00E-05	1.00E-09	1.30E+02	6.38E+02	2.50E+01	3.40E+00	3.61E+00	7.28E+01	7.28E+01	1.00E-02	fw	fw	0.00E+00	0.00E+00	No
TPH_Aromatics_C12-16	N/A	N/A	N/A	N/A	2.80E-02	N/A	N/A	N/A	6.00E-06	7.24E-10	1.50E+02	5.00E+00	5.80E+00	3.70E+00	5.18E+00	1.45E+02	1.45E+02	1.00E-01	fw	fw	0.00E+00	0.00E+00	No
TPH_Aromatics_C16-21	N/A	N/A	N/A	N/A	2.50E-03	N/A	N/A	N/A	6.00E-06	7.24E-10	1.90E+02	1.10E-01	6.50E-01	4.20E+00	6.04E+00	4.60E+02	4.60E+02	1.00E-01	fw	fw	0.00E+00	0.00E+00	No
TPH_Aromatics_C21-35	N/A	N/A	N/A	N/A	1.70E-05	N/A	N/A	N/A	6.00E-06	7.24E-10	2.40E+02	4.50E-05	6.60E-03	5.10E+00	6.50E+00	3.65E+03	3.65E+03	1.00E-01	fw	fw	0.00E+00	0.00E+00	No
TPH_Aromatics_C5-7	N/A	N/A	N/A	N/A	1.50E+00	N/A	N/A	N/A	7.00E-06	7.24E-10	7.80E+01	1.11E+04	2.20E+02	3.00E+00	2.13E+00	2.90E+01	2.90E+01	1.00E-01	fw	fw	0.00E+00	0.00E+00	No
TPH_Aromatics_C7-8	N/A	N/A	N/A	N/A	8.60E-01	N/A	N/A	N/A	7.00E-06	7.24E-10	9.20E+01	3.55E+03	1.30E+02	3.10E+00	3.13E+00	3.65E+01	3.65E+01	1.00E-01	fw	fw	0.00E+00	0.00E+00	No
TPH_Aromatics_C8-10	N/A	N/A	N/A	N/A	3.95E-01	N/A	N/A	N/A	7.00E-06	7.24E-10	1.20E+02	6.38E+02	6.50E+01	3.20E+00	3.58E+00	4.60E+01	4.60E+01	1.00E-01	fw	fw	0.00E+00	0.00E+00	No
xylene (mixture)	N/A	N/A	N/A	N/A	2.71E-01	8.53E+03	4.11E+02	6.16E+02	7.14E-06	9.34E-10	1.06E+02	1.07E+03	1.06E+02	2.64E+00	3.12E+00	1.27E+01	1.27E+01	1.00E-02	briggs	briggs	3.39E+00	8.45E+00	No

MEDIA CONCENTRATIONS

Chemical	Distribution of chemical in soil: mg.g⁻¹ total soil concentration	mg.g⁻¹ sorbed concentration	mg.g⁻¹ dissolved concentration	mg.g⁻¹ vapour concentration	% sorbed concentration	% dissolved concentration	% vapour concentration	Distribution in Non-soil Media: mg.m-3 - air indoor vapour air concentration
arsenic	5.14E-01	5.14E-01	2.68E-05	0.00E+00	1.00E+02	5.21E-03	0.00E+00	0.00E+00
benzene	9.06E-03	8.80E-03	1.75E-04	5.23E-05	9.72E+01	1.94E+00	9.09E-01	2.03E-02
benzo(a)pyrene	1.13E-04	1.13E-04	2.54E-08	9.81E-13	1.00E+02	2.24E-02	8.64E-07	2.40E-10
cadmium	1.23E+00	1.23E+00	4.51E-05	0.00E+00	1.00E+02	3.66E-03	0.00E+00	0.00E+00
chromium	3.37E+00	3.37E+00	6.59E-05	0.00E+00	1.00E+02	1.95E-03	0.00E+00	0.00E+00
ethylbenzene	1.55E+02	2.28E+00	1.69E-02	5.58E-03	1.47E+00	1.09E-02	3.59E-03	1.29E+00
mercury (inorganic)	4.86E-01	4.86E-01	6.07E-06	0.00E+00	1.00E+02	1.25E-03	0.00E+00	0.00E+00
nickel	1.59E+00	1.59E+00	7.46E-05	0.00E+00	1.00E+02	4.69E-03	0.00E+00	0.00E+00
selenium	7.95E+00	7.95E+00	2.49E-03	0.00E+00	1.00E+02	3.13E-02	0.00E+00	0.00E+00
toluene	1.35E+00	1.35E+00	2.45E-02	6.64E-03	9.77E+01	1.78E+00	4.81E-01	1.63E+00
TPH_Aliphatics_C10-12	1.32E+02	2.45E-01	3.19E-06	8.41E-04	1.36E-01	1.75E-06	4.62E-04	2.17E-01
TPH_Aliphatics_C12-16	1.55E+02	1.10E-01	7.13E-08	8.07E-05	7.11E-02	4.59E-08	5.20E-05	1.31E-02
TPH_Aliphatics_C16-21	1.00E+03	4.57E-02	2.34E-10	2.45E-06	4.57E-03	2.34E-11	2.45E-07	5.49E-04
TPH_Aliphatics_C21-35	1.00E+03	4.57E-02	2.34E-10	2.45E-06	4.57E-03	2.34E-11	2.45E-07	5.49E-04
TPH_Aliphatics_C5-6	1.00E+03	8.29E-01	3.38E-03	2.37E-01	8.29E-02	3.38E-04	2.37E-02	5.62E+01
TPH_Aliphatics_C6-8	1.00E+03	6.23E-01	5.06E-04	5.26E-02	6.23E-02	5.06E-05	5.26E-03	1.25E+01
TPH_Aliphatics_C8-10	1.55E+02	3.94E-01	4.03E-05	6.83E-03	2.54E-01	2.60E-05	4.40E-03	1.53E+00
TPH_Aromatics_10-12	7.28E+01	1.82E+00	2.34E-03	6.83E-03	2.50E+00	3.22E-03	9.38E-03	1.77E+00
TPH_Aromatics_C12-16	6.22E+01	8.43E-01	5.44E-04	6.18E-05	1.36E+00	8.75E-04	9.94E-05	1.29E-02
TPH_Aromatics_C16-21	4.66E+01	2.99E-01	6.09E-05	1.72E-06	6.41E-01	1.31E-04	3.69E-06	3.61E-04
TPH_Aromatics_C21-35	4.66E+01	2.41E-02	6.19E-07	8.89E-10	5.17E-02	1.33E-06	1.91E-09	2.28E-07
TPH_Aromatics_C5-7	1.16E+00	1.15E+00	3.71E-03	1.15E-02	9.87E+01	3.19E-01	9.89E-01	2.58E+00
TPH_Aromatics_C7-8	2.53E+00	2.51E+00	6.44E-03	1.14E-02	9.93E+01	2.55E-01	4.53E-01	2.57E+00
TPH_Aromatics_C8-10	3.52E+00	2.99E+00	6.09E-03	5.77E-03	8.48E+01	1.73E-01	1.64E-01	1.30E+00
xylene (mixture)	1.50E+00	1.34E+00	9.94E-03	6.16E-03	8.93E+01	6.62E-01	4.10E-01	1.39E+00

Chemical	mg.m-3 - air: outdoor vapour air concentration for Young Child	outdoor vapour air concentration for Older Child	outdoor vapour air concentration for Adults	outdoor dust air concentration	indoor dust air concentration	mg.g-1 FW plant matter: concentration in Brussels sprouts	concentration in cabbage	concentration in carrot	concentration in leafy salad	concentration in onion, leek, shallots	concentration in potatoes
arsenic	N/A	N/A	0.00E+00	2.27E-07	1.70E-07	4.39E-04	5.33E-04	4.49E-04	1.55E-04	7.21E-04	9.71E-04
benzene	N/A	N/A	1.92E-03	4.00E-09	3.00E-09	2.46E-03	2.46E-03	4.00E-03	2.46E-03	4.00E-03	4.00E-03
benzo(a)pyrene	N/A	N/A	2.23E-11	5.01E-11	3.76E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
cadmium	N/A	N/A	0.00E+00	5.44E-07	4.08E-07	1.81E-02	2.40E-02	1.63E-02	7.63E-03	2.62E-02	3.52E-02
chromium	N/A	N/A	0.00E+00	1.49E-06	1.12E-06	1.76E-02	2.34E-02	6.54E-03	7.42E-03	1.05E-02	1.42E-02
ethylbenzene	N/A	N/A	1.11E-01	6.85E-05	5.14E-05	6.10E-01	6.16E-01	1.55E+00	6.16E-01	1.55E+00	1.55E+00
mercury (inorganic)	N/A	N/A	0.00E+00	2.15E-07	1.61E-07	2.40E-03	3.13E-03	2.31E-03	1.01E-03	3.71E-03	5.00E-03
nickel	N/A	N/A	0.00E+00	7.02E-07	5.27E-07	7.10E-03	9.42E-03	2.78E-03	2.99E-03	4.47E-03	6.01E-03
selenium	N/A	N/A	0.00E+00	3.52E-06	2.64E-06	4.06E-01	5.39E-01	3.66E-02	1.71E-01	5.88E-02	7.92E-02
toluene	N/A	N/A	1.53E-01	6.10E-07	4.57E-07	5.65E-01	5.65E-01	1.08E+00	5.65E-01	1.08E+00	1.08E+00
TPH_Aliphatics_C10-12	N/A	N/A	2.23E-02	8.04E-05	6.03E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TPH_Aliphatics_C12-16	N/A	N/A	1.50E-03	6.86E-05	5.14E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TPH_Aliphatics_C16-21	N/A	N/A	4.54E-05	4.42E-04	3.31E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TPH_Aliphatics_C21-35	N/A	N/A	4.54E-05	4.42E-04	3.31E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TPH_Aliphatics_C5-6	N/A	N/A	5.62E+00	4.42E-04	3.31E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TPH_Aliphatics_C6-8	N/A	N/A	1.11E+00	4.42E-04	3.31E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TPH_Aliphatics_C8-10	N/A	N/A	1.27E-01	6.86E-05	5.14E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TPH_Aromatics_10-12	N/A	N/A	1.81E-01	3.22E-05	2.41E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TPH_Aromatics_C12-16	N/A	N/A	9.92E-04	2.74E-05	2.06E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TPH_Aromatics_C16-21	N/A	N/A	2.75E-05	2.06E-05	1.54E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TPH_Aromatics_C21-35	N/A	N/A	2.31E-08	2.06E-05	1.54E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TPH_Aromatics_C5-7	N/A	N/A	2.13E-01	5.13E-07	3.85E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TPH_Aromatics_C7-8	N/A	N/A	2.12E-01	1.12E-06	8.37E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TPH_Aromatics_C8-10	N/A	N/A	1.07E-01	1.56E-06	1.17E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
xylene (mixture)	N/A	N/A	1.17E-01	6.63E-07	4.97E-07	3.59E-01	3.59E-01	8.95E-01	3.59E-01	8.95E-01	8.95E-01

Chemical	Boundary Limits: mg.L⁻¹ pore water concentration	mg.L⁻¹ maximum aqueous solubility	% max	mg.m⁻³ ambient source vapour concentration	mg.m⁻³ saturated source vapour concentration	% max
arsenic	2.35E-01	4.41E+05	6.47E-05	0.00E+00	0.00E+00	N/A
benzene	1.87E+00	1.79E+03	1.05E-01	4.25E+02	4.20E+05	1.01E-01
benzo(a)pyrene	2.71E-04	1.62E-03	1.67E+01	5.06E-06	7.51E-05	6.74E+00
cadmium	4.31E-01	6.51E+05	7.40E-05	0.00E+00	0.00E+00	N/A
chromium	7.03E-01	1.67E+05	4.21E-04	0.00E+00	0.00E+00	N/A
ethylbenzene	1.80E+02	1.80E+02	1.00E+02	1.85E+06	2.88E+04	6.42E+03
mercury (inorganic)	6.48E-02	6.90E+04	9.39E-05	0.00E+00	0.00E+00	N/A
nickel	7.96E-01	1.73E+05	4.60E-04	0.00E+00	0.00E+00	N/A
selenium	2.66E+01	3.41E+05	7.80E-03	0.00E+00	0.00E+00	N/A
toluene	2.62E+02	6.00E+02	4.36E+01	3.43E+04	7.83E+04	4.38E+01
TPH_Aliphatics_C10-12	3.40E-02	3.40E-02	1.00E+02	2.99E+06	4.34E+03	6.89E+04
TPH_Aliphatics_C12-16	7.60E-04	7.60E-04	1.00E+02	7.37E+04	4.17E+02	1.77E+04
TPH_Aliphatics_C16-21	2.50E-06	2.50E-06	1.00E+02	4.65E+03	1.26E+01	3.68E+04
TPH_Aliphatics_C21-35	2.50E-06	2.50E-06	1.00E+02	4.65E+03	1.26E+01	3.68E+04
TPH_Aliphatics_C5-6	3.60E+01	3.60E+01	1.00E+02	1.46E+09	1.22E+06	1.19E+05
TPH_Aliphatics_C6-8	5.40E+00	5.40E+00	1.00E+02	3.99E+08	2.71E+05	1.47E+05
TPH_Aliphatics_C8-10	4.30E-01	4.30E-01	1.00E+02	9.20E+06	3.53E+04	2.61E+04
TPH_Aromatics_10-12	2.50E+01	2.50E+01	1.00E+02	1.40E+05	3.53E+04	3.96E+02
TPH_Aromatics_C12-16	5.80E+00	5.80E+00	1.00E+02	1.20E+04	3.19E+02	3.75E+03
TPH_Aromatics_C16-21	6.50E-01	6.50E-01	1.00E+02	2.53E+02	8.88E+00	2.85E+03
TPH_Aromatics_C21-35	6.60E-03	6.60E-03	1.00E+02	2.17E-01	4.59E-03	4.73E+03
TPH_Aromatics_C5-7	3.96E+01	2.20E+02	1.80E+01	5.94E+04	3.69E+05	1.61E+01
TPH_Aromatics_C7-8	6.87E+01	1.30E+02	5.29E+01	5.91E+04	1.39E+05	4.26E+01
TPH_Aromatics_C8-10	6.50E+01	6.50E+01	1.00E+02	2.98E+04	3.25E+04	9.15E+01
xylene (mixture)	1.06E+02	1.06E+02	1.00E+02	3.18E+04	4.80E+04	6.63E+01

CLEA UK MODEL 2005 VERSION Version 1.0

Simulation Date:	07/03/2007
Type of simulation:	Site Specific Assessment Criteria

Company Name:	MLM EL
Person running Simulation:	MCH
Contact Number:	
Site Name:	721543_WESTMINSTER_KINGSWA
Site Address:	WESTMINSTER KINGSWAY COLLEGE SIDMOUTH STREET LONDON

Chemical	HCV_{oral} compared with which exposure route/s?			HCV_{inhal} compared with which exposure route/s?			Assessment Criteria (mg.kg^{-1})					Site Specific Soil Concentration (mg.kg^{-1} dry weight soil)	ADE/HCV (dimensionless)	
	oral	dermal	inhal	oral	dermal	inhal	oral & dermal (using HCV_{oral})	20% rule applied?	inhalation (using $HCV_{inhalation}$)	20% rule applied?	integrated		oral & dermal	inhalation
acenaphthene	Yes	Yes	Yes	Yes	Yes	Yes	9.46E+04	No		No			1.00E+00	
anthracene	Yes	Yes	Yes	Yes	Yes	Yes	4.48E+05	No		No			1.00E+00	
benzo[a]anthracene	Yes	Yes	Yes	Yes	Yes	Yes	1.15E+04	No	4.88E+05	No			1.00E+00	1.00E+00
benzo[b]fluoranthene	Yes	Yes	Yes	Yes	Yes	Yes	1.15E+04	No	4.87E+03	No			1.00E+00	1.00E+00
benzo[k]fluoranthene	Yes	Yes	Yes	Yes	Yes	Yes	1.15E+03	No	4.88E+02	No			1.00E+00	1.00E+00
chrysene	Yes	Yes	Yes	Yes	Yes	Yes	1.15E+02	No	4.87E+01	No			1.00E+00	1.00E+00
dibenzo[ah]anthracene	Yes	Yes	Yes	Yes	Yes	Yes	1.15E+05	No	4.88E+04	No			1.00E+00	1.00E+00
fluoranthene	Yes	Yes	No	No	No	Yes	5.97E+04	No		No			1.00E+00	
fluorene	Yes	Yes	No	No	No	Yes	5.97E+04	No		No			1.00E+00	
indeno[123cd]pyrene	Yes	Yes	Yes	Yes	Yes	Yes	1.15E+03	No	4.88E+02	No	3.43E+02		1.00E+00	1.00E+00
naphthalene	Yes	Yes	No	No	No	Yes	2.99E+04	No	1.43E+03	No	1.36E+03		1.00E+00	1.00E+00
pyrene	Yes	Yes	No	No	No	Yes	4.48E+04	No		No			1.00E+00	

Land-use selected:	commercial and industrial

	Land-use Parameters	Age Class 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Exposure Frequency (day.yr^{-1})	direct soil and dust ingestion																	2.30E+02	
	consumption of home grown produce																	0.00E+00	
	consumption of soil attached to home grown produce																	0.00E+00	
	skin contact, indoors																	2.30E+02	
	skin contact, outdoors																	1.70E+02	
	inhalation of dust and vapours, indoors																	2.30E+02	
	inhalation of dust and vapours, outdoors																	1.70E+02	
Respiration Frequency (hr day^{-1})	active, indoors																	2.00E+00	
	active, outdoors																	6.60E-01	
	passive, indoors																	5.50E+00	
	passive, outdoors																	3.30E-01	
Soil Ingestion Rate (mg day^{-1})	soil ingestion rate																	4.00E+01	
Soil-skin adherence factor (mg.cm^{2})	indoor																	1.40E-01	
	outdoor																	1.40E-01	
Exposed skin fraction (dimensionless)	indoor maximum exposed skin fraction																	7.00E-02	
	outdoor maximum exposed skin fraction																	7.00E-02	

Receptor selected:	female (Commercial UK)

Start Age Class	End Age Class	Exposure duration (years)	Averaging Time (years)
17	17	43	43

BUILDING PARAMETERS

Building type selected:	Office with basement	
Building Parameter	**Units**	**Input Value**
height of living/working space above ground	cm	9.60E+02
height of cellar space below ground	cm	2.70E+02
enclosed space floor length	cm	2.45E+03
enclosed space floor width	cm	2.45E+03
foundation or slab thickness	cm	1.50E+01
living/working space air exchange	hr^{-1}	1.00E+00
pressure differential between soil and enclosed space	$g.cm^{-1}$	5.00E+01
floor-wall seam crack width	cm	2.00E-01
fixed crack to total area ratio	unitless	2.27E-04
volumetric flow rate of soil gas entering the building	$cm3.s^{-1}$	1.59E+02
volumetric building ventilation rate from indoor to outdoor air	$cm3.s^{-1}$	2.05E+06

SOIL CHARACTERISTICS

Soil type selected:	sandy - UK
Soil parameter	**Units**	**Input value**
grainsize	cm	5.00E-02
total porosity	$cm^3.cm^{-3}$	4.60E-01
air-filled porosity	$cm^3.cm^{-3}$	3.10E-01
water-filled porosity	$cm^3.cm^{-3}$	1.50E-01
dry bulk density	$g.cm^{-3}$	1.60E+00
enrichment factor	dimensionless	6.00E+00
soil pH	dimensionless	8.00E+00
fraction of organic carbon	dimensionless	2.90E-02
van Genuchten shape parameter	dimensionless	3.47E-01
residual water content	$cm^3.cm^{-3}$	3.00E-02
saturated hydraulic conductivity	$cm.s^{-1}$	6.47E-03
ambient soil/water temperature	K	2.83E+02
intrinsic soil permeability	cm^2	8.63E-08

SITE PARAMETERS

Site Parameter	Units	Input Value
Area of source-zone	cm^2	2.25E+06
Depth below ground to source zone	cm	1.15E+02
Equivalent threshold wind speed (7m)	$m.s^{-1}$	1.13E+01
Fraction of soil in building dust	dimensionless	7.50E-01
Fraction of the site with hard or vegetative cover	dimensionless	8.00E-01
Mean annual windspeed (10m)	$m.s^{-1}$	4.69E+00
Normalised annual average concentration of dust particles	$kg.m^{-3}$ per $g.m^{-2}.s^{-1}$	1.60E-02
Tracked back soil adjustment factor	dimensionless	1.00E+00
Width of contaminated zone in direction of prevailing wind	cm	1.50E+03
Wind speed distribution function	dimensionless	1.94E-01
Wind speed in mixing zone (1-2m)	$m.s^{-1}$	3.00E+00

Exposure Pathways

Chemical	Oral: direct soil and soil derived indoor dust ingestion – ADE % Contribution	Oral: direct soil and soil derived indoor dust ingestion – ADE Mean (ug kg-1 bw day-1)	Oral: consumption of site-grown vegetables – ADE % Contribution	Oral: consumption of site-grown vegetables – ADE Mean (ug kg-1 bw day-1)	Oral: consumption of soil attached to site-grown vegetables – ADE % Contribution	Oral: consumption of soil attached to site-grown vegetables – ADE Mean (ug kg-1 bw day-1)	Dermal: skin contact with soil-derived indoor dust – ADE % Contribution	Dermal: skin contact with soil-derived indoor dust – ADE Mean (ug kg-1 bw day-1)	Dermal: skin contact with soil – ADE % Contribution	Dermal: skin contact with soil – ADE Mean (ug kg-1 bw day-1)	Inhalation: inhalation of soil derived indoor dust – ADE % Contribution	Inhalation: inhalation of soil derived indoor dust – ADE Mean (ug kg-1 bw day-1)	Inhalation: inhalation of soil dust – ADE % Contribution	Inhalation: inhalation of soil dust – ADE Mean (ug kg-1 bw day-1)	Inhalation: inhalation of vapours indoors – ADE % Contribution	Inhalation: inhalation of vapours indoors – ADE Mean (ug kg-1 bw day-1)	Inhalation: inhalation of vapours outdoors – ADE % Contribution	Inhalation: inhalation of vapours outdoors – ADE Mean (ug kg-1 bw day-1)	Inhalation: vapour model selected values – soil air diffusion coefficient (cm2 s-1)	Inhalation: vapour model selected values – soil-vapour (& indoor air) intrusion coefficient (dimensionless)	Inhalation: dispersion factor for ambient air – young child (cm s-1)	Inhalation: dispersion factor for ambient air – older child (cm s-1)	Inhalation: dispersion factor for ambient air – adult (cm s-1)	background exposure (oral) – ADE Mean (ug kg-1 bw day-1)	background exposure (inhalation) – ADE Mean (ug kg-1 bw day-1)
acenaphthene	8.24E+01	3.62E+01	N/A	N/A	N/A	N/A	3.66E+00	3.80E+00	8.55E+00	3.76E+00	3.10E-03	1.36E-03	6.13E-04	2.70E-04	3.32E-01	1.46E-01	3.17E-03	1.39E-03	4.04E-03	3.37E-05	N/A	N/A	1.62E+01	0.00E+00	0.00E+00
anthracene	7.87E+01	1.72E+02	N/A	N/A	N/A	N/A	1.07E+01	2.34E+01	1.06E+01	2.32E+01	2.96E-03	6.45E-03	5.85E-04	1.28E-03	6.23E-05	1.36E-04	7.18E-07	1.57E-06	5.97E-03	4.13E-05	N/A	N/A	1.62E+01	0.00E+00	0.00E+00
benzo[a]anthracene	8.27E+01	4.42E+00	N/A	N/A	N/A	N/A	3.69E+00	4.64E-01	8.58E+00	4.58E-01	3.11E-03	1.66E-04	6.15E-04	3.29E-05	1.83E-03	9.78E-05	1.97E-05	1.05E-06	5.21E-03	3.86E-05	N/A	N/A	1.62E+01	0.00E+00	0.00E+00
benzo[b]fluoranthene	8.27E+01	1.87E+00	N/A	N/A	N/A	N/A	3.69E+00	1.96E-01	8.58E+00	1.94E-01	3.11E-03	7.02E-05	6.15E-04	1.39E-05	3.48E-03	7.85E-05	3.27E-05	7.39E-07	3.92E-03	3.32E-05	N/A	N/A	1.62E+01	0.00E+00	0.00E+00
benzo[k]fluoranthene	8.27E+01	1.87E-01	N/A	N/A	N/A	N/A	3.69E+00	1.96E-02	8.58E+00	1.94E-02	3.11E-03	7.02E-06	6.15E-04	1.39E-06	8.69E-04	1.96E-06	1.32E-05	2.97E-08	9.50E-03	4.99E-05	N/A	N/A	1.62E+01	0.00E+00	0.00E+00
chrysene	8.27E+01	1.87E-02	N/A	N/A	N/A	N/A	3.68E+00	1.96E-03	8.58E+00	1.94E-03	3.11E-03	7.02E-07	6.15E-04	1.39E-07	1.87E-02	4.23E-06	1.52E-04	3.44E-08	2.67E-03	2.61E-05	N/A	N/A	1.62E+01	0.00E+00	0.00E+00
dibenzo[ah]anthracene	8.27E+01	1.87E+01	N/A	N/A	N/A	N/A	3.69E+00	1.96E+00	8.58E+00	1.94E+00	3.11E-03	7.02E-04	6.15E-04	1.39E-04	2.19E-09	4.95E-10	3.60E-11	8.13E-12	1.07E-02	5.20E-05	N/A	N/A	1.62E+01	0.00E+00	0.00E+00
fluoranthene	7.87E+01	2.29E+01	N/A	N/A	N/A	N/A	1.07E+01	3.12E+00	1.06E+01	3.09E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.04E-03	2.84E-05	N/A	N/A	1.62E+01	0.00E+00	0.00E+00
fluorene	7.87E+01	2.29E+01	N/A	N/A	N/A	N/A	1.07E+01	3.12E+00	1.06E+01	3.09E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.64E-03	3.18E-05	N/A	N/A	1.62E+01	0.00E+00	0.00E+00
indeno[123cd]pyrene	8.27E+01	1.31E-01	N/A	N/A	N/A	N/A	3.69E+00	1.38E-02	8.58E+00	1.36E-02	3.11E-03	4.93E-06	6.15E-04	9.77E-07	3.72E-07	1.38E-09	6.15E-07	9.81E-10	1.82E+03	1.03E-01	N/A	N/A	1.62E+01	0.00E+00	0.00E+00
naphthalene	3.52E+01	5.22E-01	N/A	N/A	N/A	N/A	4.80E+00	7.13E-02	4.75E+00	7.05E-02	1.32E-03	1.96E-05	2.62E-04	3.89E-06	5.47E+01	8.12E-01	6.12E-01	9.09E-03	5.65E-03	4.02E-05	N/A	N/A	1.62E+01	0.00E+00	0.00E+00
pyrene	7.87E+01	1.72E+01	N/A	N/A	N/A	N/A	1.07E+01	2.34E+00	1.06E+01	2.32E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.73E-03	2.65E-05	N/A	N/A	1.62E+01	0.00E+00	0.00E+00

HEALTH CRITERIA VALUES

Chemical	TDI (ug.kg-1 bw.day-1)		ID (ug.kg-1 bw.day-1)		MDI (ug day-1)	
	oral	inhalation	oral	inhalation	oral	inhalation
acenaphthene	6.00E+01	none	none	none	0.00E+00	0.00E+00
anthracene	3.00E+02	none	none	none	0.00E+00	0.00E+00
benzo[a]anthracene	none	none	7.30E+00	3.10E+02	0.00E+00	0.00E+00
benzo[b]fluoranthene	none	none	7.30E+00	3.10E+00	0.00E+00	0.00E+00
benzo[k]fluoranthene	none	none	7.30E-01	3.10E-01	0.00E+00	0.00E+00
chrysene	none	none	7.30E-02	3.10E-02	0.00E+00	0.00E+00
dibenzo[ah]anthracene	none	none	7.30E+01	3.10E+01	0.00E+00	0.00E+00
fluoranthene	4.00E+01	none	none	none	0.00E+00	0.00E+00
fluorene	4.00E+01	none	none	none	0.00E+00	0.00E+00
indeno[123cd]pyrene	none	none	7.30E-01	3.10E-01	0.00E+00	0.00E+00
naphthalene	2.00E+01	8.60E-01	none	none	0.00E+00	0.00E+00
pyrene	3.00E+01	none	none	none	0.00E+00	0.00E+00

PHYSICO-CHEMICAL PROPERTIES

Chemical	Henry's Law Constant (dimensionless)	Reference Temperature (K)	Henry's Law Constant (atm.m3.mol^{-1})	Reference Temperature (K)	Henry's Law Constant at ambient temperature (dimensionless)	Enthalpy of vaporisation at boiling point (cal.mol^{-1})	Boiling Point (K)	Critical Temperature (K)	Air diffusion coefficient (m2.s^{-1})	Water diffusion coefficient (m2.s^{-1})	Relative atomic (molecular) mass (g . mol)
acenaphthene	N/A	N/A	N/A	N/A	4.91E-03	N/A	N/A	N/A	4.21E-06	7.69E-10	1.54E+02
anthracene	N/A	N/A	N/A	N/A	2.27E-03	1.31E+04	6.13E+02	8.73E+02	3.20E-06	7.74E-08	1.78E+02
benzo(a)anthracene	N/A	N/A	N/A	N/A	2.34E-04	N/A	N/A	N/A	5.10E-06	9.00E-10	2.28E+02
benzo(b)fluoranthene	N/A	N/A	N/A	N/A	2.69E-05	N/A	N/A	N/A	2.26E-06	5.56E-10	2.52E+02
benzo(k)fluoranthene	N/A	N/A	N/A	N/A	6.46E-06	N/A	N/A	N/A	2.26E-06	5.56E-10	2.52E+02
chrysene	N/A	N/A	N/A	N/A	1.30E-04	N/A	N/A	N/A	2.48E-06	6.21E-10	2.28E+02
dibenzo(ah)anthracene	N/A	N/A	N/A	N/A	5.03E-06	N/A	N/A	N/A	2.02E-06	5.18E-10	2.78E+02
fluoranthene	N/A	N/A	N/A	N/A	3.62E-04	N/A	N/A	N/A	3.02E-06	6.35E-10	2.02E+02
fluorene	N/A	N/A	N/A	N/A	3.93E-04	N/A	N/A	N/A	3.63E-06	7.88E-10	1.66E+02
indeno(123cd)pyrene	N/A	N/A	N/A	N/A	2.07E-11	N/A	N/A	N/A	2.30E-06	4.41E-10	2.76E+02
naphthalene	N/A	N/A	N/A	N/A	1.30E-02	N/A	N/A	N/A	5.90E-06	7.50E-10	1.28E+02
pyrene	N/A	N/A	N/A	N/A	4.87E-04	N/A	N/A	N/A	2.72E-06	7.24E-10	2.02E+02

Chemical	Vapour pressure at 10°C (Pa)	Aqueous solubility at 10°C (mg.L^{-1})	organic carbon - water distribution coefficient, log K_{oc} (log(cm^3 water g^{-1} oc))	octanol-water distribution coefficient, log K_{ow} (dimensionless)	soil-water distribution coefficient, K_d (cm^3 . water g^{-1} . soil)	Total soil concentration to pore water concentration ratio (cm^3 water g^{-1} soil)	dermal absorption fraction (dimensionless)	Type of soil-to-plant concentration factor, dry or fresh weight? (leafy) (dimensionless)	Type of soil-to-plant concentration factor, dry or fresh weight? (root) (dimensionless)	soil-to-plant concentration factor (leafy) (ug.g^{-1} FW plant over ug.cm^{-3} soil solution)	soil-to-plant concentration factor (root) (ug.g^{-1} FW plant over ug.cm^{-3} soil solution)	dust Enrichment Factors used?
acenaphthene	1.52E+00	3.80E+00	3.79E+00	3.92E+00	1.79E+02	1.79E+02	1.00E-01	fw	fw	0.00E+00	0.00E+00	No
anthracene	1.00E-03	4.50E-02	3.38E+00	4.54E+00	6.96E+01	6.96E+01	1.30E-01	BRIGGS	BRIGGS	6.37E+00	9.54E+01	No
benzo(a)anthracene	6.00E-04	1.10E-02	5.01E+00	5.91E+00	2.97E+03	2.97E+03	1.00E-01	fw	fw	0.00E+00	0.00E+00	No
benzo(b)fluoranthene	7.00E-03	1.50E-03	4.92E+00	5.80E+00	2.41E+03	2.41E+03	1.00E-01	fw	fw	0.00E+00	0.00E+00	No
benzo(k)fluoranthene	6.54E-01	8.00E-04	5.08E+00	6.00E+00	3.49E+03	3.49E+03	1.00E-01	fw	fw	0.00E+00	0.00E+00	No
chrysene	1.10E-04	1.50E-03	4.91E+00	5.79E+00	2.36E+03	2.36E+03	1.00E-01	fw	fw	0.00E+00	0.00E+00	No
dibenzo(ah)anthracene	1.85E-09	1.03E-03	6.42E+00	6.54E+00	7.63E+04	7.63E+04	1.00E-01	fw	fw	0.00E+00	0.00E+00	No
fluoranthene	1.00E-03	2.60E-01	4.85E+00	5.16E+00	2.05E+03	2.05E+03	1.30E-01	BRIGGS	BRIGGS	5.19E+00	2.85E+02	No
fluorene	1.00E-03	1.89E+00	4.05E+00	4.18E+00	3.25E+02	3.25E+02	1.30E-01	BRIGGS	BRIGGS	6.24E+00	5.08E+01	No
indeno(123cd)pyrene	1.00E-04	6.20E-02	5.90E+00	7.00E+00	2.30E+04	2.30E+04	1.00E-01	fw	fw	0.00E+00	0.00E+00	No
naphthalene	1.13E+01	3.10E+01	3.26E+00	3.30E+00	5.28E+01	5.28E+01	1.30E-01	fw	BRIGGS	0.00E+00	1.13E+01	No
pyrene	6.00E-04	1.35E-01	4.84E+00	4.88E+00	2.01E+03	2.01E+03	1.30E-01	fw	BRIGGS	0.00E+00	1.74E+02	No

MEDIA CONCENTRATIONS

Chemical	Distribution of chemical in soil							Distribution in non-soil media												Boundary Limits					
	mg g-1				%			mg m-3 air						mg g-1 FW plant matter						mg L-1	mg L-1		mg m-3	mg m-3	
acenaphthene	9.46E+01	6.79E-01	3.56E-04	1.93E-05	7.19E-01	3.77E-04	2.04E-05	3.36E-03	N/A	N/A	2.16E-04	4.17E-05	3.13E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.80E+00	3.80E+00	1.00E+02	2.60E+03	9.96E+01	2.61E+03
anthracene	4.43E+02	3.13E-03	4.22E-06	1.47E-08	6.99E-04	9.42E-07	3.28E-09	3.13E-06	N/A	N/A	2.43E-07	1.93E-04	1.48E-04	2.37E-04	2.87E-04	4.29E-03	2.87E-04	4.29E-03	4.29E-03	4.50E-02	4.50E-02	1.00E+02	1.46E+04	7.58E-02	1.93E+07
benzo[a]anthracene	1.15E+01	3.26E-02	1.03E-06	1.13E-08	2.83E-01	8.94E-06	9.78E-08	2.25E-06	N/A	N/A	1.63E-07	5.09E-06	3.82E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.10E-02	1.10E-02	1.00E+02	9.09E-01	5.82E-02	1.56E+03
benzo[b]fluoranthene	4.87E+00	3.62E-03	1.41E-07	1.05E-08	7.42E-02	2.88E-06	2.16E-07	1.80E-06	N/A	N/A	1.15E-07	2.15E-06	1.61E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.50E-03	1.50E-03	1.00E+02	5.44E-02	7.51E-01	7.24E+00
benzo[k]fluoranthene	4.88E-01	2.79E-03	7.50E-08	1.75E-10	5.72E-01	1.54E-05	3.59E-08	4.51E-08	N/A	N/A	4.61E-09	2.15E-07	1.61E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.00E-04	8.00E-04	1.00E+02	9.03E-04	7.01E+01	1.29E-03
chrysene	4.87E-02	3.54E-03	1.41E-07	7.21E-10	7.26E+00	2.99E-04	1.48E-06	9.73E-08	N/A	N/A	5.33E-09	2.15E-08	1.61E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.50E-03	1.50E-03	1.00E+02	3.72E-03	1.07E-02	3.49E+01
dibenzo[ah]anthracene	4.88E+01	7.86E-02	9.66E-08	4.24E-14	1.61E-01	1.98E-07	8.70E-14	1.14E-11	N/A	N/A	1.26E-12	2.15E-05	1.61E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.03E-03	1.03E-03	1.00E+02	3.21E-03	2.19E-07	1.47E+06
fluoranthene	5.97E+01	5.34E-01	2.44E-05	1.67E-08	3.93E-01	4.08E-05	2.79E-08	2.45E-06	N/A	N/A	1.40E-07	2.64E-05	1.98E-05	1.35E-03	1.35E-03	7.40E-02	1.35E-03	7.40E-02	7.40E-02	2.60E-01	2.60E-01	1.00E+02	1.05E+01	3.60E-02	1.23E+04
fluorene	5.97E+01	6.15E-01	1.77E-04	1.37E-08	1.03E+00	2.97E-04	2.29E-08	2.25E-06	N/A	N/A	1.38E-07	2.64E-05	1.98E-05	1.18E-02	1.18E-02	9.60E-02	1.18E-02	9.60E-02	9.60E-02	1.89E+00	1.89E+00	1.00E+02	7.21E+01	7.06E-02	1.02E+05
indeno[1,2,3cd]pyrene	3.43E-01	3.43E-01	1.39E-06	5.97E-17	1.00E+02	4.07E-04	1.74E-14	3.18E-11	N/A	N/A	1.52E-10	1.51E-07	1.13E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.49E-02	6.20E-02	2.40E+01	3.09E-10	1.17E-02	2.62E-06
naphthalene	1.36E+00	1.36E+00	2.42E-03	9.00E-05	9.98E+01	1.77E-01	6.60E-03	1.87E-02	N/A	N/A	1.41E-03	6.02E-07	4.52E-07	0.00E+00	0.00E+00	2.92E-01	0.00E+00	2.92E-01	2.92E-01	2.58E+01	3.10E+01	8.32E+01	4.64E+02	6.17E+02	7.52E+01
pyrene	4.48E+01	2.71E-01	1.27E-05	9.99E-09	6.04E-01	2.82E-05	2.23E-08	1.37E-06	N/A	N/A	7.55E-08	1.98E-05	1.48E-05	0.00E+00	0.00E+00	2.34E-02	0.00E+00	2.34E-02	2.34E-02	1.35E-01	1.35E-01	1.00E+02	1.09E+01	5.16E-02	2.11E+04