CLEA Software Version 1.06

Report generated	29-Sep-10
Report title	GAC Derivation - PAHs
Created by	Tom Bisson at Jacobs

RESULTS

Environment Agency

		Assessment Criterion (mg kg^{-1})			Ratio of ADE to HCV			Saturation Limit (mg kg^{-1})	50% rule?	
		oral	inhalation	combined	oral	inhalation	combined		Oral	Inhal
1	Acenaphthene	1.15E+04	6.66E+06	1.15E+04	1.00	0.00	1.00	5.70E+01 (sol)	No	No
2	Acenaphthylene	1.16E+04	6.35E+06	1.15E+04	1.00	0.00	1.00	8.61E+01 (sol)	No	No
3	Anthracene	5.78E+04	7.42E+07	5.77E+04	1.00	0.00	1.00	1.17E+00 (vap)	No	No
4	Benz(a)anthracene	2.66E+01	5.25E+02	2.53E+01	0.95	0.05	1.00	1.71E+00 (sol)	No	No
5	Benzo(a)pyrene	3.85E+00	1.02E+02	3.71E+00	0.96	0.04	1.00	9.11E-01 (vap)	No	No
6	Benzo(b)flouranthene	2.73E+01	6.67E+02	2.63E+01	0.96	0.04	1.00	1.22E+00 (sol)	No	No
7	Benzo(ghi)perylene	1.75E+02	8.19E+03	1.71E+02	0.98	0.02	1.00	1.54E-02 (vap)	No	No
8	Benzo(k)fluoranthene	3.85E+01	1.10E+03	3.72E+01	0.97	0.03	1.00	6.87E-01 (sol)	No	No
9	Chrysene	3.85E+01	6.71E+02	3.64E+01	0.95	0.05	1.00	4.40E-01 (vap)	No	No
10	Dibenz(ah)anthracene	3.47E+00	1.13E+02	3.36E+00	0.97	0.03	1.00	3.93E-03 (vap)	No	No
11	Fluoranthene	2.40E+03	6.30E+06	2.40E+03	1.00	0.00	1.00	1.89E+01 (vap)	No	No
12	Fluorene	7.69E+03	5.91E+06	7.68E+03	1.00	0.00	1.00	3.09E+01 (sol)	No	No
13	Indeno(123-cd)pyrene	1.66E+01	3.72E+02	1.59E+01	0.96	0.04	1.00	6.13E-02 (vap)	No	No
14	Naphthalene	3.77E+03	1.61E+04	3.09E+03	0.82	0.18	1.00	7.64E+01 (sol)	No	No
15	Phenanthrene	2.39E+03	3.16E+06	2.39E+03	1.00	0.00	1.00	3.60E+01 (sol)	No	No
16	Pyrene	5.77E+03	1.43E+07	5.77E+03	1.00	0.00	1.00	2.20E+00 (vap)	No	No
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Environment Agency

	Assessment Criterion (mg kg^{-1})			Ratio of ADE to HCV			Saturation Limit (mg kg^{-1})	50% rule?	
	oral	inhalation	combined	oral	inhalation	combined		Oral	Inhal
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Environment Agency

		Soil Distribution				Media Concentrations													
		Sorbed	Dissolved	Vapour	Total	Soil	Soil gas	Indoor Dust	Outdoor dust at 0.8m	Outdoor dust at 1.6m	Indoor Vapour	Outdoor vapour at 0.8m	Outdoor vapour at 1.6m	Green vegetables	Root vegetables	Tuber vegetables	Herbaceous fruit	Shrub fruit	Tree fruit
		%	%	%	%	mg kg^{-1}	mg m^{-3}	mg kg^{-1}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg kg^{-1} FW	mg kg^{-1} FW	mg kg^{-1} FW	mg kg^{-1} FW	mg kg^{-1} FW	mg kg^{-1} FW
1	Acenaphthene	98.0	2.0	0.0	100.0	1.15E+04	6.31E+02	NA	4.90E-06	0.00E+00	NA	1.25E-03	0.00E+00	NA	NA	NA	NA	NA	NA
2	Acenaphthylene	97.5	2.5	0.0	100.0	1.15E+04	6.05E+02	NA	4.91E-06	0.00E+00	NA	1.31E-03	0.00E+00	NA	NA	NA	NA	NA	NA
3	Anthracene	99.2	0.8	0.0	100.0	5.77E+04	3.18E+02	NA	2.46E-05	0.00E+00	NA	2.80E-03	0.00E+00	NA	NA	NA	NA	NA	NA
4	Benz(a)anthracene	99.9	0.1	0.0	100.0	2.53E+01	1.77E-03	NA	1.08E-08	0.00E+00	NA	2.69E-07	0.00E+00	NA	NA	NA	NA	NA	NA
5	Benzo(a)pyrene	100.0	0.0	0.0	100.0	3.71E+00	8.74E-06	NA	1.58E-09	0.00E+00	NA	2.92E-08	0.00E+00	NA	NA	NA	NA	NA	NA
6	Benzo(b)flouranthene	100.0	0.0	0.0	100.0	2.63E+01	8.86E-05	NA	1.12E-08	0.00E+00	NA	2.28E-07	0.00E+00	NA	NA	NA	NA	NA	NA
7	Benzo(ghi)perylene	100.0	0.0	0.0	100.0	1.71E+02	2.03E-04	NA	7.29E-08	0.00E+00	NA	7.39E-07	0.00E+00	NA	NA	NA	NA	NA	NA
8	Benzo(k)fluoranthene	100.0	0.0	0.0	100.0	3.72E+01	7.54E-05	NA	1.58E-08	0.00E+00	NA	2.71E-07	0.00E+00	NA	NA	NA	NA	NA	NA
9	Chrysene	99.9	0.1	0.0	100.0	3.64E+01	3.63E-04	NA	1.55E-08	0.00E+00	NA	4.45E-07	0.00E+00	NA	NA	NA	NA	NA	NA
10	Dibenz(ah)anthracene	100.0	0.0	0.0	100.0	3.36E+00	1.68E-05	NA	1.43E-09	0.00E+00	NA	2.13E-08	0.00E+00	NA	NA	NA	NA	NA	NA
11	Fluoranthene	99.7	0.3	0.0	100.0	2.40E+03	1.43E+00	NA	1.02E-06	0.00E+00	NA	5.67E-05	0.00E+00	NA	NA	NA	NA	NA	NA
12	Fluorene	98.4	1.6	0.0	100.0	7.68E+03	1.91E+02	NA	3.27E-06	0.00E+00	NA	6.27E-04	0.00E+00	NA	NA	NA	NA	NA	NA
13	Indeno(123-cd)pyrene	99.9	0.1	0.0	100.0	1.59E+01	6.44E-05	NA	6.75E-09	0.00E+00	NA	1.48E-07	0.00E+00	NA	NA	NA	NA	NA	NA
14	Naphthalene	93.2	6.8	0.0	100.0	3.09E+03	5.08E+03	NA	1.31E-06	0.00E+00	NA	1.60E-03	0.00E+00	NA	NA	NA	NA	NA	NA
15	Phenanthrene	99.2	0.8	0.0	100.0	2.39E+03	1.06E+01	NA	1.02E-06	0.00E+00	NA	1.13E-04	0.00E+00	NA	NA	NA	NA	NA	NA
16	Pyrene	99.7	0.3	0.0	100.0	5.77E+03	3.45E+00	NA	2.46E-06	0.00E+00	NA	1.44E-04	0.00E+00	NA	NA	NA	NA	NA	NA
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Environment Agency

	Soil Distribution				Media Concentrations													
	Sorbed	Dissolved	Vapour	Total	Soil	Soil gas	Indoor Dust	Outdoor dust at 0.8m	Outdoor dust at 1.6m	Indoor Vapour	Outdoor vapour at 0.8m	Outdoor vapour at 1.6m	Green vegetables	Root vegetables	Tuber vegetables	Herbaceous fruit	Shrub fruit	Tree fruit
	%	%	%	%	mg kg^{-1}	mg m^{-3}	mg kg^{-1}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg kg^{-1} FW	mg kg^{-1} FW	mg kg^{-1} FW	mg kg^{-1} FW	mg kg^{-1} FW	mg kg^{-1} FW
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POS PAHs

Environment Agency

		Average Daily Exposure (mg kg^{-1} bw day^{-1})							Distribution by Pathway (%)							
		Direct soil ingestion	Consumption of homegrown produce and attached soil	Dermal contact with soil and dust	Inhalation of dust	Inhalation of vapour	Background (oral)	Background (inhalation)	Direct soil ingestion	Consumption of homegrown produce and attached soil	Dermal contact with soil and dust	Inhalation of dust	Inhalation of vapour (indoor)	Inhalation of vapour (outdoor)	Background (oral)	Background (inhalation)
1	Acenaphthene	5.07E-02	0.00E+00	9.13E-03	4.05E-07	1.03E-04	5.51E-05	1.52E-06	84.52	0.00	15.22	0.00	0.00	0.17	0.09	0.00
2	Acenaphthylene	5.07E-02	0.00E+00	9.14E-03	4.05E-07	1.08E-04	7.88E-06	6.67E-07	84.58	0.00	15.23	0.00	0.00	0.18	0.01	0.00
3	Anthracene	2.54E-01	0.00E+00	4.57E-02	2.03E-06	2.31E-04	4.50E-06	2.49E-06	84.68	0.00	15.24	0.00	0.00	0.08	0.00	0.00
4	Benz(a)anthracene	1.11E-04	0.00E+00	2.00E-05	8.88E-10	2.22E-08	3.38E-06	6.67E-07	84.73	0.00	15.25	0.00	0.00	0.02	0.00	0.00
5	Benzo(a)pyrene	1.63E-05	0.00E+00	2.94E-06	1.30E-10	2.41E-09	6.19E-06	3.64E-07	84.73	0.00	15.25	0.00	0.00	0.01	0.00	0.00
6	Benzo(b)flouranthene	1.16E-04	0.00E+00	2.08E-05	9.22E-10	1.88E-08	6.19E-06	7.88E-07	84.73	0.00	15.25	0.00	0.00	0.01	0.00	0.00
7	Benzo(ghi)perylene	7.54E-04	0.00E+00	1.36E-04	6.02E-09	6.10E-08	3.38E-06	6.06E-07	84.74	0.00	15.26	0.00	0.00	0.01	0.00	0.00
8	Benzo(k)fluoranthene	1.64E-04	0.00E+00	2.95E-05	1.31E-09	2.24E-08	5.06E-06	4.24E-07	84.73	0.00	15.26	0.00	0.00	0.01	0.00	0.00
9	Chrysene	1.60E-04	0.00E+00	2.89E-05	1.28E-09	3.67E-08	6.19E-06	1.03E-06	84.73	0.00	15.25	0.00	0.00	0.02	0.00	0.00
10	Dibenz(ah)anthracene	1.48E-05	0.00E+00	2.66E-06	1.18E-10	1.75E-09	2.25E-06	2.00E-06	84.73	0.00	15.26	0.00	0.00	0.01	0.00	0.00
11	Fluoranthene	1.06E-02	0.00E+00	1.90E-03	8.44E-08	4.68E-06	1.97E-05	5.09E-06	84.54	0.00	15.22	0.00	0.00	0.04	0.16	0.04
12	Fluorene	3.38E-02	0.00E+00	6.09E-03	2.70E-07	5.17E-05	3.32E-05	5.82E-06	84.55	0.00	15.22	0.00	0.00	0.13	0.08	0.01
13	Indeno(123-cd)pyrene	6.98E-05	0.00E+00	1.26E-05	5.57E-10	1.22E-08	5.63E-06	5.46E-07	84.73	0.00	15.25	0.00	0.00	0.01	0.00	0.00
14	Naphthalene	1.36E-02	0.00E+00	2.45E-03	1.08E-07	1.32E-04	3.94E-04	1.70E-04	81.40	0.00	14.65	0.00	0.00	0.79	2.36	0.79
15	Phenanthrene	1.05E-02	0.00E+00	1.89E-03	8.39E-08	9.34E-06	8.66E-05	3.14E-05	84.03	0.00	15.13	0.00	0.00	0.07	0.69	0.08
16	Pyrene	2.54E-02	0.00E+00	4.57E-03	2.03E-07	1.19E-05	1.97E-05	3.94E-06	84.64	0.00	15.24	0.00	0.00	0.04	0.07	0.01
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Environment Agency

	Average Daily Exposure (mg kg^{-1} bw day^{-1})							Distribution by Pathway (%)							
	Direct soil ingestion	Consumption of homegrown produce and attached soil	Dermal contact with soil and dust	Inhalation of dust	Inhalation of vapour	Background (oral)	Background (inhalation)	Direct soil ingestion	Consumption of homegrown produce	Dermal contact with soil and dust	Inhalation of dust	Inhalation of vapour (indoor)	Inhalation of vapour (outdoor)	Background (oral)	Background (inhalation)
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Environment Agency

		Oral Health Criteria Value (µg kg^{-1} BW day^{-1})		Inhalation Health Criteria Value (µg kg^{-1} BW day^{-1})		Oral Mean Daily Intake (µg day^{-1})	Inhalation Mean Daily Intake (µg day^{-1})	Air-water partition coefficient (K_{aw}) (cm^3 cm^{-3})	Coefficient of Diffusion in Air (m^2 s^{-1})	Coefficient of Diffusion in Water (m^2 s^{-1})	log K_{oc} (cm^3 g^{-1})	log K_{ow} (dimensionless)	Dermal Absorption Fraction (dimensionless)	Soil-to-dust transport factor (g g^{-1} DW)	Sub-surface soil to indoor air correction factor (dimensionless)	Relative bioavailability via soil ingestion (unitless)	Relative bioavailability via dust inhalation (unitless)
1	Acenaphthene	TDI	60	TDI	60	0.98	0.025	7.59E-04	5.85E-06	4.70E-10	3.37	4.03	0.13	0.5	1	1	1
2	Acenaphthylene	TDI	60	TDI	60	0.14	0.011	5.68E-04	5.97E-06	4.82E-10	3.26	3.91	0.13	0.5	1	1	1
3	Anthracene	TDI	300	TDI	300	0.08	0.041	1.81E-04	5.36E-06	4.36E-10	3.75	4.5	0.13	0.5	1	1	1
4	Benz(a)anthracene	ID	0.138	ID	0.00048	0.06	0.011	3.16E-05	4.60E-06	3.80E-10	4.89	5.91	0.13	0.5	1	1	1
5	Benzo(a)pyrene	ID	0.02	ID	0.00007	0.11	0.006	1.76E-06	4.38E-06	3.67E-10	5.11	6.18	0.13	0.5	1	1	1
6	Benzo(b)flouranthene	ID	0.142	ID	0.0005	0.11	0.013	2.05E-06	4.38E-06	3.62E-10	5.02	6.08	0.13	0.5	1	1	1
7	Benzo(ghi)perylene	ID	0.909	ID	0.0032	0.06	0.01	2.86E-06	4.22E-06	3.56E-10	5.62	6.81	0.13	0.5	1	1	1
8	Benzo(k)fluoranthene	ID	0.2	ID	0.0007	0.09	0.007	1.74E-06	4.36E-06	3.62E-10	5.17	6.26	0.13	0.5	1	1	1
9	Chrysene	ID	0.2	ID	0.0007	0.11	0.017	3.18E-06	4.57E-06	3.77E-10	4.74	5.73	0.13	0.5	1	1	1
10	Dibenz(ah)anthracene	ID	0.018	ID	0.000063	0.04	0.033	5.40E-06	4.08E-06	3.40E-10	5.27	6.38	0.13	0.5	1	1	1
11	Fluoranthene	TDI	12.5	TDI	12.5	0.35	0.084	6.29E-05	5.01E-06	4.11E-10	4.26	5.13	0.13	0.5	1	1	1
12	Fluorene	TDI	40	TDI	40	0.59	0.096	4.12E-04	5.58E-06	4.47E-10	3.45	4.13	0.13	0.5	1	1	1
13	Indeno(123-cd)pyrene	ID	0.086	ID	0.0003	0.1	0.009	2.05E-06	4.17E-06	3.51E-10	4.94	5.97	0.13	0.5	1	1	1
14	Naphthalene	TDI	20	TDI	0.86	7	2.8	6.62E-03	6.52E-06	5.16E-10	2.81	3.34	0.13	0.5	1	1	1
15	Phenanthrene	TDI	12.5	TDI	12.5	1.54	0.518	1.43E-04	5.34E-06	4.32E-10	3.74	4.5	0.13	0.5	1	1	1
16	Pyrene	TDI	30	TDI	30	0.35	0.065	5.64E-05	5.01E-06	4.15E-10	4.21	5.08	0.13	0.5	1	1	1
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Environment Agency

	Oral Health Criteria Value (µg kg^{-1} BW day^{-1})		Inhalation Health Criteria Value (µg kg^{-1} BW day^{-1})		Oral Mean Daily Intake (µg day^{-1})	Inhalation Mean Daily Intake (µg day^{-1})	Air-water partition coefficient (K_{aw}) (cm^3 cm^{-3})	Coefficient of Diffusion in Air (m^2 s^{-1})	Coefficient of Diffusion in Water (m^2 s^{-1})	log K_{oc} (cm^3 g^{-1})	log K_{ow} (dimensionless)	Dermal Absorption Fraction (dimensionless)	Soil-to-dust transport factor (g g^{-1} DW)	Sub-surface soil to indoor air correction factor (dimensionless)	Relative bioavailability via soil ingestion (unitless)	Relative bioavailability via dust inhalation (unitless)
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Environment Agency

		Soil-to-water partition coefficient ($cm^3 g^{-1}$)	Vapour pressure (Pa)	Water solubility (mg L^{-1})	Soil-to-plant concentration factor for green vegetables (mg g^{-1} plant DW or FW basis over mg g^{-1} DW soil)	Soil-to-plant concentration factor for root vegetables (mg g^{-1} plant DW or FW basis over mg g^{-1} DW soil)	Soil-to-plant concentration factor for tuber vegetables (mg g^{-1} plant DW or FW basis over mg g^{-1} DW soil)	Soil-to-plant concentration factor for herbaceous fruit (mg g^{-1} plant DW or FW basis over mg g^{-1} DW soil)	Soil-to-plant concentration factor for shrub fruit (mg g^{-1} plant DW or FW basis over mg g^{-1} DW soil)	Soil-to-plant concentration factor for tree fruit (mg g^{-1} plant DW or FW basis over mg g^{-1} DW soil)
1	Acenaphthene	1.36E+01	7.37E-02	4.11E+00	model	model	model	model	model	model
2	Acenaphthylene	1.06E+01	7.08E-02	7.95E+00	model	model	model	model	model	model
3	Anthracene	3.26E+01	8.49E-05	5.60E-02	model	model	model	model	model	model
4	Benz(a)anthracene	4.50E+02	1.24E-06	3.80E-03	model	model	model	model	model	model
5	Benzo(a)pyrene	7.47E+02	2.00E-08	3.80E-03	model	model	model	model	model	model
6	Benzo(b)flouranthene	6.07E+02	6.34E-08	2.00E-03	model	model	model	model	model	model
7	Benzo(ghi)perylene	2.42E+03	1.55E-10	2.60E-04	model	model	model	model	model	model
8	Benzo(k)fluoranthene	8.58E+02	1.64E-08	8.00E-04	model	model	model	model	model	model
9	Chrysene	3.19E+02	4.52E-08	2.00E-03	model	model	model	model	model	model
10	Dibenz(ah)anthracene	1.08E+03	1.66E-10	6.00E-04	model	model	model	model	model	model
11	Fluoranthene	1.06E+02	1.31E-04	2.30E-01	model	model	model	model	model	model
12	Fluorene	1.63E+01	1.56E-02	1.86E+00	model	model	model	model	model	model
13	Indeno(123-cd)pyrene	5.05E+02	2.12E-09	2.00E-04	model	model	model	model	model	model
14	Naphthalene	3.74E+00	2.31E+00	1.90E+01	model	model	model	model	model	model
15	Phenanthrene	3.19E+01	2.82E-03	1.12E+00	model	model	model	model	model	model
16	Pyrene	9.41E+01	1.53E-05	1.30E-01	model	model	model	model	model	model
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Environment Agency

	Soil-to-water partition coefficient ($cm^3 g^{-1}$)	Vapour pressure (Pa)	Water solubility ($mg L^{-1}$)	Soil-to-plant concentration factor for green vegetables (mg g^{-1} plant DW or FW basis over mg g^{-1} DW soil)	Soil-to-plant concentration factor for root vegetables (mg g^{-1} plant DW or FW basis over mg g^{-1} DW soil)	Soil-to-plant concentration factor for tuber vegetables (mg g^{-1} plant DW or FW basis over mg g^{-1} DW soil)	Soil-to-plant concentration factor for herbaceous fruit (mg g^{-1} plant DW or FW basis over mg g^{-1} DW soil)	Soil-to-plant concentration factor for shrub fruit (mg g^{-1} plant DW or FW basis over mg g^{-1} DW soil)	Soil-to-plant concentration factor for tree fruit (mg g^{-1} plant DW or FW basis over mg g^{-1} DW soil)
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