



APPENDIX AVAILABLE ON REQUEST

Research Report 143

Measurement and Modeling of Exposure to Selected Air Toxics for Health Effects Studies and Verification by Biomarkers

Roy M. Harrison et al.

Appendix 24. Comparison Tables

Note: Appendices Available on the Web appear in a different order than in the original Investigators' Report. HEI has not changed these documents.

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APPENDIX 24: COMPARISON TABLES

Table A24.1. Comparison results for Personal Exposure of VOC ($\mu\text{g}/\text{m}^3$)

REFERENCE	COMMENT	n-Hexane			Benzene			Toluene			Ethylbenzene			p-Xylene			m-Xylene			Pyridine			o-Xylene			1,3,5-Trimethylbenzene			Styrene			p-Isopropyltoluene			1,2,4-Trimethylbenzene			3-Ethylpyridine			Naphthalene			1,3-Butadiene			YEAR	COUNTRY
		AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med								
MATCH Project	All	3.61	1.67		2.21	1.64	1.52	19.8	11.5	10.9	3.21	1.47	1.35	3.07*	1.26*	1.10*	7.69*	3.22*	2.87*	0.25	0.15	0.15	3.58	1.61	1.4	0.95	0.44	0.37	1.32	0.63	0.59	1.07	0.8	0.81	3.48	1.57	1.25	0.28	0.1	0.07	0.74	aphthalene	0.4	0.14	0.16	2005-2007	UK	
Leung and Harrison 1998	Urban				13			42.2									15.5						3.15															0.5			1998	UK						
	Non Urban				8.3			20.4									15.2						3.39																									
Ilgem et al 2001c	Rural				3.33	2.91		29.5	24.8		2.63	2.39					7.09	5.75					2.21	1.94																	1995-1997	Germany						
	Urban				4.27	3.95		24	22.2		2.99	2.78					7.64	7.04					2.82	2.62																								
Carrer et al 2000	All				21.2			35.2																																	2000	Italy						
	NO ETS				16.5			33.2																																								
	ETS				25.4			37.1																																								
Wallace 1996	Average				26.6	10.6																																			1981-1991	USA						
Adgate et al 2004	Winter					2.1		7.7				1			2.1								0.7																		2000	USA						
	Spring					1.5		7.7				0.9			1.4								0.5																									
Kim et al 2002	Day	30.9			10.6	6.2		28.9	15.1		3	1.8		7.6*	4.0*		2.7	1.4		0.5	0		3.1	1.6		0.7	0.3					2.7	1.4		0.6			4.4			1.1	0.4		1999-2000	UK			
	Night				9.3	6.2		47	17.6		2.7	1.7		6.1*	4.1*		2.2	1.4		0	0.8		2.5	1.8		0.5	0.7					2.2	1.4		0.3			8.7	0.5		0.8	0.4						
	Average				9.95	6.2		38	16.4		2.85	1.75		6.85*	4.05*		2.45	1.4		0.25	0.4		2.8	1.7		0.6	0.5		0.75	0.5		2.45	1.4		0.45			6.55	0.7		0.95	0.4						
Lai et al 2004		3.6			4.6	3.3		34.1	18.8		3.2	2.1					10	6.2					3.7	2.5								13.3	8.1					0.6					1998-2000	UK				
Phillips et al 2005	Day					1.3		12				3.1											0.66																		2005	USA						
	Night					1.1		11																																								
	Average					1.2		11.5				3.1											0.66																									
Goldstein et al 1992					24																																											
Sheldon et al 1991					5																																											
Heavner et al 1995					3.2																																											
Gonzalez-Flesca et al 2000					10.3																																											
Wallace et al 1988					11.6						7.3												8.2																									
Rappaport et al 2004	Low city					7.3						3.1											3.55																									
	High city					22.4						10.2											9.71																									
Edwards et al 2001	Non ETS				2.6	2.1		17.1	13.8		3.3	2.5					11.4	7.5					3.7	2.5								6.3	3.2															
	ETS				4.7	3.2		38.4	20.9		14.6	3.4					46.5	11					20	3.6					1.2	1.1		13.2	4.6															
Son et al 2003						26.3			120			1.79																																				
Kinney et al 2002					3.9																																											
Weisel et al 2005					3.64	2.39		19.2	12.2		2.79	1.68			8.07*			4.42*					2.89	1.73					1.51	0.57																		
Dodson et al 2007						1.6			11			1.3						4.4						1.5																								

*Measured separately as m-xylene and p-xylene, otherwise, when * is not present, m+p-xylene

APPENDIX 24: COMPARISON TABLES

Table A24.3. Comparison results for Other Home Microenvironment concentrations of VOC ($\mu\text{g}/\text{m}^3$)

REFERENCE	COMMENT	n-Hexane	Benzene	Toluene	Ethylbenzene	p-Xylene	m-Xylene	Pyridine	p-Xylene	1,3,5-Trimethylbenzene	Styrene	p-Isopropyltoluene	1,2,4-Trimethylbenzene	p-Ethynylpyridine	Naphthalene	1,3-Butadiene	YEAR	COUNTRY
		AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM		
MATCH	Kitchens	26.5	1.26	14.1	2.14	3.03*	7.33*	0.84	2.67	0.43	1.05	1.21	1.77	1.02	0.9	0.94	2006-2007	UK
	Living Rooms	0.67	1.52	8.2	0.97	0.84*	2.4*	0.69	1.47	0.35	1.18	1.01	1.23	0.88	1.06	0.59		
	Spare bedrooms	13.7	0.78	10.1	1.41	1.69*	4.05*	0.07	1.59	0.2	0.43	0.48	0.84	0.04	0.6	0		
	Garages	0.98	1.33	5.0	1.06	0.9*	2.51*	0.03	1.26	0.46	0.33	0.22	1.71	0.02	0.73	0		
	Gardens	0.30	1.41	2.8	0.64	0.6*	1.54*	0.04	0.67	0.14	0.18	0.06	0.48	0.01	0.29	0		
Ilgen et al. 2001b	an-Living Room		3.1	24.7	2.3		5.9		1.9								1995-1997	Germany
	Bedroom		2.9	19.1	2.2		5.5		1.8									
	Kitchen		3.1	20.9	2.4		6.1		2.0									
	Office		3.0	26.7	3.0		7.5		2.4									
	garage no car, no solvents		1.2	3.3	1.6		4.5		1.4									
	garage car not solvents		43.2	103	15.8		48.5		13.4									
	garage Solvents+car		80.9	319	48.8		182		46.5									
Wallace 1996	Living Rooms		14.6														1981-1991	USA
	Kitchen		9.5															
Mann et al. 2001	ges Average 1-4		93.9														1998-1998	UK
	garage-5		4.1															
	outside		2.5															
	Living Room		9.8															
	Bedroom		9.8															
	Room above garage		11.7	36.8	4.7		15.8		6.3				8.3					
	garage		81.8	209	28.1		95.9		31.4				44.8					
Guo et al. 2004	Living Room		0.7								0.1						2004	China (Hong Kon
	Kitchen		0.5								0.1							
Batterman et al 2006	Garages		13.6	87	10.9		46.9		15.7	4.08	0.17	0.28	14.8				2006	USA
Batterman, Jia et al 2006	Living Room		2.5	32					9.2						0.6		2006	USA
	Kitchen		2.7	34.7					9.3						0.8			
	Den		2.6	35.3					9.6						0.7			
	Bedroom		2.4	34.5					8						0.6			
	Office		2.5	35					9.3						0.7			
	Basement		1.7	16.5					6.3						0.8			
	Average		2.5	34.3					9.1						0.7			
	Garage		19	115					65.8						0.1			
Batterman 2007	Indoors		2	26.5	2.3		8.3		2.9	1.1	1	1.8	3.7		8.3		2007	USA
	Outdoors		0.4	1.2	0.2		0.7		0.2	0.1	0	0	0.3		0			
	Garage		36.6	214	28		114		38	12.4	0.6	0.8	44		8.9			
Lee et al 2002	Living Room		4.7	52.1	2.6		3.9		4.5	1.8								China (Hong Kon
	Kitchen area		4.1	58.6	3.6		5.2		4	1.7								
	Outdoors		2	40.3	4.8		6.2		4.1	2.2								
Brown 2002	Living Room	n.d.	2.2	6.9	0.9		2.8										2002	Australia
	Bedroom	n.d.	3	12	0.9		2.4											
	Outdoors	n.d.	0.8	1.4	0.3		2											
Dodson et al 2008	Indoors		2.6	13	2.4		7.3		2.6		1.1				0.54			USA
	Outdoors		0.88	2.3	0.42		1.3		0.47		0.1				0.27			
	Garage		58	102	35		90		35		3.4				7.4			
	Basement		3.2	21	4.1		12		4.2		1.7				0.5			
	Hallway		2.8	9.9	2.1		6.2		2.2		1.1				0.68			

*Measured separately as m-xylene and p-xylene, otherwise, when * is not present, m+p-xylene

APPENDIX 24: COMPARISON TABLES

Table A24.4. Comparison results for Office Microenvironment concentrations of VOC ($\mu\text{g}/\text{m}^3$)

REFERENCE	COMMENTS	n-Hexane		Benzene		Toluene		Ethylbenzene		p-Xylene		m-Xylene		Pyridine		o-Xylene		1,3,5-Trimethylbenzene		Styrene		p-Isopropyltoluene		1,2,4-Trimethylbenzene		3-Ethynylpyridine		Naphthalene		1,3-Butadiene		YEAR	COUNTRY		
		AM	GM	AM	GM	AM	GM	AM	GM	AM	GM	AM	GM	AM	GM	AM	GM	AM	GM	AM	GM	AM	GM	AM	GM	AM	GM	AM	GM	AM	GM				
MATCH		3	0,8	1,3	1,1	4,1		1,9	3,5	1,29*	0,85*	4,6*	0,8*	0,12	2,0	1,43	0,10	0,27	0,9	0,63	0,20	0,44	0,50	1,0	0,30	0,06	0,8	0,36	0,30	0,08	0,05	2005-2007	UK		
Leung and Harrison 1998	Birmingham			15,7	28,7	44,8		42,8				26,3				4,99															1998	UK			
	West Germany			10,0	20,5	84,1		32,0				23,0				5,03																			
	USA			16,0	36,5			41,6				26,0				8,98																			
	Netherlands			6,0		35,0						10,0																							
	Hertfordshire			11,0		29,0																													
Leung and Harrison 1998	Office			12,4	12,1	22,2		22,2				14,3			14,3	3,47																			
	campus			11,8	11,2	12,4		9,8				8,25			6,1	6,51																			
Ilgen et al. 2001c	Rural			4,0	2,8	20,7		4,2	13,5	2,64*	9,48*			6,4	3,06																	1995-1997	Germany		
	Urban			3,6	3,4	20,6		5,15	19,6	4,18*	12,3*			10,0	3,8																				
Lai et al. 2004		15,3	6,5	9,5	4,5	12,4		27,1			19,3			8,4										18,6		8,9						1998-2000	UK		
Carrer et al 2000	All			28,7		32,5																										2000	Italy		
	NO ETS			20,5		32																													
	ETS			36,5		41,6																													
Guo et al. 2004			0,5															0,15														2004	China (Hong Kong)		
Kim et al 2001			5,9		22		2,4		1,7		6	n.d.		1,8		0,3		0,6		0,3			1,5		n.d.		1,7		0,3		2001	UK			
Heavner et al 1996	No ETS Work			2,4		17,9		5,87		3,12*	7,07*		0,89	4,04		2,73		2,12							0,02				0,6			1996	USA		
	ETS Work			7,33		59,1		6,19		2,98*	8,77*		1,68	3,9		2,62		2,88							0,68			1,29							
Lee et al 2002			4,02		44,3		8,98				13,7			49,9																		2002	China (Hong King)		
Ho et al 2004	Urban traffic			4,02		26,3		2,9			3,39			2,55		1,09								2,37								2000-2001	China (Hong Kong)		
	Industrial -comercial mixed			3,33		45,4		2,35			2,27			1,64		0,42								1,57											
	rural			1,2		2,14		0,12			n.d.			n.d.		n.d.								n.d.											
Zuraimi et al 2006	Singapore	34,6		87,1		287					143			43,4														144						Singapore	
	EU	52,5		14,6		35,1					22,2			10,2													6,5						EU		
Baek et al 1997			12,6		80		7,6				23,4			14,5		6,4		5						14,6								1994-1995	Korea		

*Measured separately as m-xylene and p-xylene, otherwise, when * is not present, m+p-xylene

APPENDIX 24: COMPARISON TABLES

Table A24.6. Comparison results for Transport Stations Microenvironment concentrations of VOC ($\mu\text{g}/\text{m}^3$)

REFERENCE	COMMENTS	n-Hexane		Benzene		Toluene		Ethylbenzene		p-Xylene		m-Xylene		Pyridine		o-Xylene		1,3,5-Trimethylbenzene		Styrene		p-Isopropyltoluene		1,2,4-Trimethylbenzene		3-Ethylpyridine		Naphthalene		1,3-Butadiene		YEAR	COUNTRY
		AM	GM	AM	GM	AM	GM	AM	GM	AM	GM	AM	GM	AM	GM	AM	GM	AM	GM	AM	GM	AM	GM	AM	GM	AM	GM	AM	GM	AM	GM		
MATCH	train stations	0.79	0.8	1.4	1.3	3.7	3.5	0.76	0.7	0.66*	0.63*	1.97*	1.88*	0.05	0.0	1.09	1.02	0.26	0.2	0.23	0.21	0.05	0.03	1.1	0.97	0.05	0.1	0.28	0.27	0.11	0.08	2006	UK
	coach stations	1.1	0.6	1.2	1.2	5.5	5.1	0.77	0.7	0.74*	0.63*	1.77*	1.51*	0.21	0.2	0.88	0.75	0.28	0.3	0.25	0.24	0.29	0.26	0.9	0.83	0.3	0.3	0.4	0.38	0.09	0.08		
	car parks	4.21	3.0	15.1	6.7	28.1	19.5	3.80	3.2	4.33*	3.46*	10.4*	8.35*	0.02	0.0	5.62	4.33	1.02	0.8	0.69	0.48	0	0	3.22	2.83	0.05	0.0	0.33	0.3	0.78	0.28		
Kim et al 2001	train stations			46.5		135		7.4		6.9*		18.8*		n.d.		7.5		1.5		1.4		0.2		6.3		n.d.		1.6		2.2		2001	UK
	coach stations			20		47.3		3.8		3.5*		10.1*		0.1		3.5		0.8		0.6		0.4		3.8		0.1		1.1		0.9			

*Measured separately as m-xylene and p-xylene, otherwise, when * is not present, m+p-xylene

APPENDIX 24: COMPARISON TABLES

Table A24.8. Comparison results for Indoor Microenvironment concentrations of VOC ($\mu\text{g}/\text{m}^3$)

REFERENCE	COMMENTS	n-Hexane		Benzene		Toluene		Ethylbenzene		p-Xylene		m-Xylene		Pyridine		o-Xylene		1,3,5-Trimethylbenzene		Styrene		p-Isopropyltoluene		1,2,4-Trimethylbenzene		3-Ethylpyridine		Naphthalene		1,3-Butadiene		YEAR	COUNTRY
		AM	GM	AM	GM	AM	GM	AM	GM	AM	GM	AM	GM	AM	GM	AM	GM	AM	GM	AM	GM	AM	GM	AM	GM	AM	GM	AM	GM	AM	GM		
MATCH	Pub	1.41	1.0	5.1	3.2	15.0	9.4	2.44	1.4	1.84*	1.06*	6.47*	3.2*	3.96	2.3	2.22	1.30	0.5	0.3	1.54	1.00	1.0	0.8	2.0	1.31	5.1	3.56	0.58	0.5	3.85	0.65	2006	UK
	Restaurant	0.94	0.9	1.3	1.1	4.3	3.8	0.89	0.7	0.65*	0.56*	1.78*	1.54*	0.58	0.3	0.96	0.77	0.33	0.2	0.34	0.29	1.26	0.78	1.3	0.67	0.82	0.3	0.23	0.21	0.96	0.76		
	shopping centre	0.41	0.4	0.7	0.7	14.6	14.6	0.95	1.0	1.17*	1.17*	3*	3*	0.07	0.1	1.79	1.79	0.12	0.1	0.29	0.29	0.17	0.17	0.5	0.50	0.07	0.1	0.33	0.33				
	libraries	1.27	0.7	1.3	1.1	5.0	3.57	1.06	0.9	0.93*	0.76*	2.37*	1.94*	0.05	0.1	1.18	0.96	0.23	0.2	0.54	0.37	0.21	0.1	0.84	0.75	0.05	0.0	0.75	0.43	0.56	0.56		
Leung and Harrison 1998	printed room			20.1	18.8	113	87.8					112	107			49.5	39.1														1998	UK	
	smoky bar			78.8	76.6	113	93.5					12.6	10.4			8.25	6.94																
	car park			56.8	52.3	40.3	37.7					14.3	13			14.3	6.94																
	Cooking			14.7	14	37.7	36.6					14.3	13.9			3.04	2.6																
Refuelling			190	190	497	497					24.7	24.7			12.6	12.6																	
Guo et al. 2004	restaurant			1.1												0.28															2004	China (Hong Kor	
	printing room			7.46												579																	
	shopping centre			1.18												0.46																	
Kim et al 2001	Restaurant			22.7		57		6.2		5.6*		16.3*		0.6		6		1.3		1.4		0.6		5.9		0.6		0.9		1.5	2001	UK	
	Pub			31.7		75.4		7.3		6.5*		18.3*		3.3		6.9		1.5		2.1		0.6		6.2		3.8		1		3			
	Department store			10.5		56.7		3.4		3.1*		8.9*		n.d.		3.5		0.8		1.1		0.5		3.4		n.d.		0.7		0.6			
	cinemas			15.5		43.6		5.9		5.5*		15.7*		n.d.		5.9		1.7		0.7		4.9		7.6		n.d.		0.6		0.6			
	perfume shop			6.8		43.8		2.4		2.2*		6*		n.d.		2.4		0.5		0.7		2		2.9		n.d.		0.4		0.9			
	libraries			8.8		21.2		3.5		3.1*		9.2*		n.d.		3.3		1.1		0.5		0.3		4.8		n.d.		0.6		0.4			
labs			4.2		8.3		0.7		0.6*		1.9*		n.d.		0.8		0.1		0.2		0.2		0.5		n.d.		0.1		0.2				
Srivastava et al 2000	laboratory	152		58.8		15.6		n.d.		1.7						n.d.															2000	India	
	smoker's room	55.5		56.9		21.3		0.9		16.1						12.2																	
Lee et al 2006	printing room			125		290		30.3				81.5								30.6											2002-2003	Taiwan	
Batterman et al 2002	printing room	69		1		2887		12		85						604		7792		3			####			5				2002	USA		
Lee et al 2002	Shopping mall			9.39		96.6		1.64				13.6				8.81															2002	China (Hong Kin	
	Restaurant			7.17		8.46		8.4				8.82				3.01																	
Bolte et al 2007	Restaurant			11.3	9.7																				4.1	2.9			0.6	0.3	2005-2006	Germany	
	Pub			17.3	12																				10.2	6.8			1.3	0.8			
	Discotheque			24.4	22	8.46		8.4				8.82				3.01									22.6	20.1			1.2	0.9			
Baek et al 1997	Restaurant			12		52		8.2				22.4				13		5.1		4.1				10.9							1994-1995	Korea	

*Measured separately as m-xylene and p-xylene, otherwise, when * is not present, m+p-xylene

APPENDIX 24: COMPARISON TABLES

Table A24.10. Comparison results for Home Microenvironment concentrations of PAH (ng/m³)

REFERENCE	COMMENTS	Acenaphthylene			Acenaphthene			Fluorene			Phenanthrene			Anthracene			Fluoranthene			Pyrene			Benzo(a)anthracene			Chrysene			Benzo(b)fluoranthene			Benzo(k)fluoranthene			Benzo(a)pyrene			Indeno(1,2,3-cd)pyrene			Dibenzo(a,h)anthracene			Benzo(ghi)perylene			Coronene			Total PAH			YEAR	COUNTRY
		AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med											
MATCH	Average	0.33	0.18	0.21	0.91	0.13	0.12	0.39	0.23	0.20	0.51	0.30	0.27	0.08	0.05	0.05	0.65	0.35	0.32	0.38	0.23	0.18	0.15	0.07	0.06	0.28	0.15	0.13	0.39	0.21	0.17	0.23	0.14	0.13	0.19	0.09	0.07	0.20	0.10	0.11	0.02	0.04	0.02	0.26	0.16	0.16	0.15	0.09	0.10	5.1	2.5	2.3	2005-2007	UK
Turpin et al 2005	PM2.5 CA PM2.5 NJ PM2.5 TX										16	13	1.00	0.47	1.60	1.20	1.90	1.50	0.04	0.03	0.16-	0.16-	0.19*	0.15*					0.07	0.04	0.28	0.18	0.014#	0.0088	0.34	0.18	0.36	0.20	0.15	0.09	0.10	0.37	0.26	0.36	0.24	0.07	0.07	0.35	0.04			2001	USA	
Ohura et al 2004	Summer Winter	8.93 5.18						11.20 4.17			28.4 8.82	0.74 0.19		0.74 1.11	2.57 0.83	1.81 0.16			0.12 0.53	0.28 0.34	0.50 0.2	0.16 0.2							0.37	0.04	0.04	0.04	0.44	0.44	0.38	0.44							2004	Japan										
Mitra and Ray 1995	ETS Home NETS Home	40.5 13						113 84.5	6.88 2.41		10.8 11.3	7.61 7.0	1.0 0.42	2.26 1.17	1.84* 1.43*			1.0 0.44													1.0 0.44	0.75 0.49	1.06 0.64	1.06 0.64	0.65 0.44									1995	USA									
Fromme et al 2004	ETS Home NETS Home ETS Home NETS Home										1.26 0.45 0.34 0.34	0.63 0.34 0.32 0.19		0.38 0.28 0.04 0.04	0.65 0.32 0.28 0.19	0.81 0.36 0.39 0.1	0.3 0.12 0.12 0.05		0.65 0.25 0.27 0.09		0.67 0.36 0.24 0.24		0.18 0.09 0.07 0.19	0.75 0.4 0.32 0.14	0.15 0.15 0.14 0.14																1997-1998 1997-1998 2000 2000	Germany												
Naumova et al 2002	Background						27																																				1999-2000	USA										
Kingham et al 2000	Background																																									1995	UK											
Fischer et al 2000	Background																																										1995	Netherlands										
Minoia et al 1997	Background																																										1996	Italy										
Li and Ro 2000	Background						20																																				1995-1996	Taiwan										
Liu et al 2001	Background						530																																				1999	China										
Dubowsky et al 1999	Urban Weekday Semi-Urban Weekday Suburban Weekday Urban Weekend Semi-Urban Weekend Suburban Weekend																																											39	31							1988	USA	
Chao et al 2002							0.17				0.36	0.45	0.26	0.13	0.75*																											3.42								2000-2001	China			
Gevao et al 2007	Wood-burning home Reference home	0.15	0.08	0.22	0.14	0.84	0.81	3.37	2.81	0.21	0.14	0.48	0.41	0.43	0.35	0.1	0.02	0.18	0.06	0.19	0.14	0.17	0.09	0.21	0.06	0.47	n.d.	49	n.d.	0.26	n.d.														6.55	6.1							2004	Kuwait
Gustafson et al 2008	Wood-burning home Reference home						14	11	1.3	1	2.4	1.5	2	1.3	0.59	0.22	n.d.	0.75-	0.31-	0.55	0.39	0.23	0.18	0.63	0.52	0.16	0.12	0.10	0.10				0.49	0.27	0.58	0.26	0.10	0.10							2003	Sweden								
Menichini et al 2007	Low floor High floor						8.70	7.60	0.41	0.40	1.30	0.88	0.96	0.75	0.36	0.59	0.36	2.21*					1.42	1.71	1.42	2.00	0.13	0.17				3.65	4.20																					
Fisher et al 2000	Traffic Non traffic																																														1995	Netherlands						
Levy et al 2002	Coffee Shop																																								0.9							2000	USA					
Van Winkle and Scheff 2001		12.8	n.d.	179.9	6	59	26	60.0	n.d.	2.05	n.d.	6.64	7.00	6.91	2.00	0.56	n.d.	0.20	n.d.	0.07	n.d.	0.07	n.d.	0.09	n.d.																		1994-1995	USA										

~Measured as Chrysene + Tryphenylene, * Measured as B(b+k)F, Measured as B(b+k+j)F, #Measured as D(ah+ac)A, n.d.= Non Detected

APPENDIX 24: COMPARISON TABLES

Table A24.11. Comparison results for Other Home Microenvironment concentrations of PAH (ng/m³)

REFERENCE	COMMENTS	Acenaphthylene			Acenaphthene			Fluorene			Phenanthrene			Anthracene			Fluoranthene			Pyrene			Benzo(a)anthracene			Chrysene			Benzo(b)fluoranthene			Benzo(k)fluoranthene			Benzo(a)pyrene			Indeno(1,2,3-cd)pyrene			Dibenz(e,h)anthracene			Benzo(ghi)perylene			Coronene			YEAR	COUNTRY
		AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med								
MATCH	Kitchen	0.24	0.29	0.20	0.15	0.43	0.08	0.12	0.21	0.12	0.39	0.77	0.30	0.05	0.10	0.06	0.38	0.86	0.25	0.27	0.67	0.16	0.06	0.15	0.03	0.28	0.06	0.18	0.17	0.40	0.09	0.13	0.30	0.09	0.09	0.20	0.06	0.10	0.19	0.09	0.03	0.08	0.01	0.12	0.22	0.10	0.07	0.10	0.07	2005-2007	UK
	Living Room	0.60	0.51	0.58	0.57	0.44	0.21	0.69	0.65	0.41	0.99	0.98	0.85	0.14	0.14	0.16	1.63	1.49	0.90	0.98	0.95	0.72	0.25	0.12	0.03	1.09	1.06	0.79	0.47	0.39	0.16	0.42	0.37	0.24	0.40	0.38	0.09	0.35	0.33	0.24	0.11	0.11	0.11	0.44	0.39	0.24	0.22	0.18	0.10		
Zhu and Wang et al 2003	Non ETS Kitchen				1240			70			630			280			940			630			270			230						5.2			15.4												2003	China			
	ETS Kitchen				990			140			940			360			520			430			200			160						5.1			12.7																
Chuang et al 1991	Kitchen	25									93			4.20			11.00			6.90			0.55			1.40		1.3*				0.54			0.48						0.72			0.55							
	Living Room	36									110			5.90			11.00			7.60			1.00			2.20		2.0*				1.00			0.79						1.00			0.58							
Zhu et al 2003	Kitchen	25						70			630			280			940			630			270			230						5.2			15												2003	China			
	Living Room	36						140			940			360			520			430			200			160						5.1			13																
Sugiyama et al 2000	Living Room																0.26	0.20		0.27	0.23		0.14	0.09		0.31	0.21		0.50	0.32		0.19	0.19		0.33	0.20		0.50	0.32		0.04	0.02		0.42	0.30		0.02	0.01	1998	Japan	
	Kitchen																0.24	0.18		0.23	0.18		0.11	0.11		0.23	0.18		0.38	0.27		0.15	0.10		0.26	0.17		0.45	0.32		0.04	0.02		0.36	0.26		0.02	0.01			
	Bedroom																0.25	0.22		0.25	0.22		0.13	0.10		0.31	0.23		0.55	0.40		0.20	0.15		0.31	0.24		0.49	0.40		0.04	0.02		0.42	0.35		0.02	0.02			

~Measured as Chrysene + Tryphenylene, * Measured as B(b+k)F, Measured as B(b+k+j)F, #Measured as D(ah+ac)A, n.d.= Non Detected

APPENDIX 24: COMPARISON TABLES

Table A24.12. Comparison results for Street Microenvironment concentrations of PAH (ng/m³)

REFERENCE	COMMENTS	Acenaphthylene			Acenaphthene			Fluorene			Phenanthrene			Anthracene			Fluoranthene			Pyrene			Benzo(a)anthracene			Chrysene			Benzo(k)fluoranthene			Benzo(i)fluoranthene			Benzo(a)pyrene			Indene(1,2,3-c)pyrene			Dibenz(a,h)anthracene			Benzo(g,h)perylene			Coronene			YEAR	COUNTRY											
		AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med																			
MATCH	Average	10.59	0.48	0.44	3.77	0.38	0.36	15.14	1.54	0.86	0.86	0.50	0.56	0.15	0.10	0.11	2.61	1.76	1.79	1.10	0.77	0.78	0.17	0.09	0.10	0.39	0.26	0.29	0.31	0.17	0.19	0.27	0.16	0.17	0.19	0.13	0.13	0.21	0.15	0.18	0.03	0.02	0.02	0.31	0.20	0.25	0.13	0.05	0.09	2006-2007	UK											
Turpin et al 2005	Background CA PM2.5 Background NJ PM2.5 Background TX PM2.5							11.00	8.40	0.67	0.44	1.90	1.50	1.80	1.60	0.08	0.05	0.25	0.24	0.29*	0.19*										0.10	0.05	0.37	0.19	0.015#	0.008#	0.45	0.27	0.49	0.23	2001	USA																				
MATES III 2008	Background (G+P)	4.90			6.92			12.32		0.99	1.80	1.51					0.37		0.38*											0.15	0.18	0.18	0.04	0.36									2004-2006	USA																		
NAPS Air Toxics Monitoring Program	Rural Urban																0.02	0.05	0.07							0.02	0.14	0.02	0.02	0.04			0.01#				0.04#					2002-2004	Canada																			
Lim et al 1999	Traffic Urban Suburban	0.06			0.03			0.08		1.54	0.25	3.69	4.64			2.53	2.98	4.78	0.58	0.95	0.81	0.32	0.95	0.80*	1.23*	0.80*	2.93	2.06	1.12	1.12	0.12	0.12	4.67	1.49	4.73	1.07	1.07		1996	UK																						
Dimashki et al 2001	suburban (G+P) suburban (G+P) Urban (G+P) Urban (G+P) London (G+P) London (G+P)	9.10 7.70 1.80 2.20 4.20 2.10	8.90 0.67 1.20 1.10 2.30 1.10	10.4 4.4 6.3 7.1 13.5 5.1	14.0 11.9 20.9 25.9 86.9 19.8	2.60 1.20 2.40 2.90 5.00 1.40	7.30 4.50 5.70 8.80 7.50 4.80	3.00 0.39 0.60 0.72 0.75 0.49	3.60 0.66 0.82 1.20 1.40 1.00	2.07 1.11 1.4 1.7 2.2 1.1*							0.53 0.50 0.71 0.91 0.60 0.29	2.07 1.11 1.4 1.7 2.2 1.1*							1.20 0.57 0.71 0.91 1.70 0.54	0.45# 0.11# 0.15# 0.18# 0.35# 0.08#	1.40 0.75 1.21 1.40 4.50 0.94												1992 1997 1994-1996 1996-1997 1992 1992	UK																						
Harrison et al 2007	Ambient levels Ambient levels Ambient levels Ambient levels																										2.0	4.00	1.00	0.50												1960 1970 1990 1990	USA USA USA USA																			
Sheu et al 1997	Traffic-PM10 Urban PM-10 Petrochemical Industrial-PM10																										37	10.5							2.39										1994-1995	Taiwan																
Caricchia et al 1999	Background PM10 Traffic PM10 Industrial PM10																										0.90	2.97							2.75										1996-1997	Italy																
Kulkarni and Venkataraman 2000	Urban PM-10 Industrial PM10																										1.80	2.10														1995	India																			
Guo et al 2003	Traffic PM10 Industrial PM10																										2.13	1.30														200-2001	China (Hong Kong)																			
Rockens et al 2000	Urban PM-10 Industrial PM10																										0.82	0.76														2000-2001	Belgium																			
Marchand et al 2004	Urban Suburban											4.06	3.20	0.87	1.17	1.04	0.44	0.75	3.21	1.98	0.61	1.21	0.96	0.39	0.48	0.44	0.75	0.74					0.97	0.49	0.43	0.15				2004	France																					
Chang et al 2006	Traffic (G+P) Traffic Industry Urban (G+P) Traffic Industry Urban Traffic (G+P)							0.02	0.01	0.10	0.08	0.21	0.02	0.02	0.19	0.22	0.20	0.01	0.11	0.17	0.15	0.02	0.01	0.07	0.03	0.08	0.09	0.03	0.05	0.11	0.09	0.94	0.07	0.07	0.07	3.21	9.80	2.10	2.30	1.53	1.31	1.01				2006	Thailand China China Korea Japan Taiwan Taiwan Taiwan															
Wu et al 2005	Winter Autum	5.53 0.04	3.58 0.03	4.92 0.09	68.9 0.51	12.5 0.05	15.0 1.09	13.0 0.55	105 0.56	177.1 1.91	98.9 3.33	69.8 2.95	91 4.26	69.2 3.23	66.7 0.52	121.1 0.64																						2005	China																							
Rehwagen et al 2005	Industry PM10 Urban PM-10 Rural PM10 Urban PM-10 Rural PM10				0.00	0.01	0.01	0.01	0.10	0.08	0.02	0.02	0.19	0.22	0.20	0.20	0.50	0.43	0.59	0.48	1.42	1.10	0.45	0.41	0.75	0.58	1.11	0.99	0.18	0.10	1.53	1.39	0.01	0.00	0.02	0.11	0.11	0.02	0.17	0.15	0.23	0.17	0.21	0.22	0.34	0.31	0.76	0.64	0.26	0.22	0.38	0.41	0.74	0.61	0.06	0.04	1.31	1.01			1999-2002	Argentina Argentina Argentina Germany Germany
					0.00	0.01	0.00	0.04	0.02	0.00	0.02	0.01	0.00	0.17	0.04	0.20	0.07	0.12	0.03	0.20	0.08	0.33	0.09	0.11	0.03	0.15	0.04	0.27	0.06	0.07	0.01	0.34	0.21	0.24	0.21										1999-2002	Germany Germany																

~Measured as Chrysene + Tryphenylene, * Measured as B(b+k)F, Measured as B(b+k+j)F, #Measured as D(ah+ac)A, n.d.= Non Detected

APPENDIX 24: COMPARISON TABLES

Table A24.13. Comparison results for in-Vehicle Microenvironment concentrations of PAH (ng/m³)

REFERENCE	COMMENTS	Acenaphthylene			Acenaphthene			Fluorene			Phenanthrene			Anthracene			Fluoranthene			Pyrene			Benzo(a)anthracene			Chrysene			Benzo(b)fluoranthene			Benzo(k)fluoranthene			Benzo(a)pyrene			Indeno(1,2,3-cd)pyrene			Dibenzo(a,h)anthracene			Benzo(ghi)perylene			Coronene			Total PAH			YEAR	COUNTRY
		AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med											
MATCH	Bus	4.23	2.51	5.06	n.d.	n.d.	n.d.	0.25	0.17	0.25	1.07	1.04	1.19	0.14	0.14	0.14	3.47	3.34	2.84	2.80	2.74	3.15	0.24	0.22	0.24	0.66	0.60	0.50	0.39	0.39	0.41	0.25	0.24	0.25	0.20	0.18	0.17	0.22	0.22	0.23	0.01	0.01	0.02	0.48	0.46	0.43	0.25	0.25	0.27	14.7	12.51	15.15	2006-2007	UK
	Car	2.42	1.09	2.32	0.68	0.23	0.39	1.06	0.26	1.06	0.89	0.71	0.97	0.15	0.14	0.16	2.63	2.56	2.78	2.53	2.42	2.57	0.20	0.20	0.21	0.62	0.61	0.55	0.66	0.63	0.63	0.23	0.18	0.21	0.25	0.22	0.22	0.29	0.25	0.25	0.01	0.00	0.01	0.47	0.42	0.46	0.21	0.15	0.18	13.3	10.1	13.0		
	Train	1.94	1.74	1.76	1.64	1.64	1.64	0.66	0.66	0.66	0.98	0.82	0.87	0.13	0.11	0.11	1.90	1.74	1.80	1.18	1.08	1.13	0.10	0.07	0.07	0.28	0.25	0.21	0.18	0.13	0.13	0.10	0.07	0.10	0.10	0.04	0.10	0.11	0.09	0.10	n.d.	n.d.	n.d.	0.12	0.09	0.11	0.05	0.05	0.05	9.5	8.58	8.84		
Sabin et al 2004	Bus Open windows Urban Route PM2.5																																											170	140	2002	USA							
	Bus Closed windows Urban Route PM2.5																																											88.5	33.5									
	Bus Closed windows Rural Route PM2.5																																											36	17									
Leutwyler et al 2002	Train NoETS																																														41		2000	Switzerland				
	Train ETS																																											264										
Fromme et al 1998	Car Summer																																														10.2	7.3	1995-1996	Germany				
	Car Winter																																											28.7	22.8									
	Underground Summer																																											30.2	28.6									
	Underground Winter																																											67.5	62.3									

~Measured as Chrysene + Tryphenylene, * Measured as B(b+k)F, Measured as B(b+k+j)F, #Measured as D(ah+ac)A, n.d.= Non Detected

APPENDIX 24: COMPARISON TABLES

Table A24.14. Comparison results for Indoor Microenvironment concentrations of PAH (ng/m³)

REFERENCE	COMMENTS	Acenaphthylene			Acenaphthene			Fluorene			Phenanthrene			Anthracene			Fluoranthene			Pyrene			Benzo(a)anthracene			Chrysene			Benzo(b)fluoranthene			Benzo(k)fluoranthene			Benzo(a)pyrene			Indeno(1,2,3-cd)pyrene			Dibenz(a,h)anthracene			Benzo(ghi)perylene			Coronene			Total PAH			YEAR	COUNTRY
		AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med	AM	GM	Med											
MATCH	Pub Restaurant	2.05 1.17	1.46 0.42	1.41 0.48	0.72 1.23	0.41 0.62	0.33 1.27	0.35 1.79	0.29 1.20	0.23 1.08	0.90 0.36	0.60 0.14	0.63 0.27	0.19 0.09	0.16 0.04	0.16 0.08	2.33 1.00	1.78 0.67	1.74 0.71	1.55 0.58	1.07 0.37	0.94 0.38	1.82 0.15	0.63 0.12	0.66 0.10	4.59 0.55	2.00 0.62	1.79 0.40	1.79 0.41	0.92 0.48	0.78 0.32	1.53 0.35	0.82 0.40	0.67 0.26	1.45 0.25	0.62 0.27	0.45 0.12	0.64 0.22	0.35 0.26	0.29 0.17	0.41 0.07	0.16 0.06	0.11 0.03	1.21 0.35	0.64 0.03	0.38 0.03	0.32 0.15	0.20 0.16	0.22 0.15	21.9 8.7	12.1 5.9	10.8 5.9	2005-2007	UK
Bolte et al 2007	Restaurant PM2.5 Pub PM2.5 Discotheque PM2.5	30.7 59.3 68.8	25.1 45.7 66.1	23.9 43.4 45.5	20.6 27.2 40	23.5 37.6 50.9	20.8 29.6 49.2	44 62.6 67.5	40.7 56 66.5	5.9 11.6 11.1	5.1 9.4 10.7	6.6 10.5 10.8	6.2 8.6 10.4	8.5 11.2 13	8.1 9.5 12.9	1.4 4.3 4.6	0.9 2.1 3.7	4 10.8 13.9	3.1 5.8 12.2	3.6* 6.4* 5.7*	2.8* 4.6* 4.1*					1.7 3.8 4.8	1.3 2.2 3.9	1.4 1.8 2.3	1.1 1.2 1.8	0.3 0.6 0.6	0.2 0.3 0.5	1.2 1.8 2.1	0.9 1.2 1.9															2005-2006	Germany					
Fiala et al 2001	Kindergarten Summer Polluted Kindergarten Summer Non Kindergarten winter Polluted Kindergarten winter Non													2.53 0.47 0.63 0.33																																18.2 2.73 5.2 2.07	2000	Czech Republic						
Levy et al 2002	Coffee Shop Food Court Hospital Library Mall																																														0.6 1.2 0.4 0.4 1.4	2000	USA					

~Measured as Chrysene + Tryphenylene, * Measured as B(b+k)F, Measured as B(b+k+j)F, #Measured as D(ah+ac)A, n.d.= Non Detected

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APPENDIX 24: COMPARISON TABLES

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