Table S1. Summary of individual oxy-PAH compounds identified in A) ambient measurements; B) direct emissions; and C) reaction product studies

	A Ambient Measurements			B Direct Emissions		C Laboratory Reaction Products		
Compound	**Location**	**Details**	**Reference**	**Details**	**Reference**	**Reactants**	**Conditions**	**Reference**
1,2-Naphthoquinone	California, USA	PM2.5, urban area	Cho et al.[401]	Diesel Exhaust Particles	Cho et al.[401]			
	Fresno, California, USA	Atmospheric particles	Chung et al.[402]	Diesel and gasoline vehicle exhaust	Jakober et al.[433]			
	Southern California, USA	Gas and particulate phase	Eiguren-Fernadez et al.[404]					
	Athens, Greece	Airborne particles	Valavandis et al.[423]					
1,4-Naphthoquinone	Boston, USA	Atmospheric particles – urban area	Allen et al.[398]	Diesel Exhaust Particles	Cho et al.[401]	Naphthalene + OH	Gas-phase	Sasaki et al.[182]
	California, USA	PM2.5, urban areas	Cho et al.[401]	Fireplace wood combustion	Fine et al.[427]	Naphthalene + NO_3	Gas-phase	Sasaki et al.[182]
	Fresno, California, USA	Atmospheric particles	Chung et al.[402]	Diesel and gasoline vehicle exhaust	Jakober et al.[433]	Naphthalene + OH	Gas-phase	Bunce et al.[183]
	Tempe, Arizona, USA	PM2.5, urban area	Delhomme et al.[403]	Diesel vehicles	Oda et al.[434]	Naphthalene + OH	Gas-phase	Lee and Lane[181]
	Southern California, USA	Gas and particulate phase	Eiguren-Fernadez et al.[404]	Gasoline vehicles	Oda et al.[434]	Naphthalene + OH	Gas-phase	Kautzman et al.[184]
	Augsburg, Germany	Particulate and vapour-phase	Liu et al.[410]	Roadway tunnel (traffic emissions)	Oda et al.[434]			
	Paris, France	Particulate Matter	Nicol et al.[413]	Roadway tunnel (traffic emissions)	Oda et al.[435]			
	Santiago and Temuco, Chile	PM2.5, urban areas	Tsapakis et al.[422]					
	Santiago, Chile	PM10, Urban area	Sienra[418]					
	Augsberg, Germany	PM2.5, urban area	Sklorz et al.[420]					
	Athens, Greece	Airborne particles	Valavandis et al.[423]					
2-Methyl-1,4,-Naphthoquinone				Diesel and gasoline vehicle exhaust	Jakober et al.[433]			
2,3-Epoxynaphthoquinone						Naphthalene + OH	Gas-phase	Sasaki et al.[182]
1- / 2-Naphthol	Taiyuan, China	Atmospheric particles	Simoneit et al.[419]	Agricultural burning	Hays et al.[430]	Naphthalene + OH	Gas-phase	Atkinson et al.[162]
						Naphthalene + OH	Gas-phase	Bunce et al.[183]
						Naphthalene + OH	Gas-phase	Lee and Lane[181]
						Naphthalene + OH	Gas-phase	Sasaki et al.[182]
						Naphthalene + NO_3	Gas-phase	Sasaki et al.[182]

Methyl-naphthol isomers	Taiyuan, China	Atmospheric particles	Simoneit et al.[419]	Wood combustion Agricultural burning Charcoal production	Fitzpatrick et al.[428] Hays et al.[430] Re-Poppi and Santiago-Silva[437]			
Dimethyl-naphthol isomers	Taiyuan, China	Atmospheric particles	Simoneit et al.[419]					
Phthalic anhydride						Naphthalene + OH Naphthalene + OH	Gas-phase Gas-phase	Sasaki et al.[182] Lee and Lane[187]
1,3-idene-dione						Naphthalene + OH	Gas-phase	Lee and Lane[187]
2_Formylcinnamaldehyde						Naphthalene + OH Naphthalene + OH Naphthalene + OH Naphthalene + OH Naphthalene + OH	Gas-phase Gas-phase Gas-phase Gas-phase Gas-phase	Bunce et al.[183] Kautzman et al.[184] Nishino et al.[166] Sasaki et al.[182] Wang et al.[221]
2-Naphthalenecarboxylic acid				Uncontrolled domestic waste combustion	Sidhu et al.[444]			
Naphthalene-1,8-dicarboxylic acid	Columbus, USA Duisberg, Germany Munich, Germany Houston, Texas	Airborne particles, residential area Airborne particulate matter Ambient air samples, particulate-phase Ambient air, particulate- and gas-phase	Chuang et al.[383] Konig et al.[407] Schnelle-Kries et al.[417] Wilson et al.[384]	Diesel and gasoline vehicle exhaust	Jakober et al.[433]	Acenaphthene + OH Acenaphthylene + OH	Gas-phase Gas-phase	Reisen and Arey[155] Reisen and Arey[155]
1-/2-Naphthaldehyde	Marseilles, France Alpine Valley locations, France	Urban, sub-urban and rural regions Particulate and vapour-phase	Albinet et al.[133] Albinet et al.[388]	Roadway tunnel (traffic emissions) Charcoal production	Oda et al.[435] Re-Poppi and Santiago-Silva[437]			
5,12-Naphthacenequinone	Augsburg, Germany Santiago, Chile	PM2.5 PM10, Urban area	Schnelle-Kreis et al.[416] Sienra[418]	Diesel vehicles Gasoline vehicles Sintering furnace Coal powder Roadway tunnel (traffic emissions)	Oda et al.[434] Oda et al.[434] Oda et al.[434] Oda et al.[434] Oda et al.[434]			
Acenaphthoquinone	Fresno, California, USA Tempe, Arizona, USA Nevada, USA Paris, France	Atmospheric particles PM2.5 Particulate Matter Particulate Matter	Chung et al.[402] Delhomme et al.[403] McDonald et al.[411] Nicol et al.[413]	Diesel and gasoline vehicle exhaust Diesel vehicles Gasoline vehicles Road tunnel (traffic emissions)	Jakober et al.[433] Oda et al.[434] Oda et al.[434] Oda et al.[434]			

	Santiago and Temuco, Chile	PM2.5, urban areas	Tsapakis et al.[422]	Roadway tunnel (traffic emissions)	Oda et al.[435]			
1-Acenaphthenone	Boston, USA	Atmospheric particles – urban area	Allen et al.[398]	Wood combustion	Fitzpatrick et al.[428]			
Acenapthylene-1,2-dione	Paris, France	Particulate Matter	Nicol et al.[413]					
1,2-Naphthalic anhydride						Phenanthrene + OH	Gas-phase	Lee and Lane[187]
1,8-Naphthalic anhydride	Boston, USA Tokyo, Japan Melpitz, Germany Gwangju, Korea Munich, Germany Santiago and Temuco, Chile	Atmospheric particles – urban area Urban particulate matter, urban region Fine particles (PM0.14-0.42) PM2.5 Airborne particles, urban area PM2.5, urban areas	Allen et al.[398] Kojima et al.[387] Neususs et al.[412] Park et al.[414] Schnelle-Kries et al.[417] Tsapakis et al.[422]			Acenaphthene + OH	Gas-phase	Reisen and Arey[155]
1,4-Phenanthrequinone						Phenanthrene + OH	Gas-phase	Lee and Lane[187]
9,10-Phenanthrequinone	Boston, USA Athens, Greece Tempe, Arizona, USA Los Angeles Basin, USA Southern California, USA Nagasaki, Japan Munich, Germany Munich, Germany Santiago and Temuco, Chile	Atmospheric particles – urban area Coarse and fine organic PM, two urban sites PM2.5 Particle phase. Gas and particulate phase Particulate phase, Urban site Generated soot particles; and road-side air PM2.5, road-side air samples PM2.5, urban areas	Allen et al.[398] Andreou and Rapsomanikis[225] Delhomme et al.[403] Eiguren-Fernadez et al.[390] Eiguren-Fernadez et al.[404] Kishikawa et al.[405] Lintelmann et al.[408] Lintelmann et al.[409] Tsapakis et al.[422]	Diesel Exhaust Particles Diesel and gasoline vehicle exhaust Gasoline and diesel vehicle exhausts Brake lining particles Road dust particles Natural gas home appliances Wood burning in residential fireplaces	Cho et al.[401] Jakober et al.[433] Rogge et al.[440] Rogge et al.[439] Rogge et al.[439] Rogge et al.[438] Rogge et al.[442]	Phenanthrene + OH Phenanthrene + OH Phenanthrene + NO_3 Phenanthrene + O_3	Gas-phase Gas-phase Gas-phase Gas-phase	Lee and Lane[187] Wang et al.[221] Wang et al.[221] Wang et al.[221]
9,10-Anthraquinone	Marseilles, France Alpine Valley locations, France Pertouli, Greece Athens, Greece Barcelona, Spain	Urban, sub-urban and rural regions Particulate and vapour-phase Particulate Matter Coarse and fine organic PM, two urban sites Airborne particulate matter	Albinet et al.[133] Albinet et al.[388] Alves and Pio[399] Andreou and Rapsomanikis[225] Bayona et al.[381]	Diesel Exhaust Particles Fireplace wood combustion Wood combustion Motor vehicle traffic, Roadway tunnel Agricultural burning	Cho et al.[401] Fine et al.[427] Fitzpatrick et al.[428] Fraser et al.[429] Hays et al.[430]	Anthracene + NO_2 Anthracene + NO_2 Anthracene + O_3 Anthracene + O_3 Anthracene + O_3	Particle-phase, Silica Particle-phase, MgO Particle-phase, Pyrex Particle, air-aqueous interface Particle-phase, silica	Ma et al.[278] Ma et al.[278] Kwamena et al.[292] Mmereki et al.[294] Perraudin et al.[303]

	Barcelona, Spain	Urban aerosols	Castells et al.[400]	Biomass burning	Iinuma et al.[431]	Anthracene + NO_3	Particle-phase, azailic acid	Zhang et al.[259]
	Fresno, California, USA	Atmospheric particles	Chung et al.[402]	Diesel and gasoline vehicle exhaust	Jakober et al.[433]			
	Tempe, Arizona, USA	PM2.5	Delhomme et al.[403]	Diesel vehicles	Oda et al.[434]			
	Southern California, USA	Gas and particulate phase	Eiguren-Fernadez et al.[404]	Gasoline vehicles	Oda et al.[434]			
	Tokyo, Japan	Urban particulate matter, urban region	Kojima et al.[387]	Road tunnel (traffic emissions)	Oda et al.[434]			
	Duisberg, Germany	Airborne particulate matter	Konig et al.[407]	Sintering furnace	Oda et al.[434]			
	Portland, Oregon, USA	Gas and particulate phase	Ligocki and Pankow[426]	Coal powder	Oda et al.[434]			
	Augsburg, Germany	Particulate and vapour-phase	Liu et al.[410]	Roadway tunnel (traffic emissions)	Oda et al.[435]			
	Paris, France	Particulate Matter	Nicol et al.[413]	Gasoline and diesel vehicle exhausts	Rogge et al.[440]			
	Copenhagen, Denmark	Airborne PM	Nielsen et al.[12]	Road dust particles	Rogge et al.[439]			
	Munich, Germany	Ambient air samples, particulate-phase	Schnelle-Kries et al.[417]	Brake lining particles	Rogge et al.[439]			
	Augsburg, Germany	PM2.5	Schnelle-Kreis et al.[416]	Natural gas home appliances	Rogge et al.[438]			
	Santiago, Chile	PM10	Sienra[418]	Distillate fuel oil combustion for Industrial-scale boilers	Rogge et al.[441]			
	Stockholm, Sweden	Airborne Particulates, heavy traffic area	Strandell et al.[421]	Gasoline and diesel vehicle exhausts	Sidhu et al.[444]			
	Santiago and Temuco, Chile	PM2.5, urban areas	Tsapakis et al.[422]	Uncontrolled domestic waste combustion	Sidhu et al.[444]			
	Finokalia, Crete	Particulate and vapour-phase, Mediterranean marine background	Tsapakis et al.[377]	Gasoline and diesel vehicle exhausts	Strandell et al.[421]			
	Algiers, Algeria	Airborne particulates, urban area	Yassaa et al.[424]	Diesel exhaust	Zielinska et al.[446]			
2-Methylanthraquinone	Athens, Greece	Coarse and fine organic PM, two urban sites	Andreou and Rapsomanikis[225]	Roadway tunnel (traffic emissions)	Oda et al.[435]			
	Barcelona, Spain	Urban aerosols	Castells et al.[400]	Diesel vehicles	Oda et al.[434]			
	Tempe, Arizona, USA	PM2.5	Delhomme et al.[403]	Gasoline vehicles	Oda et al.[434]			
				Road tunnel (traffic emissions)	Oda et al.[434]			
				Sintering furnace	Oda et al.[434]			
				Coal powder	Oda et al.[434]			
				Natural gas home appliances	Rogge et al.[438]			
				Lignite combustion	Stefanova et al.[445]			
Aceanthraquinone	Fresno, California, USA	Atmospheric particles	Chung et al.[402]	Fireplace wood combustion	Fine et al.[427]			
	Tempe, Arizona, USA	PM2.5	Delhomme et al.[403]	Diesel and gasoline vehicle exhaust	Jakober et al.[433]			
	Santiago, Chile	PM10, Urban area	Sienra[418]	Roadway tunnel (traffic emissions)	Oda et al.[435]			
9-Anthraldehyde				Roadway tunnel (traffic emissions)	Oda et al.[435]			
				Fireplace wood combustion	Fine et al.[427]			
10H-Anthracene-9-one (Anthrone)	Athens, Greece	Coarse and fine organic PM, two urban sites	Andreou and Rapsomanikis[225]	Diesel vehicles	Oda et al.[434]			

	Paris, France	Particulate Matter	Nicol et al.[413]	Gasoline vehicles	Oda et al.[434]			
	Augsburg, Germany	PM2.5	Schnelle-Kreis et al.[416]	Sintering furnace	Oda et al.[434]			
	Santiago, Chile	PM10, Urban area	Sienra[418]					
9- Fluorenone	Marseilles, France	Urban, sub-urban and rural regions	Albinet et al.[133]	Wood combustion	Fitzpatrick et al.[428]	Phenanthrene + OH	Gas-phase	Lee and Lane[187]
	Alpine Valley locations, France	Particulate and vapour-phase	Albinet et al.[388]	Motor vehicle traffic, Roadway tunnel	Fraser et al.[429]	Phenanthrene + OH	Gas-phase	Wang et al.[221]
	Boston, USA	Atmospheric particles – urban area	Allen et al.[398]	Agricultural burning	Hays et al.[430]	Phenanthrene + NO_3	Gas-phase	Wang et al.[221]
	Athens, Greece	Coarse and fine organic PM, two urban sites	Andreou and Rapsomanikis[225]	Biomass burning	Iinuma et al.[431]	Phenanthrene + O_3	Gas-phase	Wang et al.[221]
	Barcelona, Spain	Airborne particulate matter	Bayona et al.[381]	Diesel and gasoline vehicle exhaust	Jakober et al.[433]	Fluorene + OH	Gas-phase	Helmig et al.[178]
	Barcelona, Spain	Urban aerosols	Castells et al.[400]	Roadway tunnel (traffic emissions)	Oda et al.[435]	Fluorene + OH	Gas-phase	Kwok et al.[177]
	Columbus, USA	Airborne particles, residential area	Chuang et al.[383]	Diesel vehicles	Oda et al.[434]	Fluorene + NO_3	Gas-phase	Kwok et al.[177]
	Tokyo, Japan	Urban particulate matter, urban region	Kojima et al.[387]	Gasoline vehicles	Oda et al.[434]			
	Duisberg, Germany	Airborne particulate matter	Konig et al.[407]	Road tunnel (traffic emissions)	Oda et al.[434]			
	Portland, Oregon, USA	Gas and particulate phase	Ligocki and Pankow[426]	Sintering furnace	Oda et al.[434]			
	Augsburg, Germany	Particulate and vapour-phase	Liu et al.[410]	Coal powder	Oda et al.[434]			
	Paris, France	Particulate Matter	Nicol et al.[413]	Charcoal production	Re-Poppi and Santiago-Silva[437]			
	Campo Grande City, Brazil	Particulate matter, ambient air	Re-Poppi and Santiago-Silva[415]	Uncontrolled domestic waste combustion	Sidhu et al.[444]			
	Munich, Germany	Particulate-phase	Schnelle-Kries et al.[417]	Diesel exhaust	Sidhu et al.[444]			
	Augsburg, Germany	PM2.5	Schnelle-Kreis et al.[416]	Lignite combustion	Stefanova et al.[445]			
	Santiago, Chile	PM10, Urban area	Sienra[418]	PM 2.5 from motor vehicles	Rao et al.[436]			
	Santiago and Temuco, Chile	PM2.5, Urban areas	Tsapakis et al.[422]	Gasoline and diesel vehicle exhausts	Rogge et al.[440]			
	Finokalia, Crete	Particulate and vapour-phase, Mediterranean marine background	Tsapakis et al.[377]	Brake lining particles	Rogge et al.[439]			
				Road dust particles	Rogge et al.[439]			
				Natural gas home appliances	Rogge et al.[438]			
				Distillate fuel oil combustion for Industrial-scale boilers	Rogge et al.[441]			
				Diesel and gasoline-fuelled vehicles	Zielinska et al.[446]			
2-Methyl-fluoren-9-one				Gasoline and diesel vehicle exhausts	Rogge et al.[440]			
				Brake lining particles	Rogge et al.[439]			
				Road dust particles	Rogge et al.[439]			
				Natural gas home appliances	Rogge et al.[438]			
				Distillate fuel oil combustion for Industrial-scale boilers	Rogge et al.[441]			

4-Hydroxy-9-fluorenone				Wood combustion	Fitzpatrick et al.[428]			
1-H-phenalen-1-one	Augsburg, Germany Campo Grande City, Brazil Augsburg, Germany	Particulate and vapour-phase Particulate matter, ambient air PM2.5	Liu et al.[410] Re-Poppi and Santiago-Silva[415] Schnelle-Kreis et al.[416]	Agricultural burning Wood combustion Charcoal production Natural gas home appliances Wood burning in residential fireplaces Uncontrolled domestic waste combustion	Hays et al., 2005 Fitzpatrick et al.[428] Re-Poppi and Santiago-Silva[437] Rogge et al.[438] Rogge et al.[442] Sidhu et al.[444]			
Phenanthrene-9-carboxaldehyde	Marseilles, France Alpine Valley locations, France Athens, Greece Santiago, Chile	Urban, sub-urban and rural regions Particulate and vapour-phase Coarse and fine organic PM, two urban sites PM10, Urban area	Albinet et al.[133] Albinet et al.[388] Andreou and Rapsomanikis[225] Sienra[418]	Diesel vehicles Gasoline vehicles Road tunnel (traffic emissions) Sintering furnace Coal powder	Oda et al.[434] Oda et al.[434] Oda et al.[434] Oda et al.[434] Oda et al.[434]	Anthracene + O_3	Particle-phase, silica	Perraudin et al.[303]
Phenanthrene-4,5-dicarboxaldehyde						Pyrene + O_3	Particle-phase, silica	Miet et al.[297]
Cyclopentaphenanthrenone	Pertouli, Greece Athens, Greece Augsburg, Germany Augsburg, Germany Santiago and Temuco, Chile Algiers, Algeria	Particulate Matter Coarse and fine organic PM, two urban sites Particulate and vapour-phase PM2.5 PM2.5, urban areas Airborne particulates, urban area	Alves and Pio[399] Andreou and Rapsomanikis[225] Liu et al.[410] Schnelle-Kreis et al.[416] Tsapakis et al.[422] Yassaa et al.[424]	Charcoal production Gasoline and diesel vehicle exhausts Brake lining particles Road dust particles Natural gas home appliances Uncontrolled domestic waste combustion Lignite combustion	Re-Poppi and Santiago-Silva[437] Rogge et al.[440] Rogge et al.[439] Rogge et al.[439] Rogge et al.[438] Sidhu et al.[444] Stefanova et al.[445]			
Cyclopenta[cd]pyrene-3(4H)-one	Augsburg, Germany	Particulate and vapour-phase	Liu et al.[410]					
Dibenzopyranone						Phenanthrene + OH Phenanthrene + NO_3 Phenanthrene + O_3	Gas-phase Gas-phase Gas-phase	Wang et al.[221] Wang et al.[221] Wang et al.[221]
2,2'-diformylbiphenyl						Phenanthrene + OH	Gas-phase	Wang et al.[221]

						Phenanthrene + NO_3	Gas-phase	Wang et al.[221]
						Phenanthrene + O3	Gas-phase	Wang et al.[221]
4-oxapyren-5-one						Pyrene + O_3	Particle-phase, silica	Miet et al.[297]
Pyrene-4,5-dione	Tempe, Arizona, USA	PM2.5, urban area	Delhomme et al.[403]					
1-hydroxypyrene						Pyrene + O_3	Particle-phase, silica	Miet et al.[297]
1-Pyrenecarboxaldehyde	Pertouli, Greece	Particulate Matter	Alves and Pio[399]					
	Athens, Greece	Coarse and fine organic PM, two urban sites	Andreou and Rapsomanikis[225]					
	Munich, Germany	Ambient air samples, particulate-phase	Schnelle-Kries et al.[417]					
	Santiago, Chile	PM10, Urban area	Sienra[418]					
	Houston, Texas	Ambient air, particulate- and gas-phase	Wilson et al.[384]					
Pyrene-3,4-dicarboxylic acid anhydride	Houston, Texas	Ambient air, particulate- and gas-phase	Wilson et al.[384]					
7H-benz[c]anthracen-7-one	Boston, USA	Atmospheric particles – urban area	Allen et al.[398]					
	Pertouli, Greece	Particulate Matter	Alves and Pio[399]					
7H-benz[de]anthracen-7-one (Benzanthrone)	Marseilles, France	Urban, sub-urban and rural regions	Albinet et al.[133]	Fireplace wood combustion	Fine et al.[427]			
	Alpine Valley locations, France	Particulate and vapour-phase	Albinet et al.[388]	Agricultural burning	Hays et al.[430]			
	Boston, USA	Atmospheric particles – urban area	Allen et al.[398]	Diesel vehicles	Oda et al.[434]			
	Athens, Greece	Coarse and fine organic PM, two urban sites	Andreou and Rapsomanikis[225]	Gasoline vehicles	Oda et al.[434]			
	Barcelona, Spain	Urban aerosols	Castells et al.[400]	Road tunnel (traffic emissions)	Oda et al.[434]			
	Tokyo, Japan	Urban particulate matter, urban region	Kojima et al.[387]	Sintering furnace	Oda et al.[434]			
	Duisberg, Germany	Airborne particulate matter	Konig et al.[407]	Coal powder	Oda et al.[434]			
	Portland, Oregon, USA	Gas and particulate phase	Ligocki and Pankow[426]	Gasoline and diesel vehicle exhausts	Rogge et al.[440]			
	Augsburg, Germany	Particulate and vapour-phase	Liu et al.[410]	Brake lining particles	Rogge et al.[439]			
	Paris, France	Particulate Matter	Nicol et al.[413]	Road dust particles	Rogge et al.[439]			
	Copenhagen, Denmark	Airborne PM	Nielsen et al.[12]	Natural gas home appliances	Rogge et al.[438]			
	Campo Grande City, Brazil	Particulate matter, ambient air	Re-Poppi and Santiago-Silva[415]	Distillate fuel oil combustion for industrial-scale boilers	Rogge et al.[441]			
	Augsburg, Germany	PM2.5	Schnelle-Kreis et al.[416]	Wood burning in residential fireplaces	Rogge et al.[442]			
	Stockholm, Sweden	Airborne Particulates, heavy traffic area	Strandell et al.[421]	Uncontrolled domestic waste combustion	Sidhu et al.[444]			
	Santiago and Temuco, Chile	PM2.5, urban areas	Tsapakis et al.[422]	Gasoline and diesel vehicle exhausts	Strandell et al.[421]			
	Algiers, Algeria	Airborne particulates, urban area	Yassaa et al.[424]	Lignite combustion	Stefanova et al.[445]			

1H-benz[de]anthracen-1-one				Gasoline and diesel vehicle exhausts	Rogge et al.[440]			
				Brake lining particles	Rogge et al.[439]			
				Road dust particles	Rogge et al.[439]			
				Natural gas home appliances	Rogge et al.[438]			
				Distillate fuel oil combustion for Industrial-scale boilers	Rogge et al.[441]			
				Wood burning in residential fireplaces	Rogge et al.[442]			
Benz[a]anthracene-7,12-dione	Marseilles, France	Urban, sub-urban and rural regions	Albinet et al.[133]	Motor vehicle traffic, Roadway tunnel	Fraser et al.[429]	$B(a)A + NO_3$	Particle-phase, azailic acid	Liu et al.[260]
	Alpine Valley locations, France	Particulate and vapour-phase	Albinet et al.[388]	Natural gas home appliances	Rogge et al.[438]	$B(a)A + NO_3$	Particle-phase, azailic acid	Zhang et al.[259]
	Athens, Greece	Coarse and fine organic PM, two urban sites	Andreou and Rapsomanikis[225]	Uncontrolled domestic waste combustion	Sidhu et al.[444]			
	Barcelona, Spain	Airborne particulate matter	Bayona et al.[381]	Lignite combustion	Stefanova et al.[445]			
	Barcelona, Spain	Urban aerosols	Castells et al.[400]					
	Columbus, USA	Airborne particles, residential area	Chuang et al.[383]					
	Tempe, Arizona, USA	PM2.5	Delhomme et al.[403]					
	Osaka, Japan	Airborne particles	Kameda et al.[425]					
	Duisberg, Germany	Airborne particulate matter	Konig et al.[407]					
	Portland, Oregon, USA	Gas and particulate phase	Ligocki and Pankow[426]					
	Augsburg, Germany	Particulate and vapour-phase	Liu et al.[410]					
	Paris, France	Particulate Matter	Nicol et al.[413]					
	Munich, Germany	Ambient air samples, particulate-phase	Schnelle-Kries et al.[417]					
	Augsburg, Germany	PM2.5	Schnelle-Kreis et al.[416]					
	Santiago, Chile	PM10, Urban area	Sienra[418]					
	Houston, Texas	Ambient air, particulate- and gas-phase	Wilson et al.[384]					
Benz[a]anthracene-9,10-dione	Athens, Greece	Coarse and fine organic PM, two urban sites	Andreou and Rapsomanikis[225]					
Chrysene-5,6-dione	Munich, Germany	Generated soot particles; and road-side air sample	Lintelmann et al.[408]					
	Munich, Germany	PM2.5, road-side air samples	Lintelmann et al.[409]					
Benzo[a]fluorenone	Marseilles, France	Urban, sub-urban and rural regions	Albinet et al.[133]					
	Alpine Valley locations, France	Particulate and vapour-phase	Albinet et al.[388]					
	Augsburg, Germany	PM2.5	Schnelle-Kreis et al.[416]					

Benzo[b]fluorenone	Marseilles, France Alpine Valley locations, France Tempe, Arizona, USA Campo Grande City, Brazil Augsburg, Germany	Urban, sub-urban and rural regions Particulate and vapour-phase PM2.5 Particulate matter, ambient air PM2.5	Albinet et al.[133] Albinet et al.[388] Delhomme et al.[403] Re-Poppi and Santiago-Silva[415] Schnelle-Kreis et al.[416]					
Benzo[c]fluorenone	Augsburg, Germany	PM2.5	Schnelle-Kreis et al.[416]					
11H-Benzo[a]fluorene-11-one	Boston, USA Duisberg, Germany Augsburg, Germany Munich, Germany Augsburg, Germany	Atmospheric particles – urban area Airborne particulate matter Particulate and vapour-phase Ambient air samples, particulate-phase PM2.5	Allen et al.[398] Konig et al.[407] Liu et al.[410] Schnelle-Kries et al.[417] Schnelle-Kreis et al.[416]					
11H-Benzo[b]fluorene-11-one	Boston, USA Duisberg, Germany Augsburg, Germany Munich, Germany Augsburg, Germany	Atmospheric particles – urban area Airborne particulate matter Particulate and vapour-phase Ambient air samples, particulate-phase PM2.5	Allen et al.[398] Konig et al.[407] Liu et al.[410] Schnelle-Kries et al.[417] Schnelle-Kreis et al.[416]					
Benzo[cd]pyrenone	Boston, USA Augsburg, Germany Stockholm, Sweden	Atmospheric particles – urban area Particulate and vapour-phase Airborne Particulates, heavy traffic area	Allen et al.[398] Liu et al.[410] Strandell et al.[421]	Motor vehicle traffic, Roadway tunnel Gasoline and diesel vehicle exhausts Brake lining particles Wood burning in residential fireplaces Gasoline and diesel vehicle exhausts	Fraser et al.[429] Rogge et al.[440] Rogge et al.[439] Rogge et al.[442] Strandell et al.[421]			
Benzo[a]pyrene-1,6-dione	Munich, Germany Munich, Germany Munich, Germany	Particulate matter Generated soot particles; and road-side air sample PM2.5, road-side air samples	Koeber et al.[406] Lintelmann et al.[408] Lintelmann et al.[409]			B(a)P + O_3	Particle-phase, filters	Letzel et al.[305]
Benzo[a]pyrene-3,6-dione	Munich, Germany Munich, Germany Munich, Germany	Particulate matter Generated soot particles; and road-side air sample PM2.5, road-side air samples	Koeber et al.[406] Lintelmann et al.[408] Lintelmann et al.[409]			B(a)P + O_3	Particle-phase, filters	Letzel et al.[305]
Benzo[a]pyrene-4,5-dione	Munich, Germany Munich, Germany	Generated soot particles; and road-side air sample PM2.5, road-side air samples	Lintelmann et al.[408] Lintelmann et al.[409]			B(a)P + O_3	Particle-phase, filters	Letzel et al.[305]

Benzo[a]pyrene-7,8-dione	Munich, Germany Munich, Germany	Generated soot particles; and road-side air sample PM2.5, road-side air samples	Lintelmann et al.[408] Lintelmann et al.[409]					
Benzo[a]pyrene-6,12-dione	Boston, USA Munich, Germany	Atmospheric particles – urban area Particulate matter	Allen et al.[398] Koeber et al.[406]			B(a)P + O_3	Particle-phase, filters	Letzel et al.[305]
Benzo[a]pyrene-11,12-dione	Munich, Germany	PM2.5, road-side air samples	Lintelmann et al.[409]					