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Supplement of

Characterization of ambient volatile organic compounds and their sources in Beijing, before, during, and after Asia-Pacific Economic Cooperation China 2014

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Table S1. Air quality control measures for APEC China 2014 ^a.

Target sources	Description of control measures
Vehicles controls	<ol style="list-style-type: none">1. Local vehicles: odd-even plate number rule was implemented in Beijing;2. Non-local vehicles: not allowed to drive throughout Beijing;3. Cargo trucks: not allowed to drive inside the sixth ring.
Industrial source controls	<ol style="list-style-type: none">1. High emissions factories and power plants: halted from production or cut their productions by 30% in Beijing and surrounding provinces;2. Construction sites: halted from operating in Beijing.
Solvent source controls	<ol style="list-style-type: none">1. Businesses of paint and solvent use: required to operate under sealed conditions, or totally halted from operating in Beijing and surrounding provinces.
others	<ol style="list-style-type: none">1. Declared a holiday for public-sector employees in Beijing.

^a (<http://www.bjepb.gov.cn/>)

1 **Table S2.** VOC species quantified by the GC-MS/FID system.

Alkanes (29)		Alkenes (9)	Aromatics (16)	OVOCs (17)	Halocarbons (27)	
Ethane	2,3-Dimethylpentane	Ethylene	Benzene	Acrolein	Freon11	1,1,2-Trichloroethane
Propane	2,2,4-Trimethylpentane	Propene	Toluene	Propanal	Freon113	1,2-Dibromoethane
Isobutane	2,2-Dimethylbutane	trans-2-Butene	Ethylbenzene	Acetone	Bromomethane	Chlorobenzene
n-Butane	2,3-Dimethylbutane	1-Butene	m/p-Xylene	MTBE	Chloroethane	1,1,1-Trichloroethane
Cyclopentane	Methylcyclohexane	cis-2-Butene	o-Xylene	Methacrolein	Bromoform	1,1,2,2-Tetrachloroethane
Isopentane	2,3,4-Trimethylpentane	trans-2-Pentene	Styrene	n-Butanal	1,1-Dichloroethylene	1,3-Dichlorobenzene
n-Pentane	2-Methylheptane	Isoprene	Isopropylbenzene	Methylvinylketone	Dichloromethane	1,4-Dichlorobenzene
n-Nonane	3-Methylheptane	cis-2-Pentene	n-Propylbenzene	Methylethylketone	1,1-Dichloroethane	cis-1,2-Dichloroethylene
n-Heptane	2-Methylpentane	1-Hexene	3-Ethyltoluene	2-Pentanone	Benzylchloride	1,2-Dichlorobenzene
n-Hexane	3-Methylpentane		4-Ethyltoluene	n-Pentanal	Chloroform	Tetrachloroethane
n-Decane	3-Methylhexane		1,3,5-Trimethylbenzene	3-Pentanone	tetrachloromethane	
Octane	2-Methylhexane		2-Ethyltoluene	n-Hexanal	1,2-Dichloroethane	Alkynes (1)
Cyclohexane	2,4-Dimethylpentane		1,2,4-Trimethylbenzene	Methylacetate	Trichloroethylene	Acetylene
Udecane	Methylcyclopentane		1,2,3-Trimethylbenzene	Vinylacetate	1,2-Dichloropropane	Other (1)
Dodecane			1,3-Diethylbenzene	Ethylacetate	Bromodichloromethane	Acetonitrile
			1,4-Diethylbenzene	Methylmethacrylate	trans-1,3-Dichloropropene	
				n-Butylacetate	cis-1,3-Dichloropropene	

Table S3. A listing of the SOAP expressed relative to toluene =100 ^a.

Compound	SOAP _i	Compound	SOAP _i
Ethane	0.1	Trichloroethylene	0
Propane	0	1,2-Dichloropropane	0
Isobutane	0	Bromodichloromethane	0
n-Butane	0.3	trans-1,3-Dichloropropene	0
cyclopentane	0	cis-1,3-Dichloropropene	0
Isopentane	0.2	1,1,2-Trichloroethane	0
n-Pentane	0.3	Tetrachloroethylene	0
2,2-dimethylbutane	0	1,2-Dibromoethane	0
2,3-dimethylbutane	0	Chlorobenzene	0
2-methylpentane	0	Bromoform	0
3-methylpentane	0.2	1,1,2,2-Tetrachloroethane	0
n-hexane	0.1	1,3-Dichlorobenzene	0
2,4-dimethylpentane	0	1,4-Dichlorobenzene	0
methylcyclopentane	0	Benzylchloride	0
2-methylhexane	0	1,2-Dichlorobenzene	0
cyclohexane	0	acrolein	0
2,3-dimethylpentane	0.4	Propanal	0.5
3-methylhexane	0	Acetone	0.3
2,2,4-trimethylpentane	0	Methylacetate	0
n-heptane	0.1	MTBE	0
methylcyclohexane	0	Methacrolein	0
2,3,4-trimethylpentane	0	Vinylacetate	0
2-methylheptane	0	n-Butanal	0
3-methylheptane	0	Methylvinylketone	0
octane	0.8	Methylethylketone	0.6
n-nonane	1.9	Ethylacetate	0
n-decane	7	2-pentanone	0
Udecane	0	n-Pentanal	0
Dodecane	0	3-pentanone	0
Ethylene	1.3	Methylmethacrylate	0
Propene	1.6	n-Hexanal	0
trans-2-Butene	3.1	n-Butylacetate	0
1-Butene	1.2	Acetylene	0.1
cis-2-Butene	3.6	Acetonitrile	0
trans-2-pentene	3.1	benzene	92
isoprene	1.9	toluene	100
cis-2-pentene	3.1	ethylbenzene	111.6
1-hexene	0	m/p-xylene	78.7
Bromomethane	0	o-xylene	95.5
Chloroethane	0	styrene	212.3
Freon11(CFC13)	0	isopropylbenzene	95.5
Freon113(C2F3Cl3)	0	n-propylbenzene	109.7
1,1-Dichloroethylene	0	3-ethyltoluene	100.6
Dichloromethane	0	4-ethyltoluene	69.7
1,1-Dichloroethane	0	1,3,5-trimethylbenzene	13.5
cis-1,2-Dichloroethylene	0	2-ethyltoluene	94.8
Chloroform	0	1,2,4-trimethylbenzene	20.6
1,1,1-Trichloroethane	0	1,2,3-trimethylbenzene	43.9
tetrachloromethane	0	1,3-diethylbenzene	0
1,2-Dichloroethane	0	1,4-diethylbenzene	0

^a (Derwent et al., 2010)

Reference:

Derwent, R. G., Jenkin, M. E., Utembe, S. R., Shallcross, D. E., Murrells, T. P., and Passant, N. R.: Secondary organic aerosol formation from a large number of reactive man-made organic compounds, *Science Of the Total Environment*, 408, 3374-3381, [10.1016/j.scitotenv.2010.04.013](https://doi.org/10.1016/j.scitotenv.2010.04.013), 2010.