APPENDIX A

A-1 Calculation of pollutant gases in passive sampler

According to Fick's low, the concentration of gases in passive sampler in $\mu g/m^3$ unit is calculated as follow:

$$C = \left[\frac{Q \times L}{A \times t \times D} \right]$$

Where:

C = concentration measured by passive sampling tube ($\mu g/m^3$)

Q = quantity of absorption products present in the sampler (μg)

L = diffusion length (m)

A = cross-sectional area (m^2) = πr^2

t = sampling time (s)

D = diffusion coefficient (m^2/s)

The diffusion coefficient of nitrogen dioxide in air must be corrected to average ambient temperature (K) during sampling period, according to equation

A-2 Quantity of absorption products in the sampler (Q)

Q value of NO_2 determination was calculated by multiplication NO_2^- concentration obtained from calibration curve (ppm) with 2 (2 ml of extraction volume). The NO_2^- in ppm unit was converted to the total amount of NO_2 in passive sampler in μg unit.

$$Q\ (\mu g) = NO_2^-\ \text{concentration (ppm)} * 2\ \text{ml}$$

A-3 Unit conversions

Mass per unit volume: usually μg/m^3. The mass of pollutant is expressed as a ratio to the volume of air. Since the volume of a given parcel of air is depended upon the temperature and pressure at the time sampling, the pollutant concentration expressed in these units, should, strictly speaking, specify the conditions at the time of sampling.

Volume mixing ratio: usually ppm-part per million (10^{-6}); or ppb–part per billion (10^{-9}). This unit expressed the concentration of a pollutant as ratio of its volume if segregated pure, to the volume of the air in which it is contained. Ideal gas behavior is assumed thus the concentration is not depended on temperature and pressure as these affect both the pollutant and air to the same extent. As a consequence of the gas laws, a gas present at a volume mixing ratio of 1 ppm is not only 1 $cm^3/10^6$ cm^3 of polluted air, it is also 1 molecule per 10^{-6} molecules and has a partial pressure of one millionth of the atmospheric pressure.

Conversion factors

$$ppbv = \mu g/m^3 \times \frac{molecular\ volume\ (liters)}{molecular\ weight}$$

Where:

$$molecular\ volume = 22.41 \times \frac{T}{273} \times \frac{101.3}{P}$$

T = absolute temperature (K) (Remember that Celcius+273 = Kelvin)

P = atmospheric pressure (kPa) (Remember that 1 atm = 760 mmHg, 1 atm = 101.3 kPa and 1 torr = 133.322 Pa)

Similarly

$$\mu g/m^3 = ppbv \times \frac{molecular\ weight}{molecular\ volume\ (liters)}$$

APPENDIX B

B-1 Calculation of Minivol Portable Air Sampler flow calibration (Airmetrics, 2001)

Sampling site	:	2 Shrines, Chiang Mai city
Calibration date	:	07 February 2013
Time	:	15.30 am
Ambient temperature	:	302.8 K
Ambient barometric pressure	:	732.23 mmHg

1) Calculation of actual flow rate (Q_{act})

$$Q_{act} = m_{vol} \times \sqrt{\frac{\Delta H \times T_{act}}{P_{act}}} + b_{vol}$$

Where m_{vol} is a slope of linear regression of sampler calibration (5.7013)

b_{vol} is an intercept of linear regression of sampler calibration (-0.0548)

T_{act} is an ambient temperature (K)

P_{act} is an ambient barometric pressure (mmHg)

2) Calculation of standard correction flow rate ($Q_{@std}$)

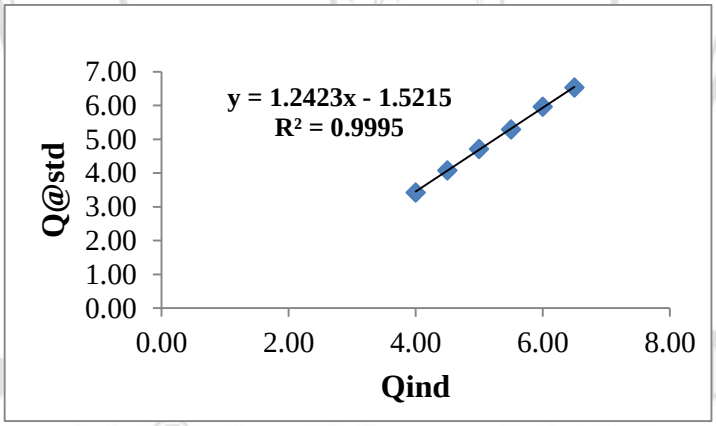
$$Q_{@std} = Q_{act} \times \sqrt{\frac{T_{std} \times P_{act}}{T_{act} \times P_{std}}}$$

Where T_{std} is a standard temperature (298.15 K)

P_{std} is a standard pressure (760 mmHg)

3) Calculation of sampler flow rate from the linear regression (Q_{calc})

Calculate Q_{calc} from linear regression of calibration curve, which constructed by plotting the different Q_{ind} of sampler flow rate versus $Q_{@std}$ obtained from calculation.



Example calculation for Q_{ind} 5.00

Y = 1.2423X – 1.5215

= 1.2423(5.00) – 1.5215

= 4.69 L/min

Q_{ind} (L/min)	ΔH (inches of water)	Q_{act} (L/min)	$Q_{@std}$ (L/min)	Q_{calc} (L/min)	Different (%)
4.00					
4.50					
5.00	1.79	4.8435	4.7164	4.8175	-0.54
5.50					
6.00					
6.50					

B-2 Calculation of $PM_{2.5}$ mass concentration (Airmetrics, 2001)

To calculate the $PM_{2.5}$ mass concentration for a sample taken with the Minivol Portable Air Sampler, the volume of air that passed through the filter must be calculated.

1) Calculate the volume of air that through the filter during the sampling period at actual ambient conditions, V_{act} (m^3)

$$V_{act} = \frac{60_{\ min/hrs} \times Q_{act} \times t_{hrs}}{1000_{L/m^3}}$$

Where t_{hrs} is a sampling period (hours)

2) Calculate the mass concentration of $PM_{2.5}$, divide the net mass gain of the filter by the volume of air that passed through the filter

$$PM_{act} = \frac{M_{PM}}{V_{act}}$$

Where PM_{act} is a $PM_{2.5}$ mass concentration ($\mu g/m^3$)

M_{PM} is a mass of $PM_{2.5}$ collected on the filter (μg)

Example calculation of $PM_{2.5}$ mass concentration (Date : 07 February 2013)

1) Calculate the actual flow rate (Q_{act})

$$Q_{act} = \left(5.7013 \times \sqrt{\frac{1.79 \times 302.8}{732.23}} \right) - 0.0548$$

$$= 4.843\, L/min$$

2) Calculate the volume of air (V_{act}) in period of 24 hours

$$V_{act} = \frac{60\ min/hrs \times 4.843\ L/min \times 24\ hrs}{1000\ L/m^3}$$

$$= 7.0\, m^3$$

3) Calculate $PM_{2.5}$ mass concentration

Pre-exposure weight = 141523 µg and Post-exposure weight = 142953 µg

$$PM_{act} = \frac{141523 - 142953\ \mu g}{7.0\, m^3}$$

$$= 204\ \mu g/m^3$$

APPENDIX C

Table C-1 Limit of detection (LOD) and limit of quantification (LOQ) of spectrophotometry for nitrite

Number of measurement	Absorbance	Nitrite concentration (µg/ml)
1	0.0026	0.012
2	0.0022	0.011
3	0.0025	0.011
4	0.0028	0.012
5	0.0032	0.013
6	0.0032	0.013
7	0.0032	0.013
8	0.0027	0.012
9	0.0026	0.012
10	0.0029	0.012
Average		**0.012**
Standard Deviation (SD)		**0.001**
DL (3×SD)		**0.003**
LOQ (10×SD)		**0.009**

Table C-2 Repeatability and Reproducibility of spectrophotometry for nitrite

No. of measurement	Repeatability (µg/ml)	Reproducibility (µg/ml)
1	0.202	0.195
2	0.195	0.200
3	0.200	0.201
4	0.201	0.200
5	0.200	0.192
6	0.220	0.177
7	0.213	0.196
Average	**0.200**	**0.199**
Standard Deviation (SD)	**0.003**	**0.003**
% RSD	**1.5**	**1.3**

Table C-3 Repeatability of standard preparation based on GC-MS analysis for PAHs

PAHs	Concentration (mg/L)							Average	SD	%RSD
	1	2	3	4	5	6	7			
NAP	0.024	0.026	0.025	0.025	0.025	0.026	0.024	0.025	0.001	3.8
ACY	0.019	0.021	0.019	0.020	0.020	0.020	0.019	0.020	0.001	3.3
ACE	0.022	0.025	0.023	0.024	0.024	0.024	0.023	0.024	0.001	4.3
FLU	0.021	0.030	0.028	0.028	0.027	0.027	0.028	0.027	0.003	10.0
PHE	0.017	0.018	0.016	0.016	0.018	0.018	0.017	0.017	0.001	4.0
ANT	0.021	0.020	0.021	0.022	0.022	0.022	0.020	0.021	0.001	4.0
FLA	0.019	0.020	0.018	0.020	0.020	0.019	0.019	0.019	0.001	3.8
PYR	0.020	0.020	0.019	0.021	0.021	0.020	0.019	0.020	0.001	3.1
BaA	0.021	0.019	0.021	0.020	0.020	0.022	0.019	0.020	0.001	5.0
CHR	0.029	0.026	0.028	0.028	0.027	0.031	0.027	0.028	0.002	6.1
BbF	0.021	0.019	0.018	0.018	0.019	0.018	0.019	0.019	0.001	4.8
BkF	0.021	0.023	0.020	0.020	0.020	0.022	0.021	0.021	0.001	4.6
BaP	0.014	0.016	0.016	0.016	0.016	0.015	0.014	0.015	0.001	6.0
IND	0.013	0.014	0.012	0.015	0.013	0.012	0.013	0.013	0.001	7.4
DbA	0.017	0.017	0.012	0.016	0.015	0.016	0.015	0.015	0.002	10.4
BPER	0.013	0.016	0.015	0.013	0.013	0.012	0.014	0.014	0.001	8.7

Table C-4 Reproducibility of standard preparation based on GC-MS analysis for PAHs

PAHs	Concentration (mg/L)							Average	SD	%RSD
	1	2	3	4	5	6	7			
NAP	0.022	0.022	0.020	0.024	0.023	0.025	0.023	0.023	0.001	6.0
ACY	0.020	0.018	0.018	0.019	0.020	0.021	0.019	0.019	0.001	5.7
ACE	0.022	0.020	0.018	0.022	0.023	0.025	0.022	0.022	0.002	10.6
FLU	0.019	0.023	0.024	0.026	0.027	0.030	0.026	0.025	0.003	13.5
PHE	0.019	0.017	0.017	0.019	0.018	0.019	0.016	0.018	0.001	6.7
ANT	0.019	0.017	0.017	0.020	0.023	0.021	0.020	0.020	0.002	10.0
FLA	0.019	0.017	0.017	0.018	0.022	0.020	0.018	0.019	0.002	9.2
PYR	0.020	0.017	0.018	0.019	0.021	0.020	0.018	0.019	0.001	7.6
BaA	0.016	0.017	0.020	0.022	0.016	0.019	0.020	0.019	0.002	11.6
CHR	0.016	0.020	0.023	0.026	0.020	0.024	0.025	0.022	0.003	15.1
BbF	0.017	0.018	0.019	0.021	0.016	0.016	0.018	0.018	0.002	10.8
BkF	0.016	0.017	0.018	0.021	0.017	0.021	0.020	0.019	0.002	10.7
BaP	0.019	0.017	0.017	0.017	0.014	0.015	0.014	0.016	0.002	10.9
IND	0.016	0.014	0.015	0.016	0.012	0.012	0.012	0.014	0.002	14.0
DbA	0.018	0.014	0.016	0.016	0.012	0.014	0.015	0.015	0.002	11.5
BPER	0.015	0.014	0.015	0.018	0.012	0.014	0.016	0.015	0.002	11.8

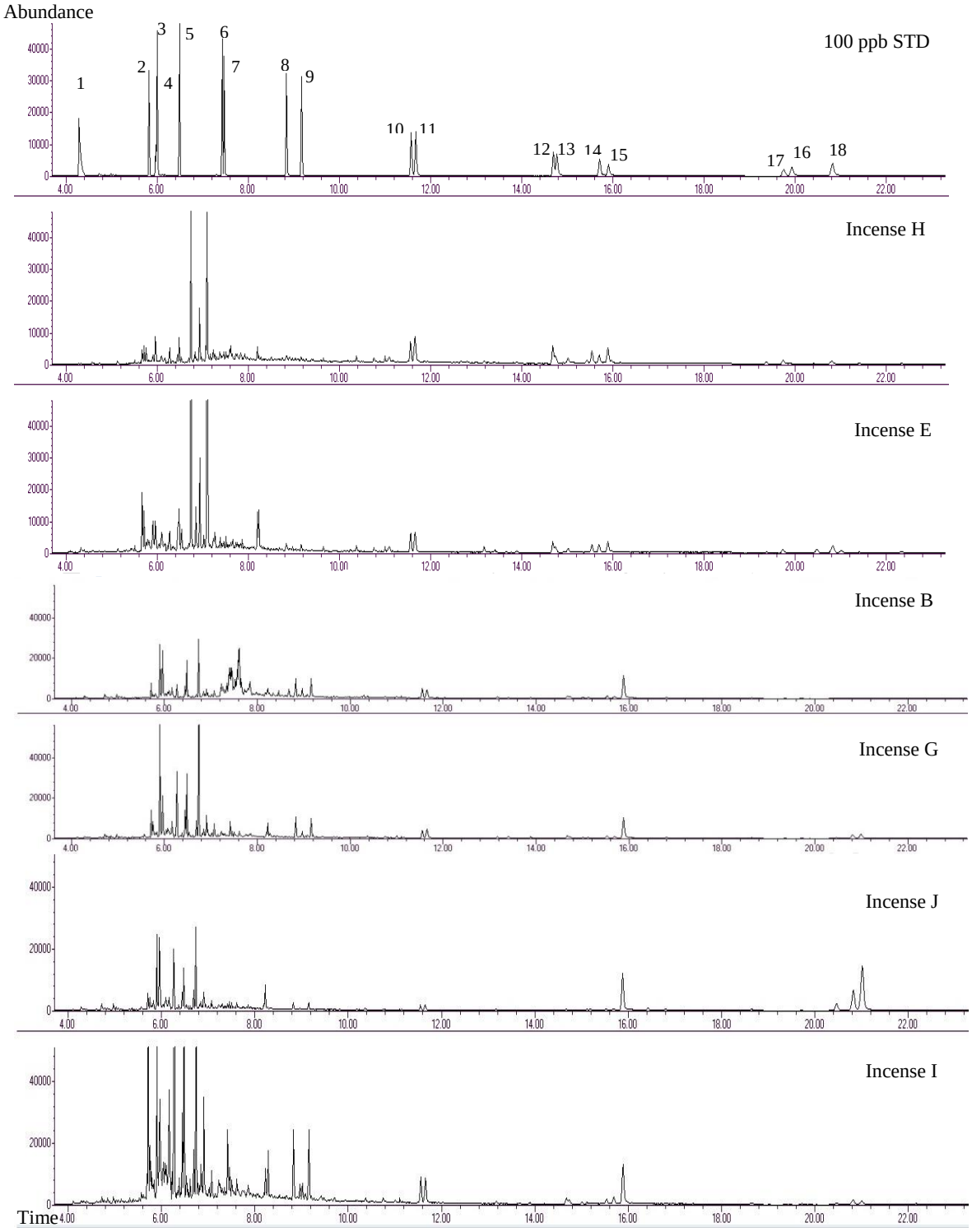


Figure C-1 Chromatogram of 16-PAHs obtained from incense burning in a chamber analyzed by GC-MS. The internal standards are marked with asterisk. Peaks: 1=NAP, 2=ACY, 3= D_{10}-ACE*, 4=ACE, 5=FLU, 6=PHE, 7=ANT, 8=FLA, 9=PYR, 10=BaA, 11=CHR, 12=BbF, 13=BkF, 14=BaP, 15= D12-PER*, 16=IND, 17=DBA and 18=BPER

AFFENDIX D

Table D-1 Concentration (g/kg) of $PM_{2.5}$ and gas pollutants emitted from incense burning in a chamber.

pollutants	number of sample (n=3)	Types of incense									
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**
$PM_{2.5}$	1	5.23	7.17	13.24	15.03	17.56	12.90	9.31	3.56	16.87	24.59
	2	5.08	6.97	15.94	13.46	17.16	12.50	9.74	3.58	21.61	32.77
	3	4.82	7.26	12.16	16.03	18.93	13.56	9.83	3.19	23.90	32.63
	Mean	**5.05**	**7.13**	**13.78**	**14.84**	**17.88**	**12.98**	**9.63**	**3.44**	**20.79**	**30.00**
	SD	**0.21**	**0.15**	**1.94**	**1.29**	**0.93**	**0.53**	**0.28**	**0.22**	**3.59**	**4.69**
CO	1	94.70	165.64	149.59	147.98	94.52	133.85	138.06	139.04	116.93	128.54
	2	88.97	181.28	140.46	127.06	108.33	144.26	145.23	129.76	105.36	118.44
	3	91.90	174.03	135.57	153.59	95.28	131.24	143.79	138.08	112.49	139.84
	Mean	**91.86**	**173.65**	**141.88**	**142.88**	**99.38**	**136.45**	**142.36**	**135.63**	**111.59**	**128.94**
	SD	**2.86**	**7.83**	**7.12**	**13.98**	**7.76**	**6.89**	**3.79**	**5.10**	**5.84**	**10.71**

Table D-1 Concentration (g/kg) of $PM_{2.5}$ and gas pollutants emitted from incense burning in a chamber (continued).

pollutants	number of sample (n=3)	Incense A	Incense B	Incense C	Incense D	Incense E	Incense F	Incense G	Incense H	Incense I	Incense J
NO	1	1.24	0.69	2.10	2.03	3.31	1.62	1.91	ND	2.25	1.39
	2	1.33	1.10	2.10	1.73	2.40	1.48	2.07	ND	2.34	2.21
	3	1.41	2.27	1.81	2.49	3.10	1.71	2.18	ND	2.28	2.24
	Mean	**1.33**	**1.36**	**2.01**	**2.08**	**2.94**	**1.60**	**2.05**	**0.00**	**2.29**	**1.95**
	SD	**0.08**	**0.82**	**0.17**	**0.38**	**0.47**	**0.12**	**0.14**	**0.00**	**0.04**	**0.48**

ND = not detected

Table D-2 Concentration (g/kg) of $PM_{2.5}$ and gas pollutants emitted from raw materials burning in a chamber.

Raw materials	number of sample (n=3)	$PM_{2.5}$	CO	NO	NO_X	SO_2
Wood powders (Chankao)	1	42.52	167.00	0.51	0.53	ND
	2	48.45	160.43	0.55	0.55	ND
	3	43.22	170.72	0.39	0.39	ND
	Mean	**44.73**	**166.05**	**0.49**	**0.49**	**ND**
	SD	**3.24**	**5.21**	**0.09**	**0.09**	**ND**
Bamboo	1	15.30	137.45	0.83	0.82	ND
	2	15.08	141.30	0.75	0.65	ND
	3	11.35	108.69	1.14	1.16	ND
	Mean	**13.91**	**129.15**	**0.91**	**0.88**	**ND**
	SD	**2.22**	**17.82**	**0.21**	**0.26**	**ND**
Plant-based glutinous powders	1	24.40	81.17	0.93	0.86	ND
	2	23.96	87.92	0.92	0.78	ND
	3	25.67	84.07	1.22	1.22	ND
	Mean	**24.68**	**84.39**	**1.02**	**0.96**	**ND**
	SD	**0.89**	**3.38**	**0.17**	**0.23**	**ND**

ND = not detected

Table D-2 Concentration (g/kg) of $PM_{2.5}$ and gas pollutants emitted from raw materials burning in a chamber (continued).

Raw materials	number of sample (n=3)	$PM_{2.5}$	CO	NO	NO_X	SO_2
Sawdust	1	30.91	172.46	0.24	0.23	ND
	2	33.90	180.33	0.25	0.25	ND
	3	29.72	177.32	0.37	0.39	ND
	Mean	**31.51**	**176.70**	**0.28**	**0.29**	**ND**
	SD	**2.15**	**3.97**	**0.07**	**0.09**	**ND**
Dye powders	1	2.00	2.96	ND	ND	16.41
	2	2.54	3.10	ND	ND	14.85
	3	1.45	3.36	ND	ND	16.54
	Mean	**2.00**	**3.14**	**0.00**	**0.00**	**15.93**
	SD	**0.54**	**0.21**	**0.00**	**0.00**	**0.94**

ND = not detected

Table D-3 Concentration (mg/kg) of PAHs emitted from incense burning in a chamber.

PAHs	Traditional incense sticks														
	A			B			C			D			E		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
NAP	0.00	0.00	0.00	0.03	0.03	0.03	0.07	0.06	0.08	0.11	0.05	0.10	0.05	0.05	0.08
ACY	0.01	0.01	0.01	0.03	0.03	0.02	0.06	0.08	0.06	0.02	0.06	0.06	0.02	0.02	0.07
ACE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FLU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PHE	0.10	0.20	0.08	0.09	0.12	0.13	0.02	0.02	0.03	0.44	0.37	0.46	0.37	0.38	0.19
ANT	0.06	0.11	0.06	0.10	0.10	0.10	0.07	0.07	0.07	0.99	0.95	0.92	0.88	0.76	0.60
FLA	0.12	0.24	0.14	0.20	0.20	0.21	0.06	0.09	0.07	0.20	0.18	0.07	0.17	0.23	0.20
PYR	0.10	0.22	0.12	0.18	0.19	0.18	0.05	0.08	0.05	0.05	0.08	0.07	0.18	0.27	0.09
BaA	0.07	0.11	0.07	0.23	0.23	0.25	0.21	0.21	0.19	0.31	0.08	0.29	0.24	0.20	0.19
CHR	0.07	0.11	0.08	0.24	0.25	0.28	0.27	0.23	0.22	0.16	0.21	0.11	0.13	0.18	0.11
BbF	0.02	0.08	0.05	0.19	0.20	0.25	0.14	0.17	0.13	0.09	0.20	0.11	0.09	0.12	0.08
BkF	0.03	0.05	0.02	0.17	0.16	0.17	0.15	0.17	0.14	0.15	0.15	0.11	0.16	0.23	0.19
BaP	0.06	0.11	0.07	0.21	0.23	0.28	0.22	0.20	0.17	0.26	0.20	0.26	0.21	0.32	0.28
IND	0.04	0.07	0.05	0.20	0.20	0.17	0.10	0.10	0.08	0.72	0.91	0.76	0.84	0.69	0.76
DbA	0.01	0.02	0.02	0.09	0.09	0.08	0.05	0.05	0.04	0.14	0.22	0.19	0.21	0.18	0.18
BPER	0.20	0.23	0.21	0.13	0.14	0.14	0.11	0.11	0.08	0.35	0.41	0.53	0.51	0.57	0.45
t-PAHs	**0.89**	**1.54**	**0.97**	**2.08**	**2.18**	**2.30**	**1.60**	**1.65**	**1.40**	**3.99**	**4.07**	**4.05**	**4.06**	**4.18**	**3.48**
c-PAHs	**0.30**	**0.53**	**0.34**	**1.32**	**1.37**	**1.48**	**1.15**	**1.14**	**0.96**	**1.82**	**1.97**	**1.84**	**1.88**	**1.90**	**1.80**
nc-PAHs	**0.60**	**1.01**	**0.63**	**0.76**	**0.80**	**0.82**	**0.45**	**0.51**	**0.44**	**2.17**	**2.10**	**2.22**	**2.18**	**2.28**	**1.68**

Table D-3 Concentration (mg/kg) of PAHs emitted from incense burning in a chamber (continued).

PAHs	Aromatic incense sticks									Aromatic incense cones					
	F			G			H			I			J		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
NAP	0.05	0.05	0.04	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.07	0.08	0.08
ACY	0.04	0.04	0.04	0.01	0.01	0.01	0.00	0.00	0.00	0.02	0.01	0.01	0.05	0.07	0.08
ACE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FLU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PHE	0.20	0.12	0.20	0.14	0.21	0.16	0.00	0.00	0.00	0.33	0.52	0.45	0.12	0.24	0.17
ANT	0.13	0.12	0.15	0.06	0.07	0.06	0.02	0.05	0.03	0.16	0.21	0.20	0.24	0.22	0.20
FLA	0.44	0.39	0.46	0.23	0.42	0.42	0.06	0.04	0.03	0.52	0.53	0.56	0.30	0.49	0.34
PYR	0.41	0.37	0.43	0.21	0.35	0.35	0.04	0.02	0.01	0.50	0.50	0.54	0.30	0.49	0.33
BaA	0.34	0.40	0.36	0.13	0.29	0.31	0.18	0.17	0.16	0.41	0.39	0.45	0.32	0.34	0.30
CHR	0.33	0.39	0.33	0.17	0.33	0.37	0.33	0.24	0.22	0.41	0.36	0.43	0.31	0.34	0.30
BbF	0.17	0.21	0.18	0.09	0.16	0.19	0.32	0.30	0.25	0.19	0.18	0.22	0.12	0.12	0.12
BkF	0.17	0.18	0.14	0.06	0.13	0.12	0.13	0.15	0.17	0.17	0.17	0.18	0.11	0.11	0.11
BaP	0.23	0.24	0.22	0.09	0.17	0.18	0.15	0.20	0.21	0.35	0.36	0.39	0.24	0.22	0.21
IND	0.11	0.11	0.10	0.04	0.06	0.07	0.14	0.16	0.16	0.13	0.16	0.15	0.09	0.09	0.08
DbA	0.03	0.03	0.03	0.01	0.02	0.02	0.01	0.01	0.01	0.02	0.03	0.02	0.02	0.02	0.01
BPER	0.06	0.07	0.06	0.10	0.11	0.16	0.09	0.11	0.11	0.12	0.16	0.15	0.97	1.32	1.04
t-PAHs	**2.70**	**2.71**	**2.74**	**1.36**	**2.33**	**2.43**	**1.46**	**1.44**	**1.36**	**3.34**	**3.59**	**3.76**	**3.26**	**4.16**	**3.37**
c-PAHs	**1.37**	**1.56**	**1.37**	**0.60**	**1.16**	**1.26**	**1.25**	**1.23**	**1.18**	**1.69**	**1.64**	**1.84**	**1.22**	**1.25**	**1.13**
nc-PAHs	**1.32**	**1.15**	**1.37**	**0.76**	**1.17**	**1.18**	**0.21**	**0.22**	**0.18**	**1.64**	**1.95**	**1.92**	**2.04**	**2.92**	**2.24**

Table D-4 Concentration (mg/kg) of PAHs emitted from raw materials burning in a chamber.

PAHs	Sawdust			Wood powder (Chan Kao)			Plant-based glutinous powder			Bamboo			Dye powder		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
NAP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ACY	0.06	0.07	0.07	0.04	0.04	0.09	0.02	0.02	0.02	0.02	0.04	0.03	0.00	0.00	0.00
ACE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FLU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PHE	0.15	0.18	0.17	0.14	0.19	0.21	0.11	0.08	0.10	0.08	0.10	0.07	0.03	0.03	0.03
ANT	0.19	0.20	0.21	0.16	0.18	0.18	0.09	0.09	0.09	0.11	0.14	0.12	0.04	0.05	0.04
FLA	0.18	0.21	0.21	0.17	0.22	0.22	0.16	0.13	0.14	0.08	0.08	0.12	0.03	0.04	0.02
PYR	0.11	0.12	0.12	0.09	0.12	0.12	0.12	0.09	0.10	0.05	0.05	0.04	0.03	0.04	0.03
BaA	0.08	0.07	0.08	0.09	0.10	0.11	0.06	0.05	0.07	0.04	0.05	0.05	0.03	0.03	0.03
CHR	0.20	0.15	0.18	0.23	0.26	0.29	0.13	0.10	0.12	0.16	0.21	0.18	0.07	0.15	0.07
BbF	0.05	0.04	0.04	0.04	0.05	0.06	0.04	0.03	0.04	0.00	0.00	0.00	0.02	0.02	0.02
BkF	0.03	0.02	0.03	0.02	0.02	0.02	0.03	0.03	0.03	0.00	0.00	0.00	0.05	0.05	0.04
BaP	0.14	0.18	0.17	0.07	0.11	0.12	0.05	0.05	0.06	0.00	0.00	0.00	0.05	0.05	0.04
IND	0.05	0.06	0.08	0.07	0.09	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DbA	0.03	0.07	0.09	0.04	0.04	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BPER	0.09	0.06	0.06	0.08	0.08	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t-PAHs	**1.35**	**1.45**	**1.53**	**1.26**	**1.47**	**1.64**	**0.80**	**0.67**	**0.76**	**0.53**	**0.68**	**0.60**	**0.34**	**0.46**	**0.33**
c-PAHs	**0.58**	**0.61**	**0.68**	**0.57**	**0.66**	**0.76**	**0.31**	**0.26**	**0.31**	**0.20**	**0.27**	**0.22**	**0.21**	**0.30**	**0.21**
nc-PAHs	**0.78**	**0.84**	**0.86**	**0.69**	**0.82**	**0.88**	**0.49**	**0.40**	**0.45**	**0.33**	**0.42**	**0.38**	**0.13**	**0.16**	**0.12**

AFFENDIX E

Table E-1 8 hrs concentrations of nitrogen dioxide (NO_2) (ppbv), $PM_{2.5}$ ($\mu g/m^3$), temperature (°C), humidity (%), number of visitors (person)

1. Shrine 1

Normal periods

Date	NO_2		$PM_{2.5}$	Temperature	Humidity	Number of visitors
	Indoor	Outdoor				
03/07/2555	23.4	13.2	44.4	28.4	58.0	18.0
05/07/2555	29.0	31.3	106.9	27.5	65.1	10.0
29/05/2555	36.2	20.9	78.4	30.0	52.6	9.0
31/05/2555	27.3	27.7	71.9	30.3	57.7	5.0
07/07/2555	33.6	23.9	118.1	32.2	55.5	12.0
13/11/2555	36.5	49.1	89.9	28.5	53.2	11.0
18/11/2555	39.5	26.1	68.1	29.0	57.7	10.0
Mean	**32.2**	**27.4**	**82.5**	**29.4**	**57.1**	**10.7**
SD	**5.8**	**11.1**	**24.9**	**1.6**	**4.2**	**3.9**
Max	**39.5**	**49.1**	**118.1**	**32.2**	**65.1**	**18.0**
Min	**23.4**	**13.2**	**44.4**	**27.5**	**52.6**	**5.0**
Median	**33.6**	**26.1**	**78.4**	**29.0**	**57.7**	**10.0**

Other special occasions

Date	NO_2		$PM_{2.5}$	Temperature	Humidity	Number of visitors
	Indoor	Outdoor				
30/08/2555	36.8	22.2	184.1	28.0	67.4	65.0
01/09/2555	31.1	39.0	163.8	27.5	70.4	24.0
29/09/2555	44.6	15.8	327.0	28.0	65.4	78.0
15/10/2555	58.9	39.5	304.3	30.0	53.4	85.0
19/10/2555	36.6	22.2	159.4	30.0	49.3	19.0
Mean	**41.6**	**27.7**	**227.7**	**28.7**	**61.2**	**54.2**
SD	**10.8**	**10.8**	**81.2**	**1.2**	**9.3**	**30.8**
Max	**58.9**	**39.5**	**327.0**	**30.0**	**70.4**	**85.0**
Min	**31.1**	**15.8**	**159.4**	**27.5**	**49.3**	**19.0**
Median	**36.8**	**22.2**	**184.1**	**28.0**	**65.4**	**65.0**

Chinese New Year

Date	NO_2		$PM_{2.5}$	Temperature	Humidity	Number of visitors
	Indoor	Outdoor				
08/02/2556	55.3	54.6	447.9	28.5	28.5	474.0
10/02/2556	55.2	47.3	602.9	30.0	49.8	547.0
Mean	**55.3**	**50.9**	**525.4**	**29.3**	**39.2**	**510.5**
SD	**0.0**	**5.2**	**109.6**	**1.1**	**15.1**	**51.6**
Max	**55.3**	**54.6**	**602.9**	**30.0**	**49.8**	**547.0**
Min	**55.2**	**47.3**	**447.9**	**28.5**	**28.5**	**474.0**
Median	**55.3**	**50.9**	**525.4**	**29.3**	**39.2**	**510.5**

2. Shrine 2

Normal periods

Date	NO_2		$PM_{2.5}$	Temperature	Humidity	Number of visitors
	Indoor	Outdoor				
08/05/2555	31.0	41.7	129.2	17.0	51.5	13.0
09/05/2555	39.4	48.0	157.7	27.0	41.5	7.0
10/05/2555	45.7	63.7	89.7	35.0	39.4	10.0
12/07/2555	25.5	21.4	70.8	35.5	36.4	5.0
13/07/2555	28.5	35.6	100.0	34.5	48.2	8.0
04/12/2555	40.4	39.6	134.8	30.0	47.8	10.0
05/12/2555	37.5	42.6	101.5	29.0	45.8	7.0
30/08/2555	25.4	29.7	52.2	33.0	49.2	7.0
01/10/2555	30.5	28.5	68.6	29.5	65.5	5.0
Mean	**33.8**	**39.0**	**100.5**	**30.1**	**47.3**	**8.0**
SD	**7.2**	**12.4**	**34.7**	**5.7**	**8.4**	**2.6**
Max	**45.7**	**63.7**	**157.7**	**35.5**	**65.5**	**13.0**
Min	**25.4**	**21.4**	**52.2**	**17.0**	**36.4**	**5.0**
Median	**31.0**	**39.6**	**100.0**	**30.0**	**47.8**	**7.0**

Other special occasions

Date	NO_2		$PM_{2.5}$	Temperature	Humidity	Number of visitors
	Indoor	Outdoor				
01/09/2555	40.1	37.0	200.0	32.0	64.7	26.0
31/08/2555	47.9	41.0	308.7	33.0	55.6	55.0
30/09/2555	29.6	47.1	101.1	31.0	60.1	11.0
15/10/2555	44.1	40.9	120.8	32.5	30.9	17.0
19/10/2555	40.4	36.5	98.6	33.0	48.9	10.0
20/10/2555	30.5	43.8	98.6	35.0	48.9	18.0
30/12/2555	36.5	40.6	297.0	28.0	41.1	29.0
01/01/2556	45.5	34.5	243.9	28.0	49.2	30.0
8/02/2556	54.0	57.1	189.9	29.0	31.3	17.0
Mean	**41.0**	**42.0**	**184.3**	**31.3**	**47.9**	**23.7**
SD	**8.0**	**6.8**	**84.9**	**2.5**	**11.8**	**13.8**
Max	**54.0**	**57.1**	**308.7**	**35.0**	**64.7**	**55.0**
Min	**29.6**	**34.5**	**98.6**	**28.0**	**30.9**	**10.0**
Median	**40.4**	**40.9**	**189.9**	**32.0**	**48.9**	**18.0**

Chinese New Year

Date	NO_2		$PM_{2.5}$	Temperature	Humidity	Number of visitors
	Indoor	Outdoor				
09/02/2556	63.6	32.9	639.1	30.0	35.5	702.0
10/02/2556	45.1	15.6	764.1	32.0	48.9	342.0
11/02/2556	41.6	24.4	471.0	32.0	42.6	126.0
Mean	**50.1**	**24.3**	**624.7**	**31.3**	**42.3**	**390.0**
SD	**11.8**	**8.7**	**147.1**	**1.2**	**6.7**	**291.0**
Max	**63.6**	**32.9**	**764.1**	**32.0**	**48.9**	**702.0**
Min	**41.6**	**15.6**	**471.0**	**30.0**	**35.5**	**126.0**
Median	**45.1**	**24.4**	**639.1**	**32.0**	**42.6**	**342.0**

Table E-2 24 hrs concentrations of nitrogen dioxide (NO_2) (ppbv), $PM_{2.5}$ ($\mu g/m^3$), temperature (°C), humidity (%), number of visitors (person)

1. **Shrine 1**

Normal periods

Date	NO_2		$PM_{2.5}$	Temperature	Humidity	Number of visitors
	Indoor	Outdoor				
30/05/2555	21.1	21.3	46.1	68.4	29.0	10.0
06/07/2555	14.4	17.5	40.7	28.5	74.7	8.0
01/06/2555	29.1	27.8	45.2	30.0	62.9	11.0
04/07/2555	26.3	18.4	33.8	31.5	46.4	8.0
29/08/2555	17.3	11.1	47.8	31.0	89.4	42.0
01/10/2555	24.9	23.3	42.5	27.5	75.6	10.0
14/11/2555	29.9	26.0	110.3	27.0	69.7	31.0
17/11/2555	28.0	24.8	51.0	24.0	76.5	26.0
Mean	**23.9**	**21.3**	**52.2**	**33.5**	**65.5**	**18.3**
SD	**5.7**	**5.4**	**24.0**	**14.3**	**19.3**	**13.0**
Max	**29.9**	**27.8**	**110.3**	**68.4**	**89.4**	**42.0**
Min	**14.4**	**11.1**	**33.8**	**24.0**	**29.0**	**8.0**
Median	**25.6**	**22.3**	**45.7**	**29.3**	**72.2**	**10.5**

Other special occasions

Date	NO_2		$PM_{2.5}$	Temperature	Humidity	Number of visitors
	Indoor	Outdoor				
03/02/2555	28.9	28.8	227.2	22.0	70.9	228.0
04/02/2555	30.6	28.9	213.2	22.0	62.8	147.0
05/02/2555	37.1	33.1	165.4	22.0	51.4	131.0
06/02/2555	51.0	33.8	310.1	22.0	57.4	457.0
31/08/2555	30.5	30.3	230.2	31.5	55.7	142.0
30/09/2555	30.5	26.1	110.1	27.0	77.5	139.0
16/10/2555	32.1	26.9	85.3	26.0	74.9	78.0
20/10/2555	32.1	28.1	83.8	26.0	74.9	78.0
Mean	**34.1**	**29.5**	**178.2**	**24.8**	**65.7**	**175.0**
SD	**7.3**	**2.7**	**81.1**	**3.5**	**10.1**	**123.2**
Max	**51.0**	**33.8**	**310.1**	**31.5**	**77.5**	**457.0**
Min	**28.9**	**26.1**	**83.8**	**22.0**	**51.4**	**78.0**
Median	**31.4**	**28.9**	**189.3**	**24.0**	**66.9**	**140.5**

Chinese New Year

Date	NO_2		$PM_{2.5}$	Temperature	Humidity	Number of visitors
	Indoor	Outdoor				
21/1/2555	39.6	24.9	366.6	21.0	49.9	596.0
22/1/2555	33.2	29.6	381.3	21.0	49.3	409.0
23/1/2555	32.9	36.0	278.1	22.0	53.9	358.0
24/1/2555	34.5	24.1	136.1	20.0	57.0	282.0
9/2/2556	54.3	49.0	450.0	24.0	59.6	961.0
11/2/2556	48.0	67.9	289.4	28.0	66.6	117.0
Mean	**40.4**	**38.6**	**316.9**	**22.7**	**56.1**	**453.8**
SD	**8.9**	**17.1**	**108.9**	**2.9**	**6.5**	**293.8**
Max	**54.3**	**67.9**	**450.0**	**28.0**	**66.6**	**961.0**
Min	**32.9**	**24.1**	**136.1**	**20.0**	**49.3**	**117.0**
Median	**37.0**	**32.8**	**328.0**	**21.5**	**55.5**	**383.5**

2. Shrine 2

Normal periods

Date	NO_2		$PM_{2.5}$	Temperature	Humidity	Number of visitors
	Indoor	Outdoor				
08/05/2555	27.1	34.5	70.7	27.0	68.7	13.0
09/05/2555	19.8	33.8	38.5	27.0	72.0	7.0
10/05/2555	24.2	35.4	60.3	28.0	69.6	12.0
12/07/2555	18.3	23.0	40.8	35.5	73.0	9.0
13/07/2555	22.2	24.0	34.3	30.0	58.2	9.0
04/12/2555	28.1	37.0	75.0	23.0	68.4	10.0
05/12/2555	33.3	43.4	66.1	23.0	75.7	7.0
30/08/2555	15.6	23.8	65.7	30.0	70.5	7.0
01/09/2555	26.8	27.0	66.7	28.0	64.7	26.0
29/09/2555	18.2	30.8	16.9	28.5	71.9	22.0
30/09/2555	18.3	32.4	24.4	28.5	74.0	11.0
01/10/2555	15.5	25.6	22.2	29.0	71.4	5.0
16/10/2555	30.9	39.0	61.6	29.0	73.1	12.0
Mean	**22.9**	**31.5**	**49.5**	**28.2**	**70.1**	**11.5**
SD	**5.9**	**6.5**	**20.5**	**3.1**	**4.6**	**6.1**
Max	**33.3**	**43.4**	**75.0**	**35.5**	**75.7**	**26.0**
Min	**15.5**	**23.0**	**16.9**	**23.0**	**58.2**	**5.0**
Median	**22.2**	**32.4**	**60.3**	**28.5**	**71.4**	**10.0**

Other special occasions

Date	NO_2		$PM_{2.5}$	Temperature	Humidity	Number of visitors
	Indoor	Outdoor				
21/01/2555	32.2	50.4	275.9	17.0	51.5	82.0
31/08/2555	27.1	32.9	72.7	29.5	64.7	61.0
30/12/2555	39.8	45.7	105.2	22.0	66.2	31.0
31/12/2555	39.9	45.5	125.0	25.0	54.9	36.0
01/01/2556	32.2	34.7	114.1	23.0	69.1	37.0
08/02/2556	45.2	51.7	204.3	21.0	58.2	58.0
15/10/2555	28.7	37.1	81.3	26.5	75.3	17.0
20/10/2555	27.0	36.5	82.3	25.5	71.9	18.0
Mean	34.0	41.8	132.6	23.7	64.0	42.5
SD	6.8	7.4	71.3	3.8	8.4	22.7
Max	45.2	51.7	275.9	29.5	75.3	82.0
Min	27.0	32.9	72.7	17.0	51.5	17.0
Median	32.2	41.3	109.7	24.0	65.5	36.5

Chinese New Year

Date	NO_2		$PM_{2.5}$	Temperature	Humidity	Number of visitors
	Indoor	Outdoor				
22/01/2555	38.6	33.5	439.6	16.0	53.9	564.0
23/01/2555	34.0	28.1	677.7	18.0	60.4	936.0
24/01/2555	31.6	30.7	372.4	18.0	52.6	480.0
09/02/2556	54.7	43.4	337.1	23.0	60.9	1040.0
10/02/2556	42.6	27.2	418.0	25.0	71.4	607.0
11/02/2556	46.9	34.1	193.8	27.0	67.2	161.0
Mean	**41.4**	**32.8**	**406.4**	**21.2**	**61.1**	**631.3**
SD	**8.6**	**5.9**	**158.8**	**4.4**	**7.3**	**319.1**
Max	**54.7**	**43.4**	**677.7**	**27.0**	**71.4**	**1040.0**
Min	**31.6**	**27.2**	**193.8**	**16.0**	**52.6**	**161.0**
Median	**40.6**	**32.1**	**395.2**	**20.5**	**60.7**	**585.5**

AFFENDIX F

Table F-1 8 hrs concentration (ng/m^3) of $PM_{2.5}$-bound PAH in specials occasion and normal periods at shrine 1.

1. Normal periods

PAHs	29/05/2555	31/05/2555	03/07/2555	05/07/2555	07/07/2555	13/11/2555	18/11/2555	Mean	SD	Median	Min	Max
NAP	5.25	6.21	4.61	4.62	6.06	6.63	5.68	**5.58**	**0.79**	**5.68**	**4.61**	**6.63**
ACY	2.19	0.55	0.60	1.39	1.45	2.23	0.87	**1.32**	**0.70**	**1.39**	**0.55**	**2.23**
ACE	5.87	4.89	2.28	1.30	5.08	6.03	7.25	**4.67**	**2.13**	**5.08**	**1.30**	**7.25**
FLU	0.00	0.00	0.00	0.11	0.45	1.96	2.00	**0.65**	**0.92**	**0.11**	**0.00**	**2.00**
PHE	2.71	1.69	2.26	0.46	14.43	13.04	12.78	**6.77**	**6.28**	**2.71**	**0.46**	**14.43**
ANT	3.10	2.36	2.39	4.92	5.16	0.00	0.00	**2.56**	**2.07**	**2.39**	**0.00**	**5.16**
FLA	3.29	3.08	4.76	4.09	8.77	11.16	8.59	**6.25**	**3.20**	**4.76**	**3.08**	**11.16**
PYR	3.81	3.49	4.86	1.24	6.79	7.58	9.72	**5.36**	**2.86**	**4.86**	**1.24**	**9.72**
BaA	1.85	1.76	2.15	1.12	2.70	2.93	3.54	**2.29**	**0.82**	**2.15**	**1.12**	**3.54**
CHR	8.37	10.02	7.60	1.40	2.41	2.75	2.65	**5.03**	**3.50**	**2.75**	**1.40**	**10.02**
BbF	0.00	0.00	0.00	0.00	3.44	3.44	3.36	**1.46**	**1.82**	**0.00**	**0.00**	**3.44**
BkF	0.00	0.00	0.00	0.00	4.23	3.50	3.34	**1.58**	**1.99**	**0.00**	**0.00**	**4.23**
BaP	1.80	4.94	5.75	3.37	25.70	19.86	20.54	**11.71**	**9.91**	**5.75**	**1.80**	**25.70**
IND	0.00	0.00	0.00	0.00	5.34	0.00	0.00	**0.76**	**2.02**	**0.00**	**0.00**	**5.34**
DbA	0.00	0.00	0.00	0.00	3.84	0.00	1.02	**0.69**	**1.44**	**0.00**	**0.00**	**3.84**
BPER	4.14	4.46	4.88	3.82	6.82	6.72	5.22	**5.15**	**1.20**	**4.88**	**3.82**	**6.82**
t-PAHs	42.39	43.45	42.15	27.85	102.69	87.81	86.56	**61.84**	**29.48**	**43.45**	**27.85**	**102.69**
c-PAHs	12.02	16.73	15.50	5.89	47.67	32.47	34.45	**23.53**	**14.92**	**16.73**	**5.89**	**47.67**
nc-PAHs	30.37	26.72	26.64	21.96	55.02	55.34	52.11	**38.31**	**15.06**	**30.37**	**21.96**	**55.34**

2. Other special occasions

PAHs	30/08/2555	01/09/2555	29/09/2555	15/10/2555	19/10/2555	Mean	SD	Median	Min	Max
NAP	8.67	13.96	9.30	5.49	11.23	**9.73**	**3.14**	**9.30**	**5.49**	**13.96**
ACY	1.23	1.10	1.14	1.10	1.26	**1.17**	**0.08**	**1.14**	**1.10**	**1.26**
ACE	4.77	5.23	5.23	4.44	8.03	**5.54**	**1.43**	**5.23**	**4.44**	**8.03**
FLU	0.16	0.68	0.23	0.00	0.03	**0.22**	**0.27**	**0.16**	**0.00**	**0.68**
PHE	10.38	10.54	8.14	6.95	7.10	**8.62**	**1.74**	**8.14**	**6.95**	**10.54**
ANT	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
FLA	6.27	9.30	4.93	3.92	6.84	**6.25**	**2.05**	**6.27**	**3.92**	**9.30**
PYR	5.43	7.70	5.03	4.52	6.61	**5.86**	**1.29**	**5.43**	**4.52**	**7.70**
BaA	2.31	2.96	2.20	2.06	2.65	**2.44**	**0.37**	**2.31**	**2.06**	**2.96**
CHR	2.37	3.79	2.74	2.02	2.80	**2.74**	**0.66**	**2.74**	**2.02**	**3.79**
BbF	2.44	8.11	4.72	2.34	4.64	**4.45**	**2.34**	**4.64**	**2.34**	**8.11**
BkF	2.60	6.25	4.09	2.59	3.99	**3.91**	**1.50**	**3.99**	**2.59**	**6.25**
BaP	14.35	32.91	9.32	3.78	7.94	**13.66**	**11.40**	**9.32**	**3.78**	**32.91**
IND	10.90	51.87	31.70	25.55	12.11	**26.42**	**16.75**	**25.55**	**10.90**	**51.87**
DbA	0.67	1.91	1.07	0.71	2.68	**1.41**	**0.87**	**1.07**	**0.67**	**2.68**
BPER	9.07	26.59	17.46	5.23	13.02	**14.27**	**8.25**	**13.02**	**5.23**	**26.59**
t- PAHs	81.63	182.89	107.31	70.69	90.93	**106.69**	**44.66**	**90.93**	**70.69**	**182.89**
c-PAHs	35.66	107.80	55.84	39.04	36.81	**55.03**	**30.61**	**39.04**	**35.66**	**107.80**
nc-PAHs	45.97	75.09	51.47	31.65	54.12	**51.66**	**15.72**	**51.47**	**31.65**	**75.09**

3. Chinese New Year

PAHs	08/02/2556	10/02/2556	Mean	SD	Median	Min	Max
NAP	14.19	11.88	**13.03**	**1.63**	**13.03**	**11.88**	**14.19**
ACY	1.68	1.58	**1.63**	**0.07**	**1.63**	**1.58**	**1.68**
ACE	7.36	8.71	**8.03**	**0.95**	**8.03**	**7.36**	**8.71**
FLU	0.15	0.51	**0.33**	**0.25**	**0.33**	**0.15**	**0.51**
PHE	9.25	10.00	**9.62**	**0.53**	**9.62**	**9.25**	**10.00**
ANT	0.00	5.09	**2.55**	**3.60**	**2.55**	**0.00**	**5.09**
FLA	10.67	16.57	**13.62**	**4.17**	**13.62**	**10.67**	**16.57**
PYR	10.53	14.99	**12.76**	**3.16**	**12.76**	**10.53**	**14.99**
BaA	3.77	5.05	**4.41**	**0.90**	**4.41**	**3.77**	**5.05**
CHR	3.77	7.32	**5.54**	**2.51**	**5.54**	**3.77**	**7.32**
BbF	6.58	12.04	**9.31**	**3.86**	**9.31**	**6.58**	**12.04**
BkF	5.75	9.60	**7.67**	**2.72**	**7.67**	**5.75**	**9.60**
BaP	15.75	24.24	**19.99**	**6.00**	**19.99**	**15.75**	**24.24**
IND	20.00	44.79	**32.40**	**17.53**	**32.40**	**20.00**	**44.79**
DbA	2.68	4.82	**3.75**	**1.51**	**3.75**	**2.68**	**4.82**
BPER	11.40	33.22	**22.31**	**15.43**	**22.31**	**11.40**	**33.22**
t- PAHs	123.53	210.40	**166.97**	**61.43**	**166.97**	**123.53**	**210.40**
c-PAHs	58.30	107.86	**83.08**	**35.04**	**83.08**	**58.30**	**107.86**
nc-PAHs	65.23	102.54	**83.89**	**26.38**	**83.89**	**65.23**	**102.54**

Table F-2 24 hrs concentration (ng/m^3) of $PM_{2.5}$-bound PAH in specials occasion and normal periods at shrine 1.

1. Normal periods

PAHs	30/05/2555	06/07/2555	01/06/2555	04/07/2555	29/08/2555	1/10/2555	14/11/2555	17/11/2555	Mean	SD	Median	Min	Max
NAP	1.83	1.19	2.30	1.45	3.46	2.45	3.05	2.51	**2.28**	**0.77**	**2.37**	**1.19**	**3.46**
ACY	0.14	0.10	0.15	0.36	0.25	0.51	2.08	0.49	**0.51**	**0.65**	**0.30**	**0.10**	**2.08**
ACE	1.79	2.03	1.82	1.35	1.31	1.61	2.90	2.29	**1.89**	**0.53**	**1.80**	**1.31**	**2.90**
FLU	0.00	0.00	0.00	0.05	0.06	0.00	0.15	0.00	**0.03**	**0.05**	**0.00**	**0.00**	**0.15**
PHE	1.25	0.69	0.58	2.72	3.65	2.35	2.96	1.84	**2.01**	**1.11**	**2.10**	**0.58**	**3.65**
ANT	2.36	0.76	0.78	1.21	0.00	0.00	1.77	0.84	**0.96**	**0.81**	**0.81**	**0.00**	**2.36**
FLA	2.88	1.32	1.45	1.82	1.64	1.82	3.29	1.54	**1.97**	**0.72**	**1.73**	**1.32**	**3.29**
PYR	3.31	1.54	1.59	1.56	1.80	1.72	2.83	1.70	**2.01**	**0.68**	**1.71**	**1.54**	**3.31**
BaA	1.71	0.70	0.71	0.70	0.77	0.75	1.06	0.74	**0.89**	**0.35**	**0.74**	**0.70**	**1.71**
CHR	5.21	1.47	2.88	0.70	0.74	0.82	1.04	0.74	**1.70**	**1.59**	**0.93**	**0.70**	**5.21**
BbF	0.00	0.66	0.00	0.86	1.62	1.58	2.30	1.14	**1.02**	**0.81**	**1.00**	**0.00**	**2.30**
BkF	0.00	0.65	0.00	1.02	1.54	1.64	2.15	1.18	**1.02**	**0.77**	**1.10**	**0.00**	**2.15**
BaP	1.33	0.00	0.85	3.76	6.36	6.06	9.52	5.36	**4.16**	**3.27**	**4.56**	**0.00**	**9.52**
IND	0.00	0.00	0.00	1.68	36.57	12.28	15.70	0.63	**8.36**	**12.98**	**1.15**	**0.00**	**36.57**
DbA	0.00	0.00	0.00	0.74	0.27	0.69	1.05	0.37	**0.39**	**0.40**	**0.32**	**0.00**	**1.05**
BPER	4.16	1.10	2.57	1.73	3.18	2.84	6.33	2.16	**3.01**	**1.63**	**2.71**	**1.10**	**6.33**
t-PAHs	25.97	12.21	15.66	21.69	63.22	37.13	58.20	23.54	**32.20**	**19.12**	**24.76**	**12.21**	**63.22**
c-PAHs	8.25	3.47	4.43	9.45	47.87	23.82	32.83	10.17	**17.54**	**15.90**	**9.81**	**3.47**	**47.87**
nc-PAHs	17.72	8.73	11.23	12.24	15.36	13.31	25.37	13.37	**14.67**	**5.08**	**13.34**	**8.73**	**25.37**

2. Other special occasions

PAHs	03/02/2555	04/02/2555	05/02/2555	06/02/2555	31/08/2555	30/09/2555	16/10/2555	20/10/2555	Mean	SD	Median	Min	Max
NAP	2.12	2.98	2.60	2.92	2.94	3.30	3.52	3.96	**3.33**	**0.43**	**2.96**	**2.12**	**3.96**
ACY	0.37	0.58	0.45	0.45	0.39	0.38	0.51	0.35	**0.41**	**0.06**	**0.42**	**0.35**	**0.58**
ACE	1.23	1.72	1.38	1.26	1.94	2.33	2.26	2.03	**1.96**	**0.42**	**1.83**	**1.23**	**2.33**
FLU	1.44	0.26	0.25	0.21	0.10	0.15	0.03	0.04	**0.11**	**0.07**	**0.18**	**0.03**	**1.44**
PHE	0.64	3.39	2.38	2.44	3.06	2.70	2.52	2.49	**2.64**	**0.25**	**2.51**	**0.64**	**3.39**
ANT	0.00	1.29	1.15	1.68	0.86	0.00	0.00	0.00	**0.51**	**0.75**	**0.43**	**0.00**	**1.68**
FLA	3.08	3.77	3.27	3.77	2.62	1.53	2.23	2.33	**2.50**	**0.82**	**2.85**	**1.53**	**3.77**
PYR	2.18	3.35	2.63	3.49	2.48	1.38	2.25	2.46	**2.41**	**0.75**	**2.47**	**1.38**	**3.49**
BaA	0.88	1.21	1.01	1.25	0.96	0.65	0.90	0.96	**0.94**	**0.21**	**0.96**	**0.65**	**1.25**
CHR	1.39	1.88	1.48	2.10	1.06	0.71	0.96	0.99	**1.16**	**0.54**	**1.22**	**0.71**	**2.10**
BbF	3.40	3.46	3.15	4.66	3.20	0.94	2.08	2.17	**2.61**	**1.40**	**3.17**	**0.94**	**4.66**
BkF	2.47	3.02	2.27	3.38	2.28	1.01	1.90	1.84	**2.08**	**0.86**	**2.28**	**1.01**	**3.38**
BaP	12.85	7.63	7.16	10.33	4.74	4.76	14.30	9.65	**8.76**	**4.07**	**8.64**	**4.74**	**14.30**
IND	4.90	10.74	4.10	6.11	14.41	13.45	7.11	10.81	**10.38**	**3.70**	**8.93**	**4.10**	**14.41**
DbA	0.37	0.51	0.38	0.84	0.91	0.53	0.49	0.40	**0.63**	**0.23**	**0.50**	**0.37**	**0.91**
BPER	11.07	7.51	6.41	11.36	10.16	4.42	1.25	5.59	**6.55**	**4.18**	**6.96**	**1.25**	**11.36**
t-PAHs	48.39	53.30	40.07	56.26	52.11	38.25	42.32	46.06	**47.00**	**7.27**	**47.23**	**38.25**	**56.26**
c-PAHs	26.26	28.46	19.55	28.67	27.56	22.05	27.75	26.82	**26.57**	**2.61**	**27.19**	**19.55**	**28.67**
nc-PAHs	22.13	24.84	20.53	27.59	24.55	16.20	14.57	19.24	**20.43**	**5.52**	**21.33**	**14.57**	**27.59**

3. Chinese New Year

PAHs	21/1/2555	22/1/2555	23/1/2555	24/1/2555	9/2/2556	11/2/2556	Mean	SD	Median	Min	Max
NAP	2.27	5.36	4.35	4.98	7.62	4.22	**5.31**	**1.38**	**4.98**	**2.27**	**7.62**
ACY	0.61	0.81	1.07	0.89	1.11	0.52	**0.88**	**0.23**	**0.89**	**0.52**	**1.11**
ACE	0.99	2.31	2.81	3.03	5.69	3.62	**3.49**	**1.32**	**3.62**	**0.99**	**5.69**
FLU	0.34	0.79	0.68	0.36	0.74	0.35	**0.58**	**0.21**	**0.36**	**0.34**	**0.79**
PHE	3.32	10.60	7.50	6.29	8.17	3.76	**7.26**	**2.51**	**6.29**	**3.32**	**10.60**
ANT	2.02	3.90	2.95	2.13	4.08	1.67	**2.95**	**1.06**	**2.13**	**1.67**	**4.08**
FLA	5.63	9.64	7.17	8.22	13.75	5.17	**8.79**	**3.22**	**8.22**	**5.17**	**13.75**
PYR	4.49	8.35	5.99	6.54	11.04	4.69	**7.32**	**2.46**	**6.54**	**4.49**	**11.04**
BaA	1.54	2.89	2.22	2.38	3.66	1.59	**2.55**	**0.78**	**2.38**	**1.54**	**3.66**
CHR	2.17	4.17	2.95	4.40	5.69	2.35	**3.91**	**1.30**	**4.40**	**2.17**	**5.69**
BbF	3.57	6.50	3.97	7.49	10.27	5.29	**6.70**	**2.39**	**7.49**	**3.57**	**10.27**
BkF	2.74	4.53	3.61	4.98	6.97	3.62	**4.74**	**1.38**	**4.98**	**2.74**	**6.97**
BaP	12.27	23.75	12.19	23.46	9.20	9.26	**15.57**	**7.43**	**9.26**	**9.20**	**23.75**
IND	16.09	25.91	17.77	15.43	8.72	3.90	**14.35**	**8.48**	**8.72**	**3.90**	**25.91**
DbA	0.60	0.54	0.18	0.58	3.45	1.27	**1.21**	**1.31**	**1.27**	**0.18**	**3.45**
BPER	5.98	12.94	9.98	7.48	31.61	17.61	**15.92**	**9.55**	**17.61**	**5.98**	**31.61**
t-PAHs	64.63	122.98	85.42	98.64	131.77	68.90	**101.54**	**26.01**	**98.64**	**64.63**	**131.77**
c-PAHs	38.98	68.29	42.91	58.71	47.95	27.28	**49.03**	**15.62**	**47.95**	**27.28**	**68.29**
nc-PAHs	25.65	54.69	42.51	39.92	83.81	41.62	**52.51**	**18.45**	**41.62**	**25.65**	**83.81**

Table F-3 8 hrs concentration (ng/m^3) of $PM_{2.5}$-bound PAH in specials occasion and normal periods at shrine 2

1. Normal periods

PAHs	08/05/2555	09/05/2555	10/05/2555	12/07/2555	13/07/2555	04/12/2555	05/12/2555	30/08/2555	01/10/2555	Mean	SD	Median	Min	Max
NAP	2.62	2.15	0.49	1.32	2.02	2.47	2.59	4.83	4.87	**2.60**	**1.45**	**2.47**	**0.49**	**4.87**
ACY	0.00	0.00	0.00	0.00	0.14	0.00	0.00	1.59	1.64	**0.37**	**0.70**	**0.00**	**0.00**	**1.64**
ACE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.51	0.82	**0.26**	**0.54**	**0.00**	**0.00**	**1.51**
FLU	0.14	0.00	0.00	0.00	0.01	0.00	0.00	1.29	1.42	**0.32**	**0.59**	**0.00**	**0.00**	**1.42**
PHE	3.11	1.86	0.39	1.52	1.65	1.54	1.25	4.00	3.83	**2.13**	**1.23**	**1.65**	**0.39**	**4.00**
ANT	1.81	1.63	0.55	1.71	1.73	1.72	1.66	1.92	1.29	**1.56**	**0.42**	**1.71**	**0.55**	**1.92**
FLA	1.96	1.46	0.00	0.14	0.38	0.04	0.00	1.85	1.70	**0.84**	**0.88**	**0.38**	**0.00**	**1.96**
PYR	0.66	0.55	0.00	0.00	0.00	0.00	0.00	1.53	1.50	**0.47**	**0.65**	**0.00**	**0.00**	**1.53**
BaA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.28	1.01	**0.25**	**0.51**	**0.00**	**0.00**	**1.28**
CHR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
BbF	25.66	2.49	6.90	9.14	0.00	38.22	11.62	14.72	2.89	**12.40**	**12.41**	**9.14**	**0.00**	**38.22**
BkF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.24	5.84	**0.79**	**1.94**	**0.00**	**0.00**	**5.84**
BaP	0.66	1.67	0.54	0.00	2.12	1.73	3.46	3.31	1.02	**1.61**	**1.20**	**1.67**	**0.00**	**3.46**
IND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	3.11	**0.36**	**1.03**	**0.00**	**0.00**	**3.11**
DbA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.00	**0.03**	**0.10**	**0.00**	**0.00**	**0.29**
BPER	1.15	0.00	0.08	0.64	1.83	0.68	0.24	3.38	3.67	**1.30**	**1.39**	**0.68**	**0.00**	**3.67**
t-PAHs	37.77	11.81	8.94	14.47	9.88	46.41	20.82	42.87	34.62	**25.29**	**15.09**	**20.82**	**8.94**	**46.41**
c-PAHs	26.33	4.15	7.44	9.14	2.12	39.96	15.08	20.97	13.87	**15.45**	**12.05**	**13.87**	**2.12**	**39.96**
nc-PAHs	11.44	7.66	1.51	5.33	7.77	6.45	5.74	21.90	20.75	**9.84**	**7.02**	**7.66**	**1.51**	**21.90**

2. Other special occasions

PAHs	01/09/2555	31/08/2555	30/09/2555	15/10/2555	19/10/2555	20/10/2555	30/12/2555	01/01/2556	08/02/2556	Mean	SD	Median	Min	Max
NAP	4.82	2.81	4.38	10.62	5.65	7.56	6.26	7.40	3.80	**5.92**	**2.37**	**5.65**	**2.81**	**10.62**
ACY	1.57	0.22	1.27	2.22	0.00	0.78	1.10	1.15	1.11	**1.05**	**0.67**	**1.11**	**0.00**	**2.22**
ACE	2.35	0.00	0.00	1.81	0.00	0.00	1.24	2.25	1.82	**1.05**	**1.05**	**1.24**	**0.00**	**2.35**
FLU	1.37	0.21	1.33	1.81	0.13	1.37	1.46	1.43	1.45	**1.17**	**0.59**	**1.37**	**0.13**	**1.81**
PHE	3.59	3.59	2.89	4.11	2.25	4.18	4.77	4.35	4.17	**3.77**	**0.78**	**4.11**	**2.25**	**4.77**
ANT	1.20	1.85	1.31	1.60	1.83	1.97	1.76	1.76	1.43	**1.64**	**0.27**	**1.76**	**1.20**	**1.97**
FLA	1.70	0.41	1.75	2.10	0.05	0.27	2.39	2.39	2.43	**1.50**	**0.98**	**1.75**	**0.05**	**2.43**
PYR	1.71	0.00	1.57	1.99	0.00	0.00	2.24	2.37	2.34	**1.36**	**1.05**	**1.71**	**0.00**	**2.37**
BaA	1.56	0.00	1.39	1.73	0.00	0.00	4.01	4.20	3.22	**1.79**	**1.68**	**1.56**	**0.00**	**4.20**
CHR	0.00	0.00	0.26	0.00	0.00	0.00	1.24	1.29	1.01	**0.42**	**0.58**	**0.00**	**0.00**	**1.29**
BbF	4.79	20.48	62.69	35.84	27.90	28.00	32.13	0.00	30.25	**26.90**	**18.22**	**28.00**	**0.00**	**62.69**
BkF	1.77	0.00	1.79	2.54	0.00	0.00	3.52	3.63	2.64	**1.77**	**1.47**	**1.79**	**0.00**	**3.63**
BaP	2.92	4.49	2.14	5.03	16.51	2.00	9.72	11.27	6.70	**6.75**	**4.89**	**5.03**	**2.00**	**16.51**
IND	0.00	0.00	12.96	12.75	0.00	0.00	15.36	13.89	5.41	**6.71**	**6.92**	**5.41**	**0.00**	**15.36**
DbA	1.73	0.00	5.51	9.17	0.00	0.00	9.48	7.66	3.81	**4.15**	**3.96**	**3.81**	**0.00**	**9.48**
BPER	3.46	1.44	7.31	4.56	0.49	0.21	11.59	7.24	5.99	**4.70**	**3.75**	**4.56**	**0.21**	**11.59**
t-PAHs	34.53	35.50	108.55	97.87	54.82	46.32	108.27	72.28	77.60	**70.64**	**29.64**	**72.28**	**34.53**	**108.55**
c-PAHs	12.77	24.97	86.75	67.06	44.41	30.00	75.46	41.94	53.05	**48.49**	**24.46**	**44.41**	**12.77**	**86.75**
nc-PAHs	21.77	10.52	21.80	30.81	10.41	16.31	32.81	30.34	24.54	**22.15**	**8.43**	**21.80**	**10.41**	**32.81**

3. Chinese New Year

PAHs	09/02/2556	10/02/2556	11/02/2556	Mean	SD	Median	Min	Max
NAP	2.17	3.97	4.54	**3.56**	**1.24**	**3.97**	**2.17**	**4.54**
ACY	0.00	1.07	1.05	**0.70**	**0.61**	**1.05**	**0.00**	**1.07**
ACE	0.00	0.27	0.01	**0.09**	**0.16**	**0.01**	**0.00**	**0.27**
FLU	0.18	1.24	1.36	**0.93**	**0.65**	**1.24**	**0.18**	**1.36**
PHE	4.80	4.96	4.58	**4.78**	**0.19**	**4.80**	**4.58**	**4.96**
ANT	2.11	1.05	1.03	**1.40**	**0.61**	**1.05**	**1.03**	**2.11**
FLA	1.62	3.18	3.25	**2.68**	**0.92**	**3.18**	**1.62**	**3.25**
PYR	1.37	3.11	3.13	**2.54**	**1.01**	**3.11**	**1.37**	**3.13**
BaA	2.11	5.14	4.70	**3.98**	**1.64**	**4.70**	**2.11**	**5.14**
CHR	0.00	2.66	3.18	**1.95**	**1.71**	**2.66**	**0.00**	**3.18**
BbF	35.80	4.83	4.20	**14.94**	**18.07**	**4.83**	**4.20**	**35.80**
BkF	0.00	2.15	6.46	**2.87**	**3.29**	**2.15**	**0.00**	**6.46**
BaP	8.20	9.25	12.62	**10.02**	**2.30**	**9.25**	**8.20**	**12.62**
IND	10.94	4.21	23.10	**12.75**	**9.57**	**10.94**	**4.21**	**23.10**
DbA	3.51	3.30	45.17	**17.33**	**24.12**	**3.51**	**3.30**	**45.17**
BPER	6.11	5.27	17.77	**9.72**	**6.99**	**6.11**	**5.27**	**17.77**
t-PAHs	78.93	55.65	136.15	**90.24**	**41.43**	**78.93**	**55.65**	**136.15**
c-PAHs	60.56	31.53	99.43	**63.84**	**34.07**	**60.56**	**31.53**	**99.43**
nc-PAHs	18.36	24.11	36.72	**26.40**	**9.39**	**24.11**	**18.36**	**36.72**

Table F-4 24 hrs concentration (ng/m^3) of $PM_{2.5}$-bound PAH in specials occasion and normal periods at shrine 2

1. Normal periods

PAHs	08/05/ 2555	09/05/ 2555	10/05/ 2555	12/7/ 2555	13/07/ 2555	4/12/ 2555	5/12/ 2555	30/8/ 2555	01/09/ 2555	29/9/ 2555	30/9/ 2555	1/10/ 2555	16/10/ 2555	Mean	SD	Median	Min	Max
NAP	0.92	0.91	0.50	0.50	0.46	1.17	1.25	1.26	1.56	1.28	1.53	0.91	2.10	**1.10**	**0.48**	**1.17**	**0.46**	**2.10**
ACY	0.00	0.11	0.00	0.00	0.02	0.00	0.00	0.48	0.54	0.02	0.48	0.12	0.38	**0.17**	**0.22**	**0.02**	**0.00**	**0.54**
ACE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.33	0.00	0.20	0.00	0.24	**0.08**	**0.13**	**0.00**	**0.00**	**0.33**
FLU	0.01	0.02	0.00	0.02	0.01	0.02	0.02	0.41	0.50	0.10	0.46	0.04	0.50	**0.16**	**0.21**	**0.02**	**0.00**	**0.50**
PHE	1.04	0.61	0.49	0.64	0.45	0.80	0.64	1.34	1.29	0.90	1.13	0.79	1.31	**0.88**	**0.32**	**0.80**	**0.45**	**1.34**
ANT	0.59	0.56	0.56	0.58	0.59	0.59	0.61	0.51	0.38	0.62	0.68	0.63	0.45	**0.57**	**0.08**	**0.59**	**0.38**	**0.68**
FLA	0.47	0.39	0.00	0.06	0.00	0.12	0.16	0.83	0.61	0.18	0.98	0.34	0.63	**0.37**	**0.32**	**0.34**	**0.00**	**0.98**
PYR	0.19	0.18	0.00	0.00	0.00	0.00	0.12	0.81	0.56	0.11	0.91	0.36	0.58	**0.29**	**0.32**	**0.18**	**0.00**	**0.91**
BaA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.72	0.53	0.00	1.02	0.00	0.49	**0.29**	**0.53**	**0.00**	**0.00**	**1.72**
CHR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.05	0.00	0.00	**0.04**	**0.14**	**0.00**	**0.00**	**0.50**
BbF	4.54	4.91	0.74	0.00	0.00	2.53	20.50	0.08	13.13	10.22	0.92	15.48	8.13	**6.24**	**6.76**	**4.54**	**0.00**	**20.50**
BkF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.62	0.46	0.00	0.97	0.00	0.73	**0.21**	**0.35**	**0.00**	**0.00**	**0.97**
BaP	2.28	0.62	0.70	0.56	0.00	2.43	0.45	1.89	1.01	1.45	1.59	3.23	1.60	**1.37**	**0.93**	**1.45**	**0.00**	**3.23**
IND	0.00	0.00	0.00	1.90	0.00	0.00	1.84	1.01	1.18	0.00	2.94	2.54	1.47	**0.99**	**1.08**	**1.01**	**0.00**	**2.94**
DbA	0.00	0.00	0.00	0.00	0.00	0.00	1.14	1.63	0.46	0.00	1.17	0.00	0.74	**0.40**	**0.58**	**0.00**	**0.00**	**1.63**
BPER	0.44	0.22	0.09	0.57	0.40	0.58	0.80	2.44	1.35	0.54	2.42	0.56	1.94	**0.95**	**0.81**	**0.57**	**0.09**	**2.44**
t-PAHs	**10.48**	**8.54**	**3.08**	**4.82**	**1.93**	**8.24**	**27.53**	**15.81**	**23.88**	**15.43**	**17.44**	**25.01**	**21.32**	**14.12**	**8.65**	**15.43**	**1.93**	**27.53**
c-PAHs	**6.83**	**5.53**	**1.44**	**2.46**	**0.00**	**4.96**	**23.93**	**7.44**	**16.76**	**11.67**	**8.66**	**21.25**	**13.17**	**9.55**	**7.47**	**7.44**	**0.00**	**23.93**
nc-PAHs	**3.66**	**3.01**	**1.64**	**2.36**	**1.93**	**3.28**	**3.60**	**8.37**	**7.11**	**3.75**	**8.78**	**3.77**	**8.15**	**4.57**	**2.57**	**3.66**	**1.64**	**8.78**

2. Other special occasions

PAHs	21/01/2555	31/08/2555	30/12/2555	31/12/2555	01/01/2556	08/02/2556	15/10/2555	20/10/2555	Mean	SD	Median	Min	Max
NAP	1.22	1.06	0.23	1.06	1.08	1.09	1.97	2.94	**1.33**	**0.80**	**1.09**	**0.23**	**2.94**
ACY	0.74	0.02	0.00	0.37	0.38	0.38	0.58	0.39	**0.36**	**0.25**	**0.38**	**0.00**	**0.74**
ACE	4.82	0.00	0.41	0.75	0.82	0.31	0.00	0.00	**0.89**	**1.62**	**0.36**	**0.00**	**4.82**
FLU	0.54	0.05	0.40	0.42	0.41	0.48	0.53	0.58	**0.43**	**0.17**	**0.45**	**0.05**	**0.58**
PHE	2.03	0.82	1.15	1.43	1.21	2.11	1.33	1.46	**1.44**	**0.44**	**1.38**	**0.82**	**2.11**
ANT	0.79	0.60	0.48	0.44	0.47	0.61	0.45	0.41	**0.53**	**0.13**	**0.47**	**0.41**	**0.79**
FLA	1.83	0.12	0.71	0.84	0.71	1.65	0.72	0.70	**0.91**	**0.56**	**0.71**	**0.12**	**1.83**
PYR	1.81	0.00	0.69	0.72	0.70	1.84	0.66	0.69	**0.89**	**0.62**	**0.70**	**0.00**	**1.84**
BaA	3.23	0.00	0.99	0.78	0.87	3.06	0.75	0.96	**1.33**	**1.16**	**0.92**	**0.00**	**3.23**
CHR	2.01	0.00	0.13	0.00	0.00	1.94	0.00	0.00	**0.51**	**0.90**	**0.00**	**0.00**	**2.01**
BbF	5.06	11.05	4.11	0.04	17.51	21.49	7.09	6.89	**9.16**	**7.17**	**6.99**	**0.04**	**21.49**
BkF	0.77	0.00	1.13	0.77	1.00	0.91	0.57	1.05	**0.77**	**0.36**	**0.84**	**0.00**	**1.13**
BaP	5.75	4.71	3.44	2.02	2.11	4.62	2.34	2.05	**3.38**	**1.48**	**2.89**	**2.02**	**5.75**
IND	5.27	0.00	5.28	1.97	4.42	7.00	2.21	3.17	**3.66**	**2.25**	**3.80**	**0.00**	**7.00**
DbA	1.03	0.00	5.40	1.37	1.18	1.89	0.75	1.70	**1.66**	**1.62**	**1.27**	**0.00**	**5.40**
BPER	2.13	0.95	4.71	2.40	2.49	4.41	2.24	3.27	**2.83**	**1.25**	**2.44**	**0.95**	**4.71**
t-PAHs	**39.03**	**19.39**	**29.26**	**15.38**	**35.36**	**53.78**	**22.19**	**26.25**	**30.08**	**12.41**	**27.76**	**15.38**	**53.78**
c-PAHs	**23.12**	**15.76**	**20.47**	**6.95**	**27.10**	**40.90**	**13.71**	**15.81**	**20.48**	**10.29**	**18.14**	**6.95**	**40.90**
nc-PAHs	**15.91**	**3.63**	**8.79**	**8.43**	**8.26**	**12.87**	**8.48**	**10.43**	**9.60**	**3.63**	**8.64**	**3.63**	**15.91**

3. Chinese New Year

PAHs	22/01/2555	23/01/2555	24/01/2555	09/02/2556	10/02/2556	11/02/2556	Mean	SD	Median	Min	Max
NAP	1.84	7.70	1.06	1.02	1.65	1.48	**2.46**	**2.59**	**1.57**	**1.02**	**7.70**
ACY	0.00	4.10	0.06	0.00	0.55	0.39	**0.85**	**1.61**	**0.23**	**0.00**	**4.10**
ACE	0.00	0.00	0.00	0.00	0.88	0.15	**0.17**	**0.35**	**0.00**	**0.00**	**0.88**
FLU	0.27	0.63	0.12	0.09	0.52	0.45	**0.35**	**0.22**	**0.36**	**0.09**	**0.63**
PHE	5.18	4.36	1.67	1.72	2.45	1.43	**2.80**	**1.58**	**2.09**	**1.43**	**5.18**
ANT	1.59	1.95	0.74	0.68	1.18	0.81	**1.16**	**0.52**	**1.00**	**0.68**	**1.95**
FLA	2.97	6.80	1.17	0.71	1.76	1.00	**2.40**	**2.30**	**1.46**	**0.71**	**6.80**
PYR	2.46	6.92	1.02	0.44	1.84	0.92	**2.27**	**2.39**	**1.43**	**0.44**	**6.92**
BaA	4.37	9.38	2.88	1.03	3.46	1.47	**3.77**	**3.02**	**3.17**	**1.03**	**9.38**
CHR	0.00	4.34	0.21	0.00	2.43	1.18	**1.36**	**1.74**	**0.69**	**0.00**	**4.34**
BbF	16.09	13.91	8.63	1.55	3.52	6.58	**8.38**	**5.72**	**7.60**	**1.55**	**16.09**
BkF	0.00	2.17	0.00	0.00	1.35	0.89	**0.73**	**0.90**	**0.45**	**0.00**	**2.17**
BaP	5.27	10.79	5.69	4.66	7.42	3.73	**6.26**	**2.53**	**5.48**	**3.73**	**10.79**
IND	5.69	8.88	2.53	1.33	10.72	6.56	**5.95**	**3.60**	**6.13**	**1.33**	**10.72**
DbA	0.81	1.13	0.00	0.00	2.41	1.92	**1.05**	**0.99**	**0.97**	**0.00**	**2.41**
BPER	2.63	16.17	3.26	1.84	4.87	3.33	**5.35**	**5.39**	**3.30**	**1.84**	**16.17**
t-PAHs	**49.18**	**99.22**	**28.21**	**15.07**	**47.02**	**32.29**	**45.17**	**29.33**	**39.66**	**15.07**	**99.22**
c-PAHs	**32.24**	**50.59**	**19.11**	**8.58**	**31.31**	**22.33**	**27.36**	**14.32**	**26.82**	**8.58**	**50.59**
nc-PAHs	**16.94**	**48.63**	**9.10**	**6.50**	**15.71**	**9.96**	**17.81**	**15.62**	**12.84**	**6.50**	**48.63**

Table F-5 Concentrations (ng/m^3) of $PM_{2.5}$- bound PAHs collected at the selected shrine during Chinese New Year in 2012-2013.

PAHs (ng/m^3)	Shrine 1						Shrine 2					
	8 hrs (n=3)			24 hrs (n=6)			8 hrs (n=2)			24 hrs (n=6)		
	Range	Median	Mean±SD	Range	Median	Mean±SD	Range	Median	Mean±SD	Range	Median	Mean±SD
NAP	11.9-14.9	13.03	13.0±1.63	2.27-7.62	4.98	5.31±1.38	2.17-4.54	3.97	3.56±1.24	1.02-7.70	1.57	2.46±2.59
ACY	1.58-1.68	1.63	1.63±0.07	0.52-1.11	0.89	0.88±0.23	ND-1.07	1.05	0.70±0.61	ND-4.10	0.23	0.85±1.61
ACE	7.36-8.71	8.03	8.03±0.95	0.99-5.69	3.62	3.49±1.32	ND-0.27	0.01	0.09±0.16	ND-0.88	ND	0.17±0.35
FLU	0.15-0.51	0.33	0.33±0.25	0.34-0.79	0.36	0.58±0.21	0.18-1.36	1.24	0.93±0.65	0.09-0.63	0.36	0.35±0.22
PHE	9.25-10.0	9.62	9.62±0.53	0.32-10.6	6.29	7.26±2.51	4.58-4.96	4.80	4.78±0.19	1.43-5.18	2.09	2.80±1.58
ANT	ND-5.09	2.55	2.55±3.60	1.67-4.08	2.13	2.95±1.06	1.03-2.11	1.05	1.40±0.61	0.68-1.95	1.00	1.16±0.52
FLA	10.7-16.6	13.62	13.6±4.17	5.17-13.8	8.22	8.79±3.22	1.62-3.25	3.18	2.68±0.92	0.71-6.80	1.46	2.40±2.30
PYR	10.5-15.0	12.76	12.8±3.16	4.49-11.0	6.54	7.32±2.46	1.37-3.13	3.11	2.54±1.01	0.44-6.92	1.43	2.27±2.39
BaA	3.77-5.05	4.41	4.41±0.90	1.54-3.66	2.38	2.55±0.78	2.11-5.14	4.70	3.98±1.64	1.03-9.38	3.17	3.77±3.02
CHR	3.77-7.32	5.54	5.54±2.51	2.17-5.69	4.40	3.91±1.30	ND-3.18	2.66	1.95±1.71	ND-4.34	0.69	1.36±1.74
BbF	6.58-12.0	9.31	9.31±3.86	3.57-10.3	7.49	6.70±2.39	4.20-35.8	4.83	14.9±18.1	1.55-16.1	7.60	8.38±5.72
BkF	5.75-9.60	7.67	7.67±2.72	2.74-6.97	4.98	4.74±1.38	ND-6.46	2.15	2.87±3.29	ND-2.17	0.45	0.73±0.90
BaP	15.8-24.2	19.99	20.0±6.00	9.20-23.8	9.26	15.6±7.43	8.20-12.6	9.25	10.0±2.30	3.73-10.8	5.48	6.26±2.53
IND	20.0-44.8	32.4	32.4±17.5	3.90-25.9	8.72	14.4±8.48	4.21-23.1	10.94	12.8±9.57	1.33-10.7	6.13	5.95±3.60
DbA	2.68-4.82	3.75	3.75±1.51	0.18-3.45	1.27	1.21±1.31	3.30-45.2	3.51	17.3±24.1	ND-2.41	0.97	1.05±0.99
BPER	11.4-33.2	22.31	22.3±15.4	5.98-31.6	17.61	15.9±9.55	5.27-17.8	6.11	9.72±6.99	1.84-16.7	3.30	5.35±5.39
t-PAHs	**125-210**	**167.0**	**168±60**	**64.6-132**	**98.64**	**102±26**	**55.6-136**	**78.93**	**90±41**	**15.1-99.2**	**39.66**	**45±29**
c-PAHs	**58.3-108**	**83.1**	**83±35**	**27.3-68.3**	**47.95**	**49±16**	**31.5-99.4**	**60.56**	**64±34**	**8.58-50.6**	**26.82**	**27±14**
nc-PAHs	**67.1-102**	**83.9**	**85±25**	**25.6-83.8**	**41.62**	**52±18**	**18.4-36.7**	**24.11**	**26±9.4**	**6.50-48.6**	**12.84**	**18±16**

ND = not detected

Table F-6 Concentrations (ng/m^3) of $PM_{2.5}$- bound PAHs collected at the selected shrine during other special occasions in 2012.

PAHs (ng/m^3)	Shrine 1						Shrine 2					
	8 hrs (n=9)			24 hrs (n=8)			8 hrs (n=5)			24 hrs (n=8)		
	Range	Median	Mean±SD	Range	Median	Mean±SD	Range	Median	Mean±SD	Range	Median	Mean±SD
NAP	5.49-14.0	9.3	9.73±3.14	2.12-3.96	2.96	3.33±0.43	2.81-10.6	5.65	5.92±2.37	0.23-2.94	1.09	1.33±0.80
ACY	1.10-1.26	1.14	1.17±0.08	0.35-0.58	0.42	0.41±0.06	ND-2.22	1.11	1.05±0.67	ND-0.74	0.38	0.36±0.25
ACE	4.44-8.03	5.23	5.54±1.43	1.23-2.33	1.83	1.96±0.42	ND-2.35	1.24	1.05±1.05	ND-4.82	0.36	0.89±1.62
FLU	ND-0.68	0.16	0.22±0.27	0.03-1.44	0.18	0.11±0.07	0.18-1.81	1.37	1.17±0.59	0.05-0.58	0.45	0.43±0.17
PHE	6.95-10.5	8.14	8.62±1.74	0.64-3.39	2.51	2.64±0.25	2.25-4.77	4.11	3.77±0.78	0.82-2.11	1.38	1.44±0.44
ANT	ND	ND	ND	ND-1.68	0.43	0.51±0.75	1.20-1.97	1.76	1.64±0.27	0.41-0.79	0.47	0.53±0.13
FLA	3.92-9.30	6.3	6.25±2.05	1.53-3.77	2.85	2.50±0.82	0.05-2.43	1.75	1.50±0.98	0.12-1.83	0.71	0.91±0.56
PYR	4.52-7.70	5.4	5.86±1.29	1.38-3.49	2.47	2.41±0.75	ND-2.37	1.71	1.36±1.05	ND-1.84	0.70	0.89±0.62
BaA	2.06-2.96	2.31	2.44±0.37	0.65-1.25	0.96	0.94±0.21	ND-4.20	1.56	1.79±1.68	ND-3.23	0.92	1.33±1.16
CHR	2.02-3.79	2.74	2.74±0.66	0.71-2.10	1.22	1.16±0.54	ND-1.29	0.00	0.42±0.58	ND-2.01	ND	0.51±0.90
BbF	2.34-8.11	4.64	4.45±2.34	0.94-4.66	3.17	2.61±1.40	ND-62.7	28.00	26.9±18.2	0.04-21.5	6.99	9.16±7.17
BkF	2.59-6.25	3.99	3.91±1.50	1.01-3.38	2.28	2.08±0.86	ND-3.63	1.79	1.77±1.47	ND-1.13	0.84	0.77±0.36
BaP	3.78-32.9	9.3	13.6±11.4	4.74-14.3	8.64	8.76±4.07	2.00-16.5	5.03	6.75±4.89	2.02-5.75	2.89	3.38±1.48
IND	10.9-51.9	25.6	26.4±16.8	4.10-14.4	8.93	10.4±3.70	ND-15.4	5.4	6.71±6.92	ND-7.00	3.80	3.66±2.25
DbA	0.67-2.68	1.07	1.41±0.87	0.37-0.91	0.50	0.63±0.23	ND-9.48	3.81	4.15±3.96	ND-5.40	1.27	1.66±1.62
BPER	5.23-26.6	13.0	14.3±8.25	1.25-11.4	7.0	6.55±4.18	0.21-11.6	4.6	4.70±3.75	0.95-4.71	2.44	2.83±1.25
t-PAHs	**70.7-183**	**91.0**	**107±45**	**38.2-56.3**	**47.2**	**47±7.3**	**34.5-108**	**72.3**	**71±30**	**15.4-53.8**	**27.8**	**30±12**
c-PAHs	**35.7-108**	**39.0**	**55±31**	**19.6-28.7**	**27.2**	**27±2.6**	**12.8-86.8**	**44.4**	**48±24**	**6.75-40.9**	**18.1**	**20±10**
nc-PAHs	**31.6-75.1**	**51.5**	**52±16**	**14.6-27.6**	**21.3**	**20±5.5**	**10.4-32.8**	**21.8**	**22±8**	**3.63-15.9**	**8.6**	**10±4**

ND = not detected

Table F-7 Concentrations (ng/m^3) of $PM_{2.5}$- bound PAHs collected at the selected shrine during normal periods in 2012.

PAHs (ng/m^3)	Shrine 1						Shrine 2					
	8 hrs (n=10)			24 hrs (n=13)			8 hrs (n=7)			24 hrs (n=8)		
	Range	Median	Mean±SD	Range	Median	Mean±SD	Range	Median	Mean±SD	Range	Median	Mean±SD
NAP	4.61-6.63	5.7	5.58±0.79	1.19-3.46	2.37	2.28±0.77	0.49-4.87	2.47	2.60±1.45	0.46-2.10	1.17	1.10±0.48
ACY	0.55-2.23	1.39	1.32±0.70	0.10-2.08	0.30	0.51±0.65	ND-1.64	ND	0.37±0.70	ND-0.54	0.02	0.17±0.22
ACE	1.30-7.25	5.08	4.67±2.13	1.31-2.90	1.80	1.89±0.53	ND-1.51	ND	0.26±0.54	ND-0.33	ND	0.08±0.13
FLU	ND-2.00	0.11	0.65±0.92	ND-0.15	ND	0.03±0.05	ND-1.42	ND	0.32±0.59	ND-0.50	0.02	0.16±0.21
PHE	0.46-14.4	2.71	6.77±6.28	0.58-3.67	2.10	2.01±1.11	0.39-4.00	1.65	2.13±1.23	0.45-1.34	0.80	0.88±0.32
ANT	ND-5.16	2.39	2.56±2.07	ND-2.36	0.81	0.96±0.81	0.55-1.92	1.71	1.56±0.42	0.38-0.68	0.59	0.57±0.08
FLA	3.08-11.2	4.8	6.25±3.20	1.32-3.29	1.73	1.97±0.72	ND-1.96	0.38	0.84±0.88	ND-0.98	0.34	0.37±0.32
PYR	1.24-9.72	4.9	5.36±2.86	1.54-3.31	1.71	2.01±0.68	ND-1.53	ND	0.47±0.65	ND-0.91	0.18	0.29±0.32
BaA	1.12-3.54	2.15	2.29±0.82	0.70-1.71	0.74	0.89±0.35	ND-1.28	ND	0.25±0.51	ND-1.72	ND	0.29±0.53
CHR	1.40-10.0	2.75	5.03±3.50	0.70-5.21	0.93	1.70±1.59	ND	ND	ND	ND-0.50	ND	0.04±0.14
BbF	ND-3.44	ND	1.46±1.82	ND-2.30	1.00	1.02±0.81	ND-38.2	9.14	12.4±12.4	ND-20.5	4.54	6.24±6.76
BkF	ND-4.23	ND	1.58±1.99	ND-2.15	1.10	1.02±0.77	ND-5.84	ND	0.79±1.94	ND-0.97	ND	0.21±0.35
BaP	1.80-25.7	5.8	11.7±9.91	ND-11.0	4.56	4.16±3.27	ND-3.46	1.67	1.61±1.20	ND-3.23	1.45	1.37±0.93
IND	ND-5.34	ND	0.76±2.02	ND-36.6	1.15	8.36±13.0	ND-3.11	ND	0.36±1.03	ND-2.94	1.01	0.99±1.08
DbA	ND-3.84	ND	0.69±1.44	ND-1.05	0.32	0.39±0.40	ND-0.29	ND	0.03±0.10	ND-1.63	ND	0.40±0.58
BPER	3.82-6.82	4.9	5.15±1.20	1.10-6.33	2.7	3.01±1.63	ND-3.67	0.7	1.30±1.39	0.09-2.44	0.57	0.95±0.81
t-PAHs	**27.8-103**	**43.0**	**62±30**	**12.2-63.2**	**24.8**	**32±19**	**8.94-46.4**	**20.8**	**25±15**	**1.93-27.5**	**15.4**	**14±9**
c-PAHs	**5.89-47.7**	**16.7**	**24±15**	**3.54-47.9**	**9.8**	**18±16**	**2.12-40.0**	**13.9**	**15±12**	**ND-23.9**	**7.4**	**10±8**
nc-PAHs	**22.0-55.3**	**30.4**	**38±15**	**8.73-25.4**	**13.3**	**15±5**	**1.51-21.9**	**7.7**	**10±7**	**1.64-8.78**	**3.7**	**5±3**

ND = not detected

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