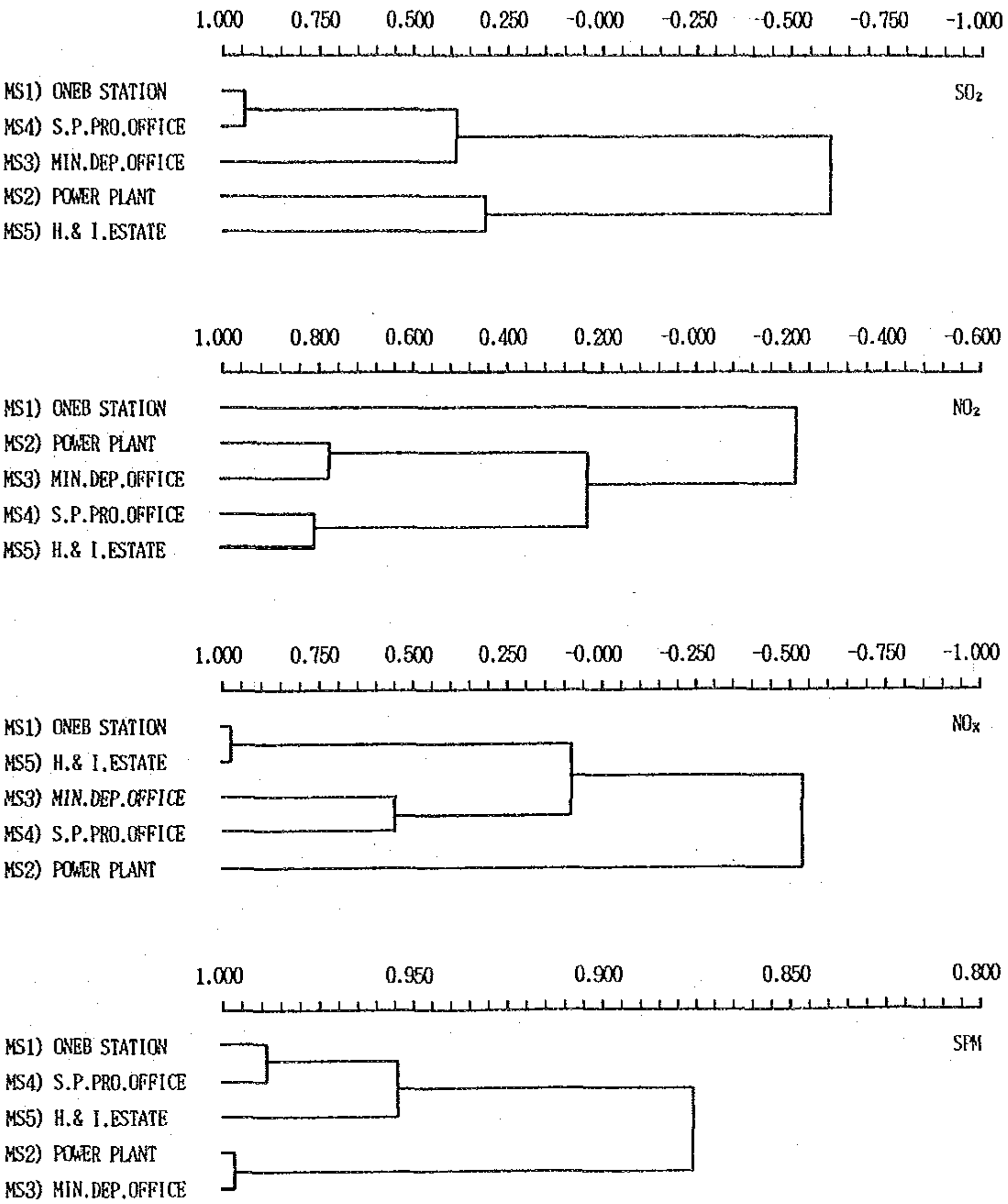

Fig. 1-19 The Result of Cluster Analysis (Dendrogram of Monitoring Stations for Various Atmospheric Pollutants)

(2) Principal component analysis

The method is usefully applied for analysis of components having numerous variables X_1, X_2, ..., X_p (number of variables=p) and to convert into a minimum number of representative components called principal components which are mutually independent. Each principal component is expressed by a linear equation of weighted variables as shown by the equation (1-7).

$$
\left.
\begin{aligned}
Z_1 &= \ell_{11}X_1+\ell_{12}X_2+\cdots+\ell_{1P}X_P = \sum_{i=1}^{P}\ell_{1i}X_i \\
Z_2 &= \ell_{21}X_1+\ell_{22}X_2+\cdots+\ell_{2P}X_P = \sum_{i=1}^{P}\ell_{2i}X_i \\
Z_k &= \ell_{k1}X_1+\ell_{k2}X_2+\cdots+\ell_{kP}X_P = \sum_{i=1}^{P}\ell_{ki}X_i \\
Z_m &= \ell_{m1}X_1+\ell_{m2}X_2+\cdots+\ell_{mP}X_P = \sum_{i=1}^{P}\ell_{mi}X_i
\end{aligned}
\right\} \quad \text{.................................... (1-7)}
$$

where;

$$
\ell_{k1}^2+\ell_{k2}^2+\cdots+\ell_{kP}^2 = \sum_{i=1}^{P}\ell_{ki}^2 = 1\ (k=1, 2, \cdots, m) \quad \text{.................................... (1-8)}
$$

The constant ℓ_{ki} is determined such that it satisfies the following conditions:

① The first principal component Z_1 has the constant ℓ_{1i} (to be multiplied by X_i) which gives the maximum variance under the condition of equation (1-8) being upheld. ($i=1, 2, \ldots, P$)

② The constant of second principal component Z_2, (ℓ_{2i}) ($i=1, 2, \ldots, P$), satisfies the equation (1-8) and gives the maximum variance under the condition that Z_2 and Z_1 are mutually independent.

③ Likewise, the constant of Kth principal component (ℓ_{ki}, $i=1, 2, \ldots, P$) satisfies equation (1-8) and gives the maximum variance under the condition that $Z_1, Z_2, \ldots, Z_{k-1}$ are mutually independent.

Thus the principal component Z_k can be expressed mathematically by matrix of correlation coefficients or by variance-covariance of original variables but derivation steps are omitted here.

In this study, the variables mentioned above are atmospheric pollutant concentration monitored at each stations and the principal component analysis was done by using correlation matrix (as shown in Table 1-13) of pollutant concentrations among stations. The result is shown in Table 1-14 in which the eigen vector (constant ℓ_{ki}) and eigen values are listed. The eigen values show the variance of Z_k and is termed as "contribution to total variance". Here P=5. The contribution ($\lambda_1/5$) of first principal component reads 0.663 for SO_2, 0.525 for NO_2, 0.594 for NO_x and 0.933 for SPM respectively, which means that the first principal component (Z_1) remains information of variables by as much as 66.3 pct. 52.5 pct, 59.4 pct, and 93.3 pct. The contribution of second principal component (Z_2) was calculated to be 0.280, 0.317, 0.304, 0.057 for SO_2, NO_2, NO_x, SPM respectively. The sum of the first and second contribution being called "cumulative contribution" becomes thus 0.943 (SO_2), 0.842 (NO_2), 0.898 (NO_x), and 0.990 (SPM).

The loading factor $r(Z_k, X_i)$ shown in Table 1-14 represents the correlation coefficient between the principal component Z_k and variable X_i and a relationship $r(Z_k, X_i)= \sqrt{\lambda_k}\cdot\ell_{ki}$ is unheld.

Table 1-14 The Result of Principal Component Analysis done on Correlation Coefficients among Stations with respect to Atmospheric Pollutants

(SO_2)

Monitoring stations	Loading factor				Eigen vector			
	1	2	3	4	1	2	3	4
(MS1) ONEB STATION	0.942	-0.301	0.088	0.119	0.517	-0.255	0.175	0.717
(MS2) POWER PLANT	-0.709	0.620	0.336	0.023	-0.389	0.524	0.665	0.141
(MS3) MIN.DEP.OFFICE	0.640	0.766	-0.030	0.048	0.351	0.647	-0.059	0.288
(MS4) S.P.PRO.OFFICE	0.912	-0.230	0.331	-0.081	0.501	-0.194	0.656	-0.487
(MS5) H. & I. ESTATE	-0.828	-0.535	0.155	0.063	-0.455	-0.452	0.306	0.382
Eigen values	3.316	1.402	0.255	0.027				

(NO_2)

Monitoring stations	Loading factor				Eigen vector			
	1	2	3	4	1	2	3	4
(MS1) ONEB STATION	-0.587	0.263	0.764	0.042	-0.363	0.209	0.875	0.241
(MS2) POWER PLANT	0.485	0.868	0.076	-0.074	0.299	0.690	0.087	-0.426
(MS3) MIN.DEP.OFFICE	0.889	0.437	-0.055	0.128	0.549	0.347	-0.063	0.739
(MS4) S.P.PRO.OFFICE	0.917	-0.204	0.333	-0.076	0.566	-0.162	0.382	-0.439
(MS5) H. & I. ESTATE	0.643	-0.726	0.241	0.025	0.397	-0.577	0.277	0.147
Eigen values	2.625	1.583	0.762	0.030				

(NO_x)

Monitoring stations	Loading factor				Eigen vector			
	1	2	3	4	1	2	3	4
(MS1) ONEB STATION	0.891	-0.340	0.290	-0.083	0.517	-0.276	0.501	-0.197
(MS2) POWER PLANT	-0.880	-0.083	0.466	-0.028	-0.511	-0.067	0.806	-0.067
(MS3) MIN.DEP.OFFICE	0.096	0.963	0.138	0.211	0.056	0.781	0.239	0.504
(MS4) S.P.PRO.OFFICE	0.765	0.590	0.066	-0.251	0.444	0.479	0.113	-0.599
(MS5) H. & I. ESTATE	0.899	-0.349	0.099	0.245	0.522	-0.283	0.170	0.586
Eigen values	2.970	1.520	0.334	0.175				

(SPM)

Monitoring stations	Loading factor				Eigen vector			
	1	2	3	4	1	2	3	4
(MS1) ONEB STATION	0.971	-0.235	-0.003	0.043	0.450	-0.442	-0.015	0.604
(MS2) POWER PLANT	0.963	0.265	0.028	-0.031	0.446	0.498	0.129	-0.438
(MS3) MIN.DEP.OFFICE	0.953	0.300	0.031	0.034	0.441	0.564	0.141	0.480
(MS4) S.P.PRO.OFFICE	0.960	-0.249	0.124	-0.027	0.445	-0.467	0.566	-0.378
(MS5) H. & I. ESTATE	0.981	-0.076	-0.176	-0.019	0.454	-0.142	-0.802	-0.264
Eigen values	4.663	0.284	0.048	0.005				

Fig. 1-20 shows the loading factor of the first and second principal components of pollutants observed at each station. From the graph, one can understand that all stations are plotted in a close proximity for SPM but in case of other pollutants, stations are dispersed (except MS1 and MS4 (for SO_2), MS4 and MS5 (for NO_2), MS1 and MS5 (for NO_x)) and have little regional relationship among them. The principal component analysis discussed so far conforms to whatever is found by cluster analysis.

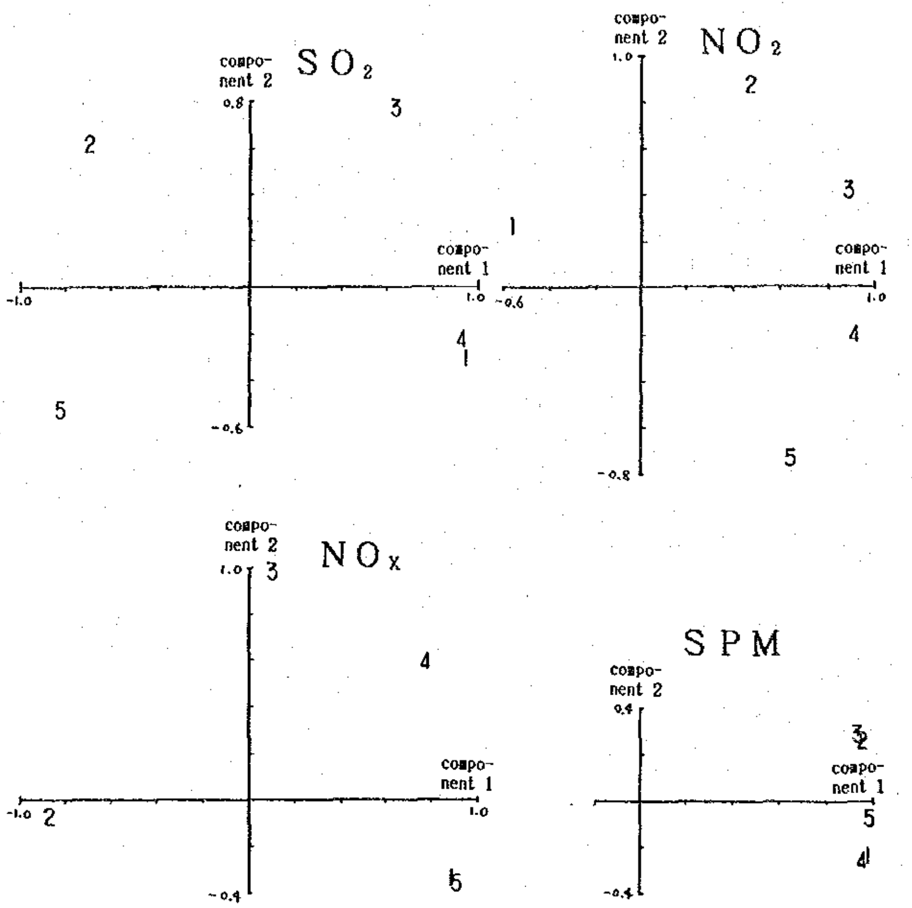

Fig. 1-20 The Result of Principal Component Analysis done on Correlation Coefficients among Stations with respect to Atmospheric Pollutants

1.2.3 Resemblance among Atmospheric Pollutants

The correlation coefficient among atmospheric pollutants were calculated by using monthly average concentrations of SO_2, NO_2, NO_x and SPM to clarify their relationship. The calculation result is shown in Table 1-15 and made it possible for reporter to screen such combinations that have the coefficient larger than 0.8. They are as shown below.

MS1; SO_2-SPM, NO_2-NO_x
MS3; NO_2-NO_x, NO_2-SPM, NO_x-SPM
MS4; SO_2-NO_2, SO_2-NO_x, SO_2-SPM,
NO_2-NO_x, NO_2-SPM, NO_x-SPM

As for MS4, the coefficient was found larger than 0.8 for all combinations of pollutant, which may suggest that they are of a single source origin. On the other hand, if the coefficient is found small, each station monitors pollutants that have multiple sources.

Table 1-15 Correlation Coefficient among Atmospheric Pollutant Concentrations

(MS1) ONEB STATION

	SO_2	NO_2	NO_x	SPM
SO_2				
NO_2	0.57			
NO_x	0.60	0.82		
SPM	0.81	0.17	0.23	

(MS2) POWER PLANT

	SO_2	NO_2	NO_x	SPM
SO_2				
NO_2	0.40			
NO_x	0.53	0.76		
SPM	0.64	0.79	0.60	

(MS3) MIN.DEP.OFFICE

	SO_2	NO_2	NO_x	SPM
SO_2				
NO_2	-0.25			
NO_x	-0.35	0.88		
SPM	0.18	0.86	0.84	

(MS4) S.P.PRO.OFFICE

	SO_2	NO_2	NO_x	SPM
SO_2				
NO_2	0.83			
NO_x	0.85	0.98		
SPM	0.86	0.92	0.91	

(MS5) H.& I.ESTATE

	SO_2	NO_2	NO_x	SPM
SO_2				
NO_2	-0.37			
NO_x	-0.07	0.72		
SPM	-0.46	0.77	0.28	

1.2.4 Cumulative Frequency Distribution

As the result of analyses done in U.S.A. on environmental concentration measurement data of various pollutants, R.I. Larsen (1969)[9] discovered that the characteristics of the concentration of atmospheric pollutants agree to a log normal distribution and that such distribution is upheld with respect to the various averaging time. Thus he proposed the following mathematical model to express such characteristics.

$$f(c) = \frac{1}{\sqrt{2\pi}\,Sg} \exp\left\{-\frac{(\ln C - \ln mg)^2}{2Sg^2}\right\} \qquad \text{(1-9)}$$

where;

f(c): Occurrence probability at concentration C

mg: Geometrical mean

$$mg = \exp\left(\frac{\sum_{i=1}^{n} \ln Ci}{n}\right)$$

Sg: Geometrical standard deviation

$$Sg = \exp\sqrt{\frac{\sum_{i=1}^{n}(\ln Ci - \ln mg)^2}{n}}$$

In Fig. 1-21 plotted are the cumulative occurrence frequency distribution of hourly values and daily average values of SO_2, NO_2, NO_x and SPM environmental concentration at each monitoring station on log normal probability chart (P–C curve diagram). This cumulative frequency was obtained by consolidating occurrence frequency of concentration, in the ascending order of concentration. Distribution of hourly concentrations are found to be nearly a straight line, which substantiates log normal distribution. The similar trend is also observed in daily average concentrations. The distribution maintains a straight line, which supports log normal distribution.

The gradient of the line expresses Sg, the standard deviations of concentration, and Sg becomes larger for smaller gradient of the line. And the concentration at cumulative frequency of 50 percents is equal to the arithmetic mean mg. Assuming the log-normal profile, the value of Sg is calculable from the curve by the following equation:

$$Sg = \exp\left\{\frac{\ln(Ca/Cb)}{Za - Zb}\right\} \quad \cdots\cdots (1\text{-}10)$$

where, the symbols are as follows;

Ca, Cb: Concentration level at cumulative frequency a and b, respectively.

Za, Zb: Standard deviation of concentration at cumulative frequency a and b, respectively.

This cumulative occurrence distribution is also applicable for estimation of the maximum concentration while upper X% excluded or for estimation of probability of exceeding the specified concentration.

Ninety eight per cent cumulative of the daily average value (the value where the upper 2% of high concentration is excluded from effective measurement days), daily average value, maximum value of hourly data (percentile value) and geometrical standard deviation of hourly concentration are shown in Table 1-16.

Table 1-16 Statistical Values of Atmospheric Pollutants Concentration

〔SO_2〕

Monitoring Stations	Geometical standard deviation	98% cumulative of daily average (ppb)	Maximum value of daily average (ppb)	Maximum value of hourly data (ppb)
(MS1) ONEB STATION	2.77	19	23	109
(MS2) POWER PLANT	2.84	30	34	112
(MS3) MIN.DEP.OFFICE	2.52	60	71	199
(MS4) S.P.PRO.OFFICE	2.49	14	20	79
(MS5) H.& I. ESTATE	2.20	8	21	48

〔NO_2〕

Monitoring Stations	Geometical standard deviation	98% cumulative of daily average (ppb)	Maximum value of daily average (ppb)	Maximum value of hourly data (ppb)
(MS1) ONEB STATION	2.33	33	49	138
(MS2) POWER PLANT	2.45	20	32	69
(MS3) MIN.DEP.OFFICE	2.40	30	41	81
(MS4) S.P.PRO.OFFICE	2.73	46	69	150
(MS5) H.& I. ESTATE	2.55	14	16	48

〔NO_x〕

Monitoring Stations	Geometical standard deviation	98% cumulative of daily average (ppb)	Maximum value of daily average (ppb)	Maximum value of hourly data (ppb)
(MS1) ONEB STATION	2.82	112	176	497
(MS2) POWER PLANT	2.07	40	56	132
(MS3) MIN.DEP.OFFICE	2.21	62	75	251
(MS4) S.P.PRO.OFFICE	2.64	105	180	343
(MS5) H.& I. ESTATE	2.70	25	36	127

〔SPM〕

Monitoring Stations	Geometical standard deviation	98% cumulative of daily average ($\mu g/m^3$)	Maximum value of daily average ($\mu g/m^3$)	Maximum value of hourly data ($\mu g/m^3$)
(MS1) ONEB STATION	2.19	130	156	477
(MS2) POWER PLANT	2.15	125	169	870
(MS3) MIN.DEP.OFFICE	2.09	132	157	702
(MS4) S.P.PRO.OFFICE	2.42	162	201	605
(MS5) H.& I. ESTATE	2.29	103	119	661

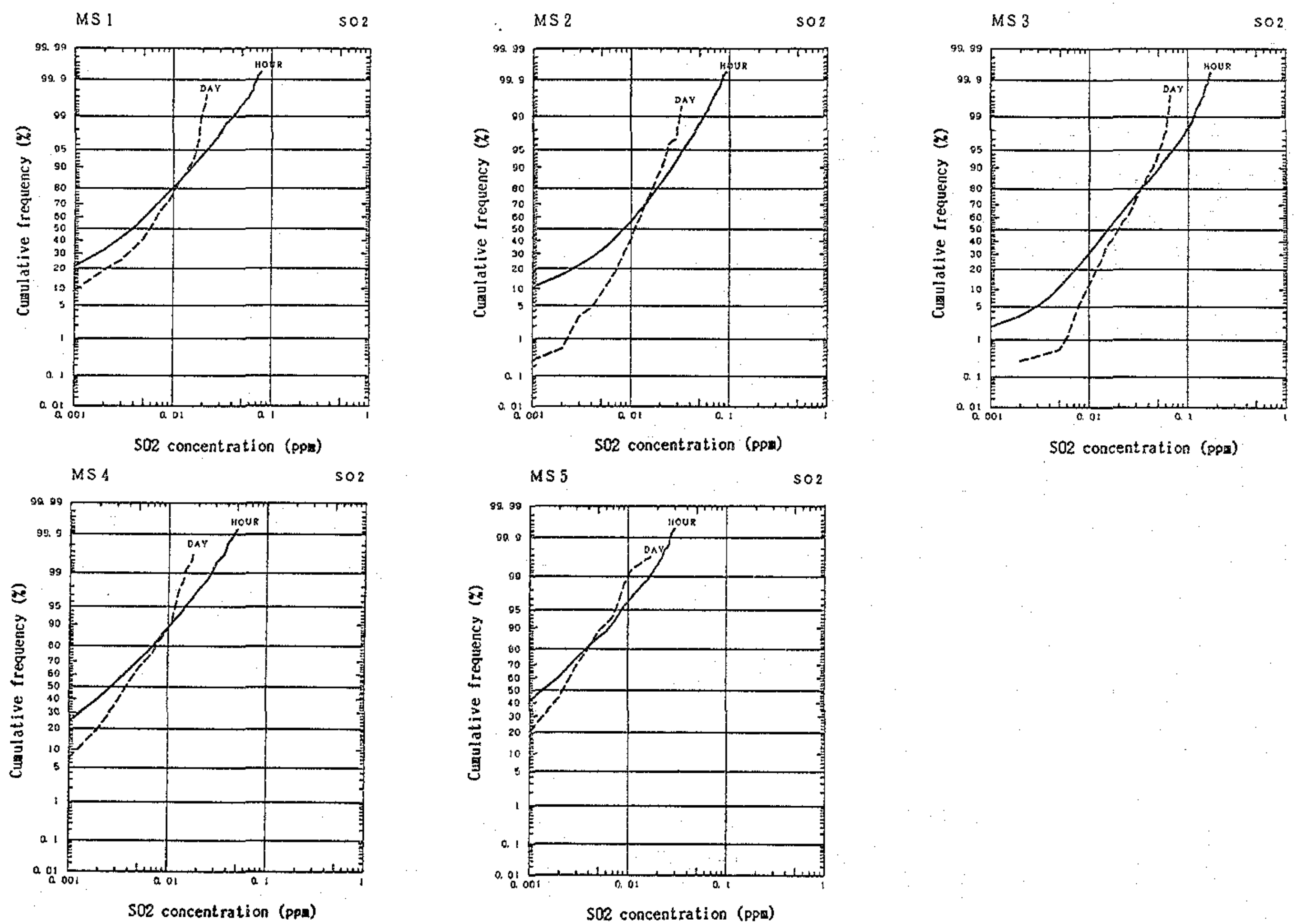

Fig. 1-21 (1) Cumulative Frequency Distribution of Hourly and Daily Average Concentration (SO_2)

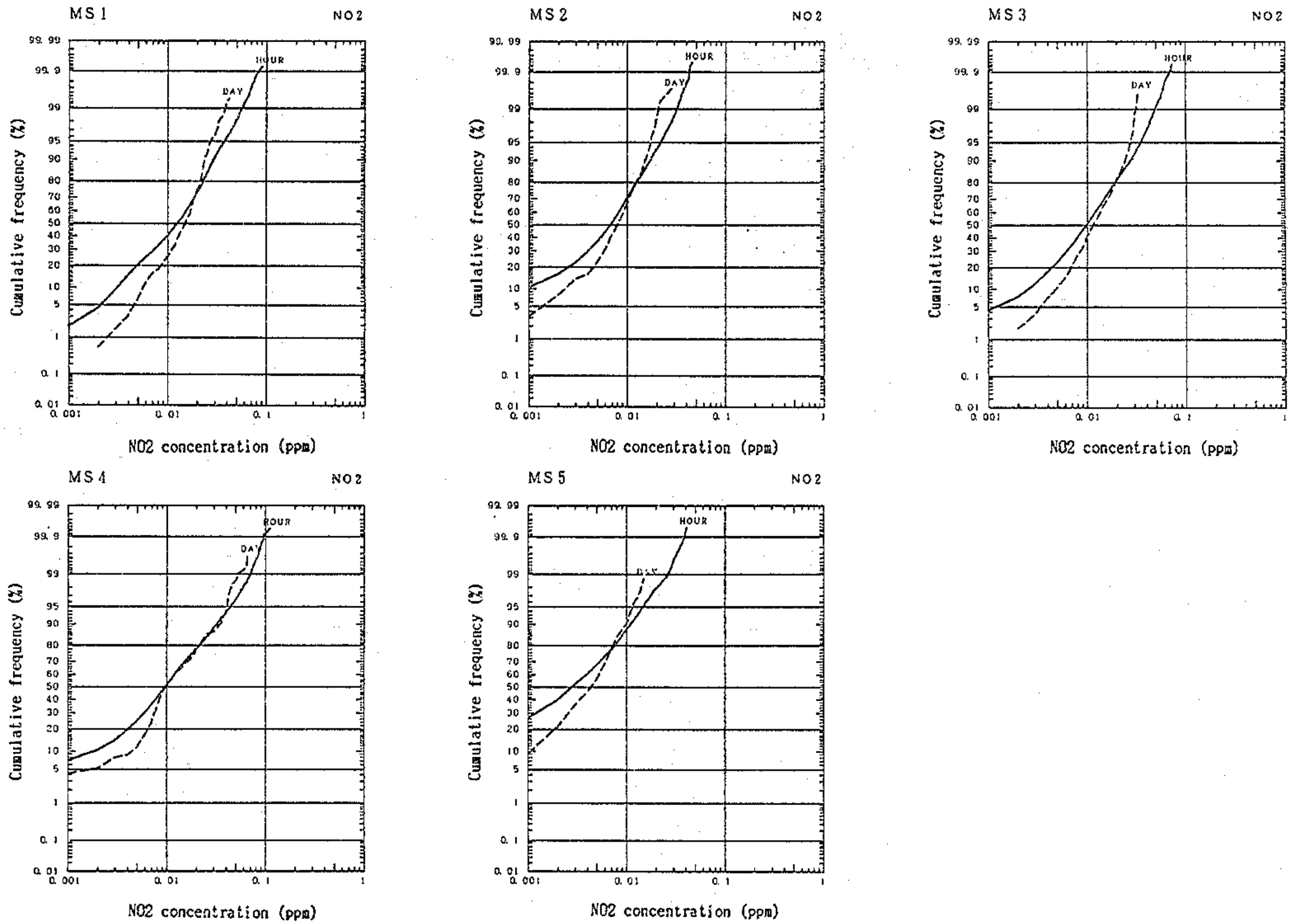

Fig. 1-21 (2) Cumulative Frequency Distribution of Hourly and Daily Average Concentration (NO_2)

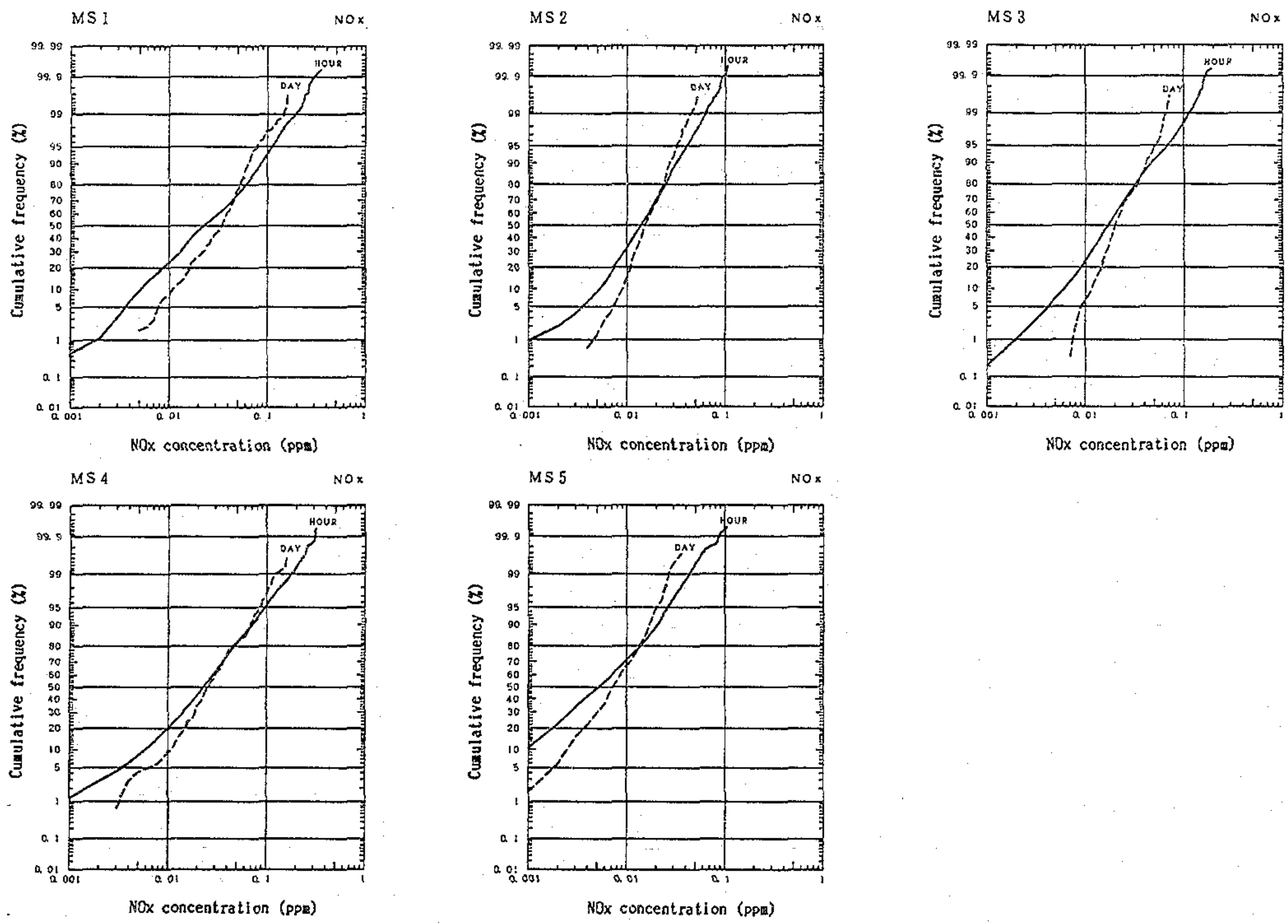

Fig. 1-21 (3) Cumulative Frequency Distribution of Hourly and Daily Average Concentration (NO_x)

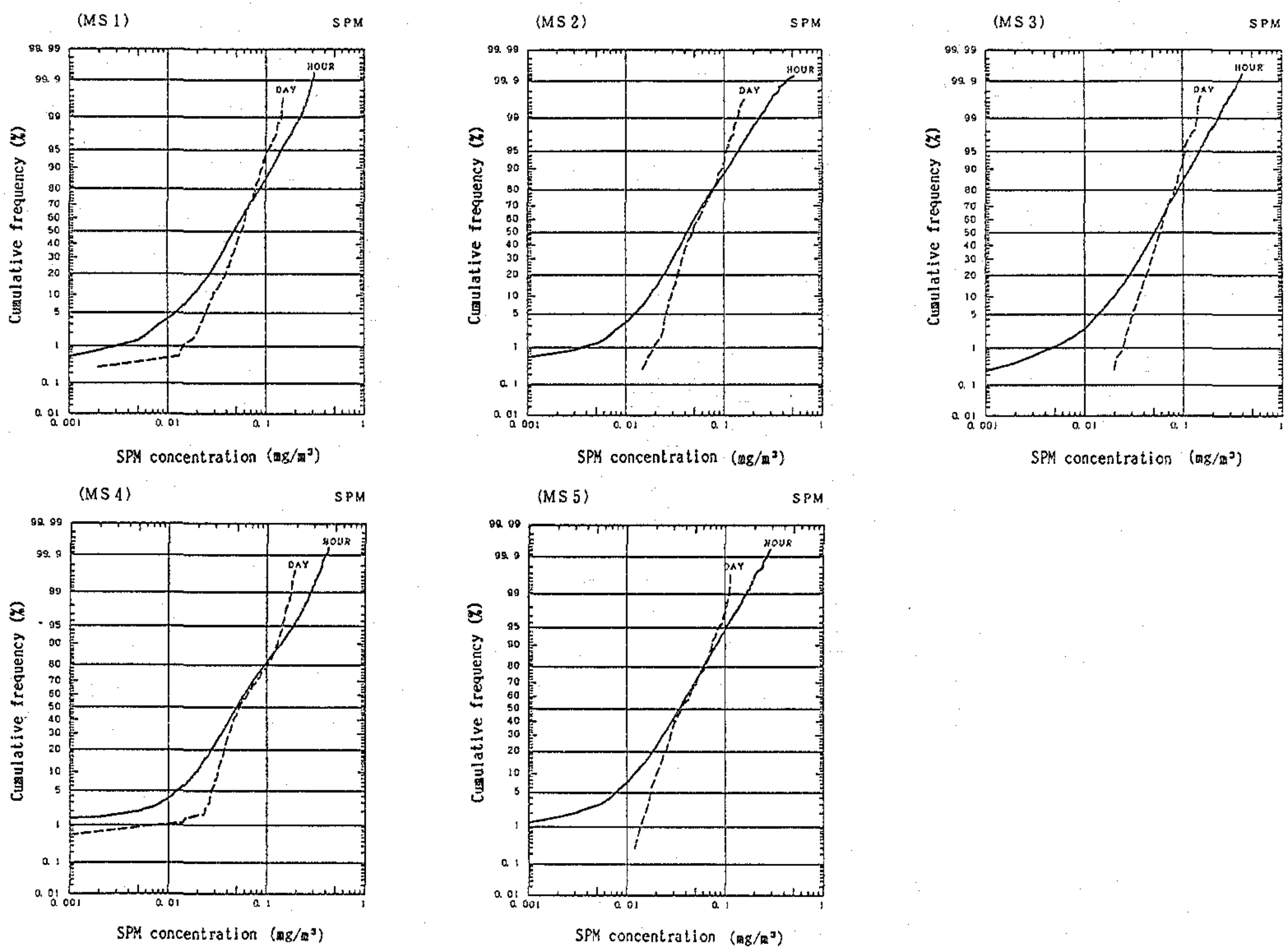

Fig. 1-21 (4) Cumulative Frequency Distribution of Hourly and Daily Average Concentration (SPM)

1.2.5 Comparison of Measured Concentrations with Ambient Air Standards

The measured pollutant concentrations (SO_2, NO_2, particulate matters) were studied in light of Thai standards and were simultaneously subject to a comparative study with those of other industrialilzed countries. Table 1-17 and Table 1-18 show the control standards on Thailand and those in other countries respectively. The standards are mostly defined in term of weight concentration ($\mu g/m^3$) but were converted into volume concentrations as for both SO_2 and NO_2 just to ease the comparison with Japanese standards. Japanese standards are defined in term of ppm and thus such conversion was done by using the average atmospheric temperature. The comparative study among standards on particulate matter of listed countries was, however, difficult because measurement of particulate size is dependent on the type of instrument and detection procedure. (For example, both Japanese and US standards address SPM concentration in less than 10 micron size while Thailand and other countries maintain standards set for TSP concentration in 0–30 micron size range that High volume sampler detects. Accordingly, Japanese control standards, as a rule of thumb, looks stringent when the absolute value of standards is watched.

Table 1-17 Ambient Air Pollution Control Standards in Thailand

Pollutant		Standard of air pollution	
		(mg/m^3)	(ppm)
SO_2	Daily average	0.30	0.117
	Yearly geometric average	0.10	0.039
NO_2	Hourly data	0.32	0.173
TSP	Daily average	0.33	—
	Yearly geometric average	0.10	—

Table 1-19 shows pollutant concentrations, SO_2, NO_2, and SPM measured at Samut Prakarn province, the former two of which are found to comply with Thai standards at all monitoring stations. As for SPM, there is no standards stipulated in the country.

When those measurements being compared with standards of other countries, the SO_2 yearly mean of MS3 (0.024 ppm) is found exceeding the yearly means of daily averages of both countries, England and France (0.014~0.021 ppm) and also desirable (0.01 ppm) as well as acceptable (0.021 ppm) levels of Canada. When the maximum daily average is compared, the measurement of MS3 (0.071 ppm) is found larger than English and French guidelines (0.035~0.052 ppm), the desirable level (0.052 ppm) of Canada, the acceptable level (0.060 ppm) of Australia and Japanese standards (0.040 ppm). The hourly maximum of MS3 (0.199 ppm) is also exceeding the acceptable level (0.170 ppm) of Australia and the desirable level (0.157 ppm) of Canada.

Table 1-18 Ambient Air Quality Standards of Major Countries

Country	SO_2	NO_2	Particulate matter
England France	Permissible limits (μg/m³) Yearly average (of daily average values) IF SMOKE<34 0.042 ppm IF SMOKE≧34 0.028 ppm Winter average (of daily average values from October to March) IF SMOKE<51 0.063 ppm IF SMOKE≧51 0.045 ppm Yearly peak (of daily average values) IF SMOKE<128 0.122 ppm IF SMOKE≧128 0.087 ppm Guideline value Yearly average (of daily average values) 0.014~0.021 ppm 24-hour value 0.035~0.052 ppm		SMOKE* environment standard Permissible limits Yearly average (of daily average values) 68 μg/m³ Winter average (of daily average values from October to March) 111 μg/m³ Yearly peak (98% value of daily average concentration) 213 μg/m³ Guideline value Yearly average (of daily average values) 34~51 μg/m³ 24-hour value 85~128 μg/m³ *SMOKE: A portion in particle diameter of less than 15 μm of soot and dust exhausted by fossil fuel combustion.
West Germany	30-min value 0.350 ppm 24-hour average value 0.105 ppm	30-min value 0.098 ppm 24-hour average value 0.049 ppm	30-min value 300 μg/m³ 24-hour average value 200 μg/m³ Yearly average value 100 μg/m³
Italy	Yearly average value of daily average concentrations 0.028 ppm 98% value of daily average concentration during a year 0.087 ppm	Arithmetic mean of one-hour average concentrations 0.070 ppm (The value should not be maintained longer than one hour per day.)	Yearly arithmetic mean of daily average concentrations 150 μg/m³ 95% value of daily average concentration during a year 300 μg/m³
Nether-lands	50% value of 24-hour average concentration 0.026 ppm 95% value of 24-hour average concentration 0.070 ppm 98% value of 24-hour average concentration 0.087 ppm 24-hour average value 0.175 ppm One hour average value 0.290 ppm	50% value of 24-hour average concentration 0.024 ppm 95% value of 24-hour average concentration 0.049 ppm 95% value of one-hour average concentration 0.054 ppm 98% value of 24-hour average concentration 0.059 ppm 98% value of one-hour average concentration 0.066 ppm 24-hour average value 0.073 ppm One hour average value 0.146 ppm 4-hour average value* 0.046 ppm The mark * is for the protection of fauna and flora, and the other is for the protection of human health.	50% value of 24-hour average concentration 30 μg/m³ 95% value of 24-hour average concentration 75 μg/m³ 98% value of 24-hour average concentration 90 μg/m³ 24-hour average value 150 μg/m³
South Africa	0.02 ppm (Shall not exceed 0.04 ppm) Averaging time is unknown.		Dependention chemical and physical property of substance and threshold value Example Asbstos 0.02 fibers/cc (max. 0.04). Nuisance dust 0.1 mg/m³ (max. 0.2)
Taiwan	(Non-industrial district) (Industrial district) Yearly average value of one-hour values: 0.05 ppm or less, 0.075 ppm or less Daily average value of one-hour values: 0.1 ppm or less, 0.15 ppm or less One-hour value: 0.3 ppm or less, 0.5 ppm or less	(Non-industrial district) (Industrial district) Daily average value of one-hour values: 0.05 ppm or less, 0.1 ppm or less Daily average value which exceeds this standard shall be less than 10% of yearly data.	(Non-industrial district) (Industrial district) Diameter of particle: 10 μm or less Monthly average value: 210 μg/Nm³ or less, 240 μg/Nm³ or less Yearly average value: 140 μg/Nm³ or less, 160 μg/Nm³ or less Including a portion in with a particle diameter of 10 μm or more Monthly average value: 260 μg/Nm³ or less, 290 μg/Nm³ or less Yearly average value: 170 μg/Nm³ or less, 190 μg/Nm³ or less Monthly average value which exceeds this standard must be less than two times per year.
Korea	Yearly average value: 0.05 ppm or less Daily average value: 0.1 ppm or less (Shall not exceed three times per year.)	Yearly average value: 0.05 ppm or less One-hour average value: 0.15 ppm or less (Shall not exceed three times per year.)	Yearly average value: 150 μg/m³ Daily average value: 300 μg/m³ (Shall not exceed three times per year.)
Australia	(Victoria) Acceptable level / Detrimental level One-hour value 0.17 ppm / 0.34 ppm 24-hour value 0.06 ppm / 0.11 ppm	(Victoria) Acceptable level / Detrimental level One-hour value 0.15 ppm / 0.25 ppm 24-hour value 0.06 ppm / 0.15 ppm	
U.S.A.	(Primary) Yearly arithmetic average: 0.03 ppm 24-hour average 0.14 ppm (Secondary) 3-hour average 0.5 ppm	Yearly average 0.053 ppm	SPM environmenta standard Yearly average (arithmetic average): 50 μg/m³ 24-hour average: 150 μg/m³
Canada	(1) Desirable level a) Yearly arithemetic average value 0~0.010 ppm b) 24-hour average concentration 0~0.052 ppm c) One-hour average concentration 0~0.157 ppm (2) Acceptable level a) Yearly arithemetic average value 0.010~0.021 ppm b) 24-hour average concentration 0.052~0.105 ppm c) One-hour average concentration 0.157~0.315 ppm (3) Tolerable level Average concentration measured continuously for 24 hours or more 0.105~0.280 ppm	(1) Desirable level a) Yearly arithemetic average value 0~0.029 ppm (2) Acceptable level a) Yearly arithemetic average value 0~0.049 ppm b) Average concentration for 24 hours or more 0~0.098 ppm c) Average concentration for one hour or more 0~0.195 ppm (3) Tolerable level Average concentration measured continuously for one hour or more 0.195~0.488 ppm	(1) Desirable level a) Yearly geometrical average 0~60 μg/m³ (2) Acceptable level a) Yearly geometrical average 60~70 μg/m³ b) Average concentration for 24 hours or more 0~120 μg/m³ (3) Tolerable level Average concentration for 24 hours or more 120~400 μg/m³
Japan	Daily average value of one-hour value: 0.04 ppm or less One-hour value: 0.1 ppm or less (98% value)	Daily average value of one-hour value shall be within the zone of 0.04 ppm to 0.06 ppm or less.	Daily average of one-hour values shall be 100 μg/m³ or less. One-hour value 200 μg/m³ or less (98% value) Particulate matter with a diameter of 10 μm or less (SPM)

Table 1-19 Measurements of Ambient Air Pollutants

Item Code (unit)	Station	Effective monitoring days (days)	Monitoring hours (hrs)	Yearly Average	Yearly Geometric Average	Maximum values of hourly data	Maximum values of daily average data	Values of 98% cumulative daily average
SO_2 (ppb)	MS 1	362	8684	7	4	109	23	19
	MS 2	354	8515	12	8	112	34	30
	MS 3	352	8502	24	16	199	71	60
	MS 4	360	8562	5	3	79	20	14
	MS 5	296	7225	3	2	48	21	8
NO_2 (ppb)	MS 1	354	8560	16	12	138	49	33
	MS 2	316	7763	9	6	69	32	20
	MS 3	276	6805	13	10	81	41	30
	MS 4	289	7097	15	10	150	69	46
	MS 5	315	7640	5	3	48	16	14
NO_x (ppb)	MS 1	354	8558	38	23	497	176	112
	MS 2	316	7763	18	14	132	56	40
	MS 3	270	6674	24	18	251	75	62
	MS 4	289	7092	34	22	343	180	105
	MS 5	315	7639	9	6	127	36	25
SPM ($\mu g/m^3$)	MS 1	348	8399	60	46	477	156	130
	MS 2	344	8419	56	42	870	169	125
	MS 3	355	8579	63	50	702	157	132
	MS 4	350	8504	68	49	605	201	162
	MS 5	343	8322	43	32	661	119	103

Note) An effective monitoring day has 20 monitoring hours or over

The daily averages of NO_2 measured at MS1 and MS4 are 0.049 ppm and 0.069 ppm respectively, both of which are found not smaller than West Germany standards of 0.049 ppm. Especially the value of MS4 is exceeding control standards of such countries as Taiwan (0.050 ppm), Australia (0.060 ppm), and Japan (0.060 ppm). The hourly maximum of NO_2 measured at MS4 (0.150 ppm) is comparable to Korean standards and the acceptable level of Australia (0.150 ppm).

With respect to particulate matter concentration, the measurement was done this time only for the portion less than 10 micron in size and thus obtained data were compared with figures available in US and Japanese standards. The concentrations observed in all stations except MS5 are found exceeding US yearly average of 50 $\mu g/m^3$. Same is true for daily average maximum as compared with US figure 150 $\mu g/m^3$. The daily average maximum in Thailand of course surpasses the Japanese standards (100 $\mu g/m^3$) at all stations. In the United States the measurement of SPM is dependent on the use of Dichotomos sampler as shwon in Table II-4-17, which may present some difficulty of directly comparing the value measured by β-ray dust sampler with American standards. (In Japan, the fraction less than 10 μ is completely screened off while U.S. practice counts 50% of such fraction.)

1.3 Analysis of TSP Concentration by Low-Volume Sampler

Concentrations of TSP were measured by using two units of Low-volume sampler which has a quartz-fiber filter and a polyfluorocarbon filter. This monitoring job continued while replacing the filters once every half month for the period of January 17, 1988 through January 16, 1989.

1.3.1 Comparison of the TSP Concentrations Measured by Using Polyfluorocarbon Filter and Quartz-Fiber Filter

Fig. 1-22 shows the scattergrams of TSP concentration measured by using polyfluorocarbon filter and quartz-fiber filter. In this figure, the plotted data are those of half month average concentration. The values of TSP trapped by polyfluorocarbon filter and by quartz-fiber filter was showed a good agreement because the correlation between TSP concentrations taken by using both filters was found highly significant at all monitoring stations and the regression coefficient "a" was nearly 1.0.

Also shown in this figure is the concentration of TSP shown by Flow I calculated by using the air aspiration volume estimated from the reading value of both rotameter and pressure gage installed in Low-volume sampler. The concentration of TSP shown by Flow II is calculated by the air sampling volume known from the count values of integrated flow meter. The value of correlation coefficients between them were found larger in Flow II case than in Flow I case. So the reporter took the TSP concentration calculated by using Flow II.

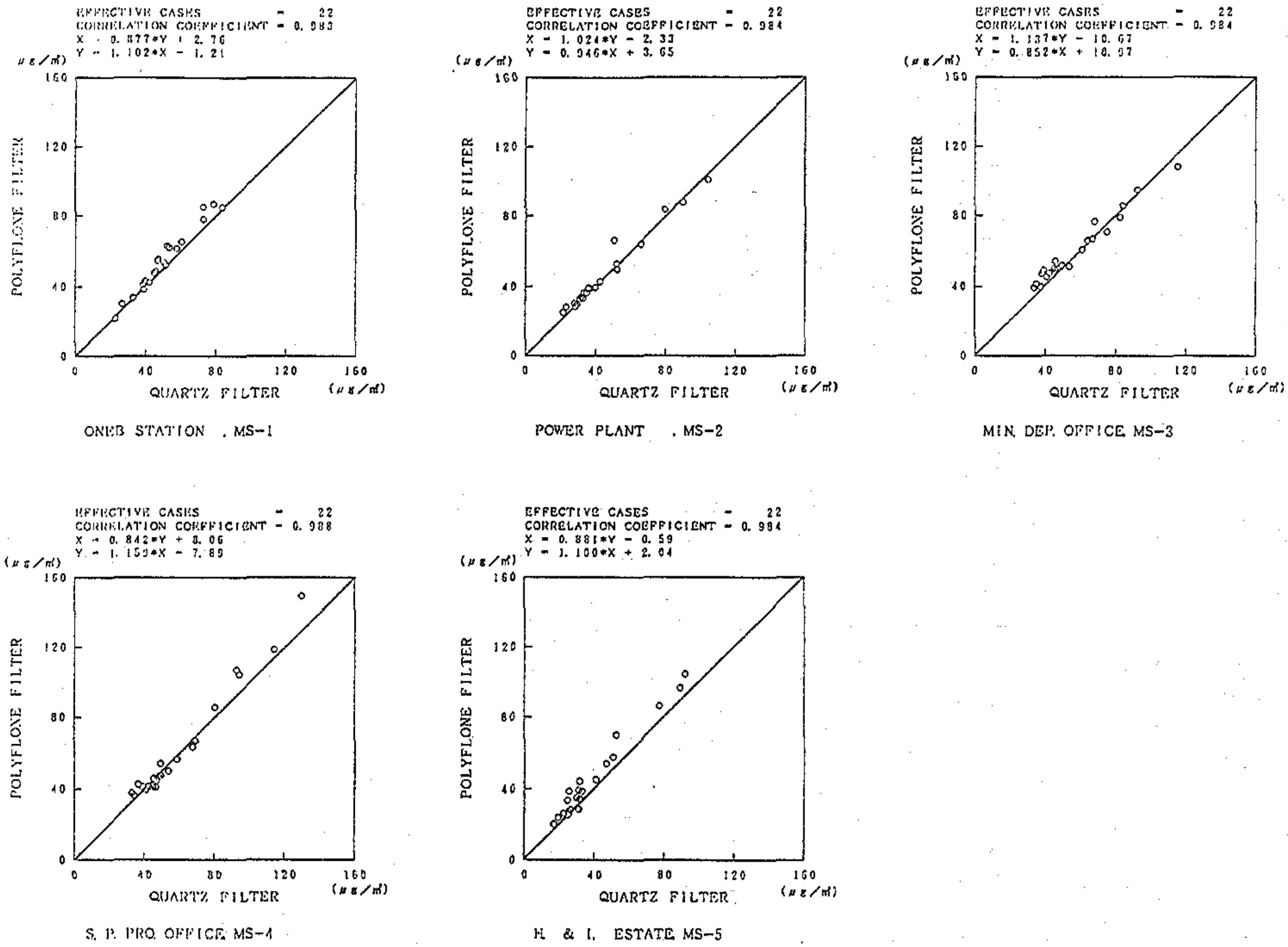

Fig. 1-22 (1) Comparison of TSP Concentrations measured by Low-Volume Samplers mounting Polyfluorocarbon Filter and Quartz-Fiber Filter (FLOW I)

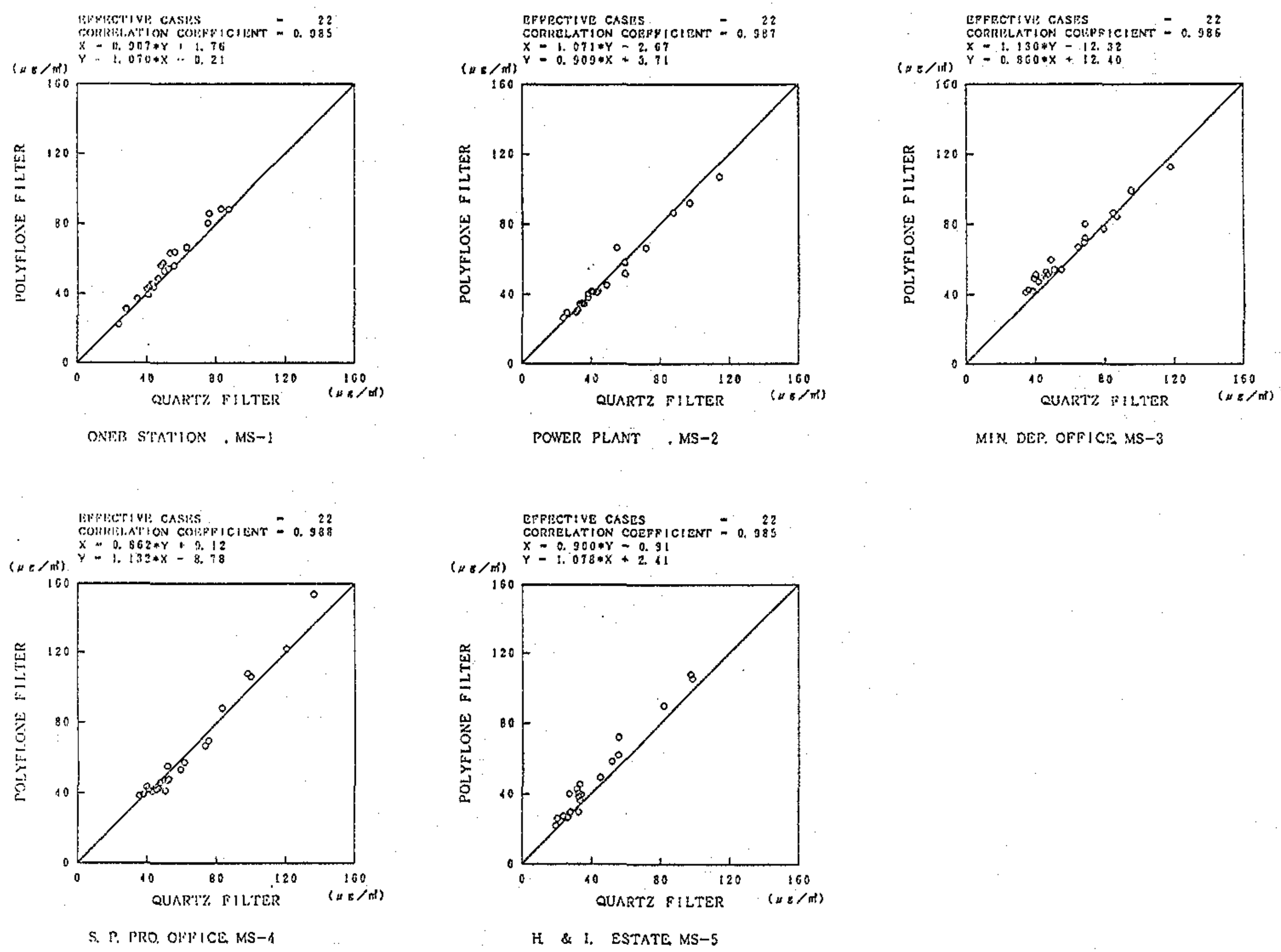

Fig. 1-22 (2) Comparison of TSP Concentrations measured by Low-Volume Samplers mounting *Polyfluorocarbon* Filter and Quartz-Fiber Filter (FLOW II)

1.3.2 Monthly Average Concentration of TPM

Fig. 1-23 and Table 1-20 show the TSP monthly averages measured by Low volume sampler and monthly means of SPM concentration measured by β-ray dust sampler. TSP and SPM values here are calculated by using 15 day concentration averages and hourly concentration averages respectively.

The graph shows higher values in the dry season than in wet season at all monitoring stations and they peak around November–December period. When values are compared among stations, MS5 showed slightly lower figures probably due to a limited number of pollutants sources in its vicinity. On the other hand, MS4 marked a considerably high concentration of 100 $\mu g/m^3$ during Nov.–Dec. period which may be caused by the wind (dominantly in NE direction) coming from Route 3115 with daily traffic volume of 35,000 automobiles during the period. As for MS1, observation of concentration exceeding 100 $\mu g/m^3$ was scarce without the wind coming from Route 3 having the traffic volume of 77,000 vehicles per day that locates about 90 m apart to WNW direction of MS1.

Table 1-20 Monthly Average Concentrations of TSP measured by Low-Volume Sampler

(unit μg/m³)
【 measured by Roter Meter and Pressure Meter (FLOW#1) 】

Survey		Monitoring Station				
		MS 1	MS 2	MS 3	MS 4	MS 5
JAN.	Quartz	57.9	52.1	82.6	67.5	50.6
	Polyflone	61.5	53.0	78.7	63.1	57.5
FEB.	Quartz	48.8	44.5	68.3	58.3	38.6
	Polyflone	50.6	44.4	65.8	55.4	44.4
MAR.	Quartz	36.0	37.7	53.9	42.8	32.1
	Polyflone	37.2	39.2	59.3	42.0	35.0
APR.	Quartz	42.3	36.5	45.4	48.4	31.9
	Polyflone	42.3	39.3	49.9	46.4	34.3
MAY.	Quartz	34.6	26.8	43.6	44.5	22.5
	Polyflone	35.3	29.1	47.1	41.1	24.7
JUN.	Quartz	50.0	31.0	37.0	35.0	21.9
	Polyflone	59.4	31.7	44.5	40.1	24.4
JUL.	Quartz	42.7	30.7	36.2	43.2	28.3
	Polyflone	47.5	30.5	39.6	42.3	27.1
AUG.	Quartz	39.8	29.9	47.9	41.9	24.0
	Polyflone	43.0	32.5	49.1	41.0	31.9
SEP.	Quartz	39.7	33.7	48.5	53.8	28.4
	Polyflone	40.8	34.4	50.7	51.2	39.2
OCT.	Quartz	67.5	45.0	52.4	63.3	32.3
	Polyflone	72.2	51.5	61.5	68.1	38.9
NOV.	Quartz	78.4	97.2	99.0	122.6	84.3
	Polyflone	84.9	93.7	96.0	134.9	94.6
DEC.	Quartz	67.2	73.4	80.6	93.7	72.1
	Polyflone	75.1	74.3	81.5	105.3	83.9

(unit μg/m³)
【 measured by Roter Meter and Dry Gas Meter (FLOW#2) 】

Survey		Monitoring Station				
		MS 1	MS 2	MS 3	MS 4	MS 5
JAN.	Quartz	62.8	59.4	86.9	73.6	55.5
	Polyflone	66.1	58.2	84.3	66.9	62.1
FEB.	Quartz	53.0	50.3	72.0	63.6	42.3
	Polyflone	54.4	46.7	72.2	58.5	48.5
MAR.	Quartz	38.1	42.7	57.4	47.4	35.4
	Polyflone	40.6	42.4	65.0	45.2	38.1
APR.	Quartz	43.9	39.7	46.0	52.6	33.6
	Polyflone	43.6	41.5	52.6	47.8	36.3
MAY.	Quartz	35.7	29.1	44.1	48.3	23.6
	Polyflone	35.9	30.4	49.0	41.5	25.9
JUN.	Quartz	51.5	33.4	37.4	38.0	23.6
	Polyflone	60.4	32.8	45.9	40.9	25.3
JUL.	Quartz	43.8	33.3	36.5	45.1	29.5
	Polyflone	48.8	31.7	41.3	43.1	27.9
AUG.	Quartz	41.2	32.3	48.5	43.9	25.3
	Polyflone	43.7	34.0	51.5	42.3	32.9
SEP.	Quartz	41.2	37.8	49.0	56.3	32.6
	Polyflone	41.6	37.3	52.7	52.6	44.2
OCT.	Quartz	69.9	48.7	52.9	66.0	33.8
	Polyflone	74.2	52.9	64.1	70.0	40.0
NOV.	Quartz	81.6	105.1	100.4	129.1	89.3
	Polyflone	86.8	98.5	98.4	139.0	98.1
DEC.	Quartz	70.4	80.1	82.4	99.0	78.4
	Polyflone	76.8	77.1	85.0	106.5	89.7

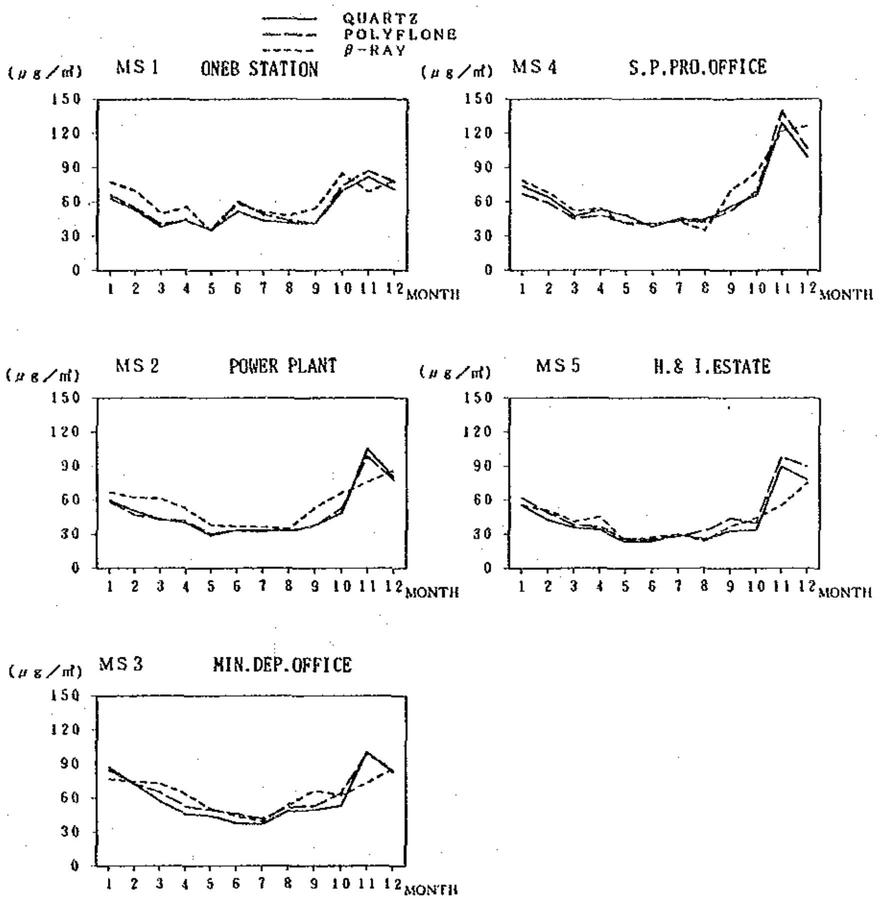

Fig. 1-23 Time Series Variations of TSP Concentrations by Low-Volume Sampler and SPM Concentrations by β-Ray Dust Analyser

1.3.3 Comparison of the Concentration of TSP measured by Low-Volume Sampler and the SPM Concentration Measured by β-Ray Dust Analyzer

The scattergrams of SPM measurements by β-ray dust analyser and TSP measurements by Low volume sampler were shown in Fig. 1-24. The graphs combined with regression coefficient 0.815–0.938 and slope of regressional equations 0.80–1.35 show a poor correlation between TSP and SPM concentrations allowing the effect coming from site specific condition of station and filter type. It may be due to the difference of effective measurement range of dust size between two instruments, i.e.,

0.1–30 μm for Low volume sampler and 0.1–10 μm for β-ray dust analyser.

The SPM value exceeding TSP one was occasionally observed but the cause is unknown. It may be probably due to measurement procedures or other factors.

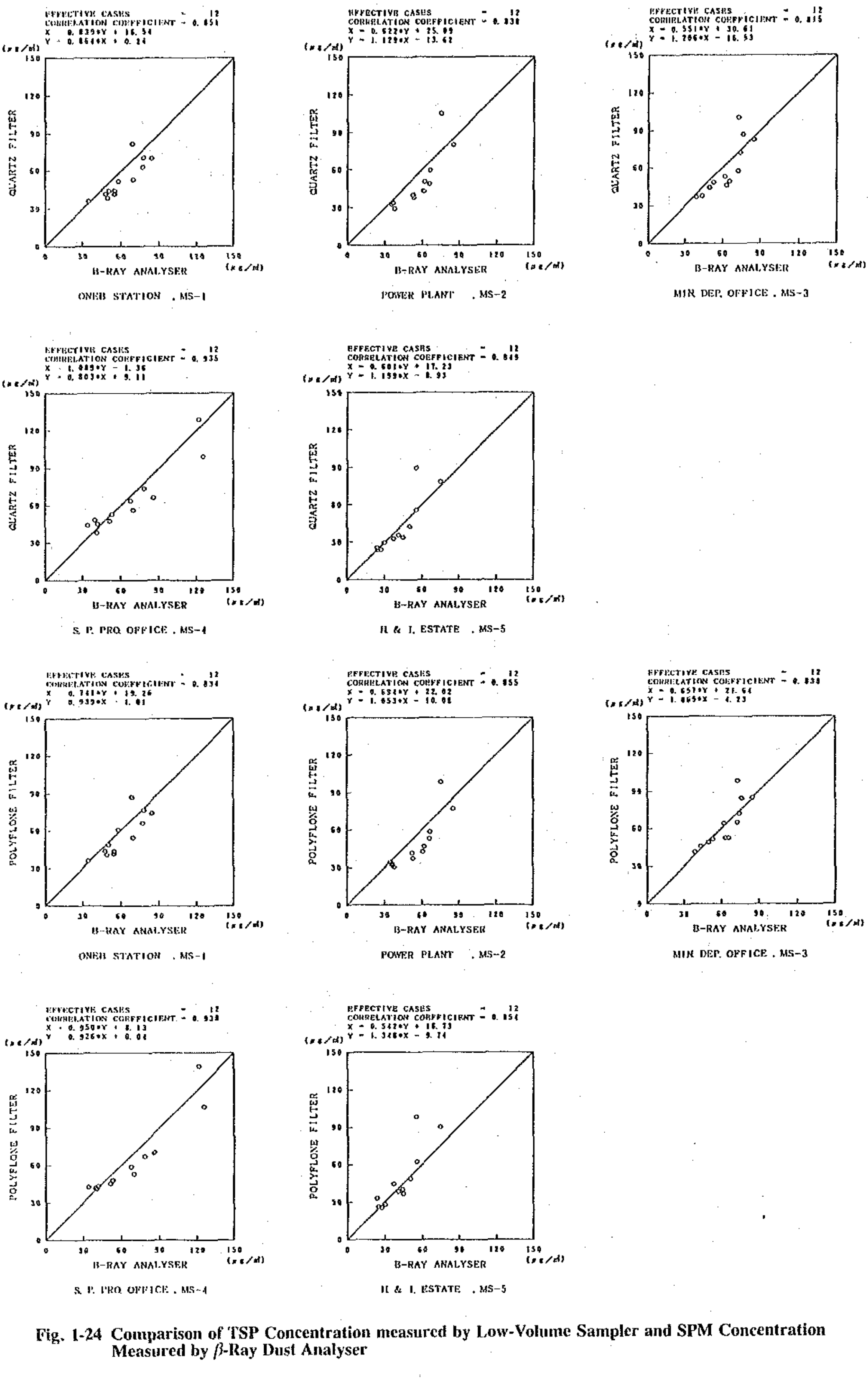

Fig. 1-24 Comparison of TSP Concentration measured by Low-Volume Sampler and SPM Concentration Measured by β-Ray Dust Analyser

1.3.4 Resemblance among the Monitoring Stations by Cluster Analysis and Principal Component Analysis based on Correlation Coefficients among Ambient Pollutant Concentrations

As previously discussed, both cluster and principal component analysis were done on TSP concentrations trying to clarify the regional resemblance among monitoring stations.

(1) Cluster analysis

Data base applied for cluster analysis are correlation coefficients among monitoring stations with respect to TSP concentrations trapped by Low volume samplers. The samplers used two types of filter, namely one made of quartz and the other of polyfluorocarbon and thus cluster analysis was done about two groups of measurement by applying the group average method.

Table 1-21 lists regional correlation coefficients with respect to TSP concentration and Fig. 1-25 shows the result of cluster analysis, briefly insignificant difference between two types of filter and significant regional resemblance among TSP monitoring stations given by similarity over 0.7. The result thus agrees to the observation previously obtained about SPM.

Table 1-21 Correlation Coefficients among Stations with respect to TSP Concentrations

(Quartz FLOW#2)

	MS1	MS2	MS3	MS4	MS5
MS1 ONEB STATION		0.838	0.667	0.727	0.792
MS2 POWER PLANT	0.838		0.894	0.943	0.954
MS3 MIN.DEP.OFFICE	0.667	0.894		0.851	0.897
MS4 S.P.PRO.OFFICE	0.727	0.943	0.851		0.892
MS5 H.&I.ESTATE	0.792	0.954	0.897	0.892	

(Polyflone FLOW#2)

	MS1	MS2	MS3	MS4	MS5
MS1 ONEB STATION		0.800	0.654	0.745	0.715
MS2 POWER PLANT	0.800		0.924	0.941	0.932
MS3 MIN.DEP.OFFICE	0.654	0.924		0.808	0.905
MS4 S.P.PRO.OFFICE	0.745	0.941	0.808		0.887
MS5 H.&I.ESTATE	0.715	0.932	0.905	0.887	

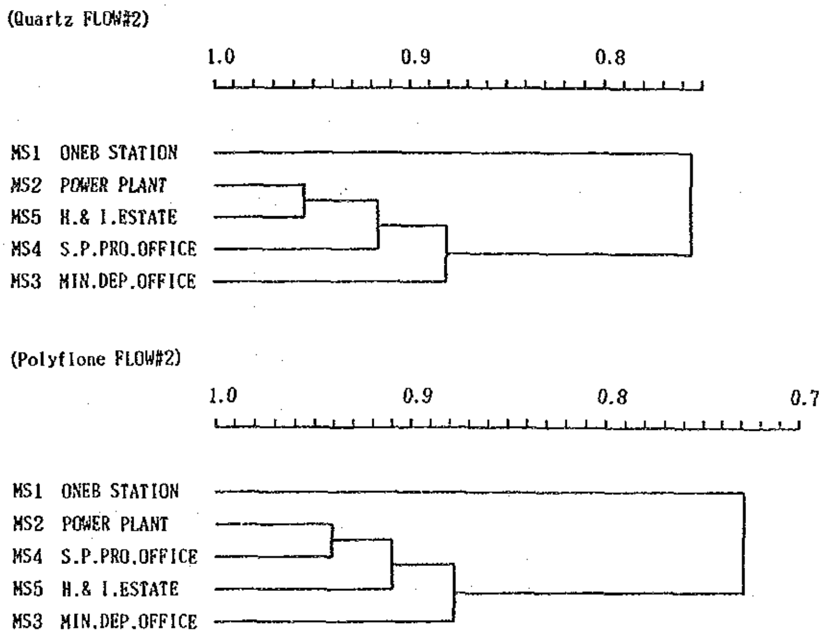

Fig. 1-25 The Result of Cluster Analysis (Dendrogram among Monitoring Stations with respect to TSP Concentration)

(2) Principal component analysis

TSP concentrations observed by monitoring stations were thought as variable and correlation coefficients listed in Table 1-21 were applied for principal component analysis, the result of which is shown in Table 1-22.

The contribution of first principal component is calculated to be 0.879 for quartz filter case and 0.867 for polyfluorocarbon filter case. In other words, the first principal component retains 87.9 pct or 86.7 pct of information. Fig. 1-26 shows plots of contribution by the first and second principal components with respect to TSP concentrations observed by stations. The figure shows a significant regional resemblance among stations as indicated by proximity of plots and conforms to our findings by cluster analysis.

Table 1-22 Result of Principal Component Analysis done on Correlation Coefficients among Stations with respect to TPS Concentration

(Quartz FLOW#2)

Monitoring stations	Loading factor				Eigen vector			
	1	2	3	4	1	2	3	4
(MS1) ONEB STATION	0.854	0.511	0.060	0.063	0.408	0.850	0.156	0.231
(MS2) POWER PLANT	0.989	0.002	-0.059	-0.017	0.472	0.003	-0.154	-0.063
(MS3) MIN.DEP.OFFICE	0.922	-0.281	0.235	0.124	0.440	-0.467	0.610	0.455
(MS4) S.P.PRO.OFFICE	0.944	-0.135	-0.286	0.069	0.451	-0.225	-0.744	0.254
(MS5) H. & I. ESTATE	0.970	-0.054	0.063	-0.224	0.463	-0.089	0.164	-0.819
Eigen values	4.393	0.362	0.148	0.075				

(Polyflone FLOW#2)

Monitoring stations	Loading factor				Eigen vector			
	1	2	3	4	1	2	3	4
(MS1) ONEB STATION	0.834	0.539	0.114	0.013	0.401	0.863	0.274	0.047
(MS2) POWER PLANT	0.989	-0.038	-0.021	-0.087	0.475	-0.060	-0.050	-0.306
(MS3) MIN.DEP.OFFICE	0.925	-0.269	0.241	-0.103	0.444	-0.430	0.578	-0.364
(MS4) S.P.PRO.OFFICE	0.944	-0.010	-0.320	-0.064	0.453	-0.015	-0.767	-0.225
(MS5) H. & I. ESTATE	0.957	-0.161	0.004	0.241	0.459	-0.258	0.011	0.849
Eigen values	4.337	0.390	0.174	0.081				

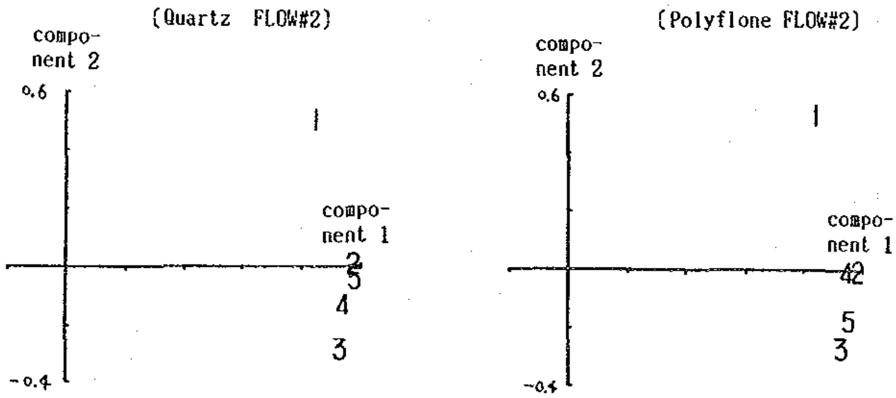

Fig. 1-26 Principal Component Analysis done on Correlation Coefficients among Stations with respect to TSP Concentration

1.4 Analysis of Polluting Meteorology

1.4.1 Concentration of Air Pollutants by Wind Direction and by Wind Velocity Level

Among meteorological conditions influencing the environmental concentration at a given location, wind direction and wind velocity are the most decisive factors. Concentration of air pollutants by wind direction and by wind velocity level are shown in Table 1-23. Fig. 1-27 shows plots of the average concentration of SO_2, NO_2, NO_x and SPM at each monitoring station by wind direction and by wind velocity level. The ordinate is concentration, and the abscissa shows wind direction. With respect to each wind direction, concentration is shown for each wind velocity level, divided into 5 classes. Since wind velocity was not measured at MS3 and MS4, the data at the nearby station 2 were used.

As for SO_2, concentration is found low at MS1 when there is little wind, but high concentrations appeared under winds of SW–N direction. While MS2 locates at high concentration spot, next to MS3, high concentration appeared there when it is windless or when wind of W–N direction blows softly. While MS3 is the place having the highest SO_2 concentration, high concentrations appear under winds of NNE to E to S direction.

Concerning to NO_2 and NO_x, high concentration values are seen at both MS1 and MS4, the high concentration appear under the calm condition. This is thought due to the presence of trunk highways in the vicinity.

As for SPM, high concentrations appeared at the time of calmness or of soft wind. This is a trend seen at every station.

Table 1-23 (1) Concentration by Wind Direction and by Wind Velocity Level (SO_2)

(MS1) OKED STATION

WS \ WD		CALM	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0 -0.4	(hour)	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
	(ppb)	6.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.8
0.5-0.9	(hour)	0	8	7	13	17	9	7	5	7	22	6	2	1	3	3	1	1	112
	(ppb)	0.0	6.0	9.6	5.4	4.3	3.6	2.9	11.0	4.7	6.5	9.8	14.5	20.0	13.0	19.7	19.0	3.0	6.9
1.0-1.9	(hour)	0	64	107	145	152	136	126	120	137	171	111	70	86	44	38	38	50	1505
	(ppb)	0.0	7.9	5.1	4.8	4.8	4.2	4.4	5.4	6.5	6.1	12.5	15.1	13.0	9.3	12.4	15.6	9.2	7.5
2.0-2.9	(hour)	0	194	243	227	195	120	115	126	277	302	106	149	100	79	37	56	133	2029
	(ppb)	0.0	11.0	6.9	4.8	4.2	3.1	4.2	4.7	5.4	7.6	13.9	17.1	13.2	11.7	16.3	22.1	15.2	8.8
3.0-4.9	(hour)	0	103	94	205	243	72	49	157	673	649	158	101	69	40	20	42	105	2780
	(ppb)	0.0	9.1	5.2	2.8	2.2	2.7	2.7	3.5	2.7	4.5	9.1	10.0	8.6	10.1	19.8	30.0	18.5	5.5
5.0-	(hour)	0	0	1	24	74	6	0	36	90	61	11	9	2	0	0	2	10	316
	(ppb)	0.0	0.0	4.0	1.6	1.3	2.5	0.0	1.2	1.1	2.2	2.2	5.6	2.5	0.0	0.0	30.0	16.1	2.3
TOTAL		5	398	452	614	691	343	297	434	1184	1235	452	331	338	166	98	133	298	7437
		6.8	9.8	6.1	4.0	3.3	3.4	4.0	4.3	3.6	5.0	11.6	14.2	12.2	10.7	15.6	23.8	15.3	7.0

(MS2) POWER PLANT

WS \ WD		CALM	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0 -0.4	(hour)	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35
	(ppb)	24.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.4
0.5-0.9	(hour)	0	83	137	127	67	34	24	20	13	13	18	22	13	14	14	22	24	645
	(ppb)	0.0	18.8	13.2	12.7	16.6	16.6	13.6	13.6	12.2	16.2	24.2	15.1	30.6	26.2	23.9	22.0	21.5	16.3
1.0-1.9	(hour)	0	342	275	203	162	112	111	107	142	179	315	318	76	34	25	38	180	2700
	(ppb)	0.0	24.3	12.7	9.2	7.7	9.0	13.0	10.7	11.7	12.7	12.6	14.8	13.8	21.4	24.0	19.7	20.7	15.1
2.0-2.9	(hour)	0	242	194	137	69	28	33	231	330	405	200	114	51	5	2	13	215	2450
	(ppb)	0.0	17.6	7.1	3.5	2.9	4.4	11.0	7.2	11.2	8.4	8.0	9.2	15.4	10.2	15.0	14.3	19.1	10.2
3.0-4.9	(hour)	0	45	120	48	17	3	3	110	656	1106	200	23	15	2	1	12	66	2515
	(ppb)	0.0	12.9	2.9	2.3	2.0	7.3	7.7	7.8	14.2	8.7	5.9	6.6	5.5	4.5	14.0	6.8	11.3	9.5
5.0-	(hour)	0	0	0	0	0	0	0	0	39	86	7	0	0	0	0	0	1	133
	(ppb)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.9	9.2	9.9	0.0	0.0	0.0	0.0	0.0	1.0	11.7
TOTAL		35	712	726	515	315	177	171	548	1107	1949	839	477	158	55	42	85	405	8406
		24.4	20.7	9.7	7.9	8.2	9.7	12.6	8.8	13.1	9.1	9.5	13.1	17.8	21.0	23.3	17.7	21.0	12.1

(MS3) MIN.DEP.OFFICE

WS \ WD		CALM	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0 -0.4	(hour)	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35
	(ppb)	15.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.8
0.5-0.9	(hour)	0	83	135	125	66	34	27	20	13	14	19	22	13	14	14	22	24	645
	(ppb)	0.0	16.3	23.8	27.6	29.9	30.4	29.3	22.2	23.1	18.1	18.1	9.9	17.5	17.3	11.4	14.5	13.1	22.7
1.0-1.9	(hour)	0	309	270	201	161	113	114	106	142	181	316	310	76	32	25	36	173	2653
	(ppb)	0.0	12.5	17.3	23.3	24.2	25.0	28.6	29.3	34.9	27.0	13.3	10.8	11.0	14.8	17.5	11.9	11.6	19.0
2.0-2.9	(hour)	0	222	103	136	70	30	34	232	330	485	201	115	53	5	2	12	190	2400
	(ppb)	0.0	11.6	11.2	13.1	12.3	13.0	20.7	24.6	36.5	35.2	14.2	8.5	11.9	11.2	8.5	8.7	11.6	21.5
3.0-4.9	(hour)	0	36	104	38	21	3	3	112	661	1178	203	23	15	2	1	11	64	2475
	(ppb)	0.0	10.0	9.2	13.2	13.9	21.7	20.7	16.7	34.2	37.5	14.3	11.2	5.3	12.5	11.0	7.6	12.9	30.3
5.0-	(hour)	0	0	0	0	0	0	0	0	30	90	6	0	0	0	0	0	1	130
	(ppb)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	43.0	31.1	11.5	0.0	0.0	0.0	0.0	0.0	6.0	33.5
TOTAL		35	650	692	500	318	180	178	560	1194	1948	835	478	157	53	42	81	461	8352
		15.8	12.5	15.7	20.8	22.1	23.9	27.1	24.5	35.1	35.6	14.0	10.3	11.3	15.1	14.9	11.5	11.9	23.6

(MS4) S.P.PRO.OFFICE

WS \ WD		CALM	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0 -0.4	(hour)	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35
	(ppb)	9.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.9
0.5-0.9	(hour)	0	83	134	126	66	31	27	20	12	14	19	22	13	14	14	22	24	644
	(ppb)	0.0	7.3	6.7	5.2	6.5	8.8	7.3	5.9	5.3	7.1	8.9	9.0	8.2	7.6	11.7	9.9	9.1	7.1
1.0-1.9	(hour)	0	331	206	201	156	107	110	186	141	176	313	319	76	33	25	37	190	2005
	(ppb)	0.0	9.3	6.4	5.3	4.2	5.0	5.1	5.2	5.0	4.6	6.5	6.8	8.1	11.4	8.2	8.6	11.9	6.8
2.0-2.9	(hour)	0	237	102	133	69	30	32	222	338	482	200	117	54	5	2	13	216	2422
	(ppb)	0.0	7.8	4.4	4.6	4.2	4.5	4.2	4.1	3.4	2.4	3.3	3.7	5.6	2.8	8.5	7.5	11.3	4.6
3.0-4.9	(hour)	0	49	118	45	22	3	3	111	607	1187	208	23	14	2	1	10	50	2511
	(ppb)	0.0	6.2	3.7	4.6	4.5	4.3	5.3	3.9	2.7	2.1	2.4	2.6	2.2	4.5	2.0	3.9	8.5	2.8
5.0-	(hour)	0	0	0	0	0	0	0	0	30	87	7	0	0	0	0	0	1	131
	(ppb)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	1.7	2.0	0.0	0.0	0.0	0.0	0.0	2.0	1.9
TOTAL		35	700	700	506	312	174	172	539	1107	1946	807	481	157	54	42	82	409	8112
		9.9	8.4	5.5	5.0	4.7	5.6	5.3	4.5	3.2	2.4	4.4	6.0	6.7	9.4	9.2	8.2	11.1	4.9

(MS5) H. & I. ESTATE

WS \ WD		CALM	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0 -0.4	(hour)	210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	210
	(ppb)	4.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7
0.5-0.9	(hour)	0	78	94	152	120	67	40	82	73	72	45	56	80	60	43	55	34	1235
	(ppb)	0.0	4.2	3.9	4.0	3.5	3.0	3.5	2.6	3.1	2.3	3.1	3.8	4.9	6.0	7.0	5.1	4.7	4.0
1.0-1.9	(hour)	0	135	227	265	254	160	129	138	226	338	220	101	103	73	54	86	100	2631
	(ppb)	0.0	2.7	2.5	2.1	2.9	3.1	3.2	2.7	2.7	2.4	2.7	4.4	3.7	8.1	6.8	5.3	2.9	3.1
2.0-2.9	(hour)	0	71	172	163	97	39	41	65	68	332	458	130	25	23	10	24	27	1755
	(ppb)	0.0	1.6	1.5	2.0	2.1	2.3	2.7	4.0	2.3	2.0	2.1	3.6	4.3	4.4	4.9	2.3	2.5	2.3
3.0-4.9	(hour)	0	19	121	151	66	15	8	8	5	73	546	101	8	14	2	10	6	1150
	(ppb)	0.0	1.2	1.3	1.4	1.9	1.5	2.1	6.8	4.6	2.6	2.0	2.2	4.6	5.1	2.5	2.0	3.3	2.0
5.0-	(hour)	0	0	5	33	4	1	0	0	0	0	53	4	0	0	0	0	0	100
	(ppb)	0.0	0.0	0.8	1.5	1.5	2.0	0.0	0.0	0.0	0.0	0.8	2.5	0.0	0.0	0.0	0.0	0.0	1.1
TOTAL		210	303	619	770	540	290	226	293	373	815	1331	302	216	183	118	175	227	7000
		4.7	2.7	2.2	2.3	2.8	2.9	3.1	3.1	2.7	2.2	2.1	3.5	4.2	6.6	6.5	4.7	3.6	2.9

Table 1-23 (2) Concentration by Wind Direction and by Wind Velocity Level (NO_2)

(MS1) ONEB STATION

WS \ WD		CALM	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0 -0.4	(hour)	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
	(ppb)	19.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.0
0.5-0.9	(hour)	0	8	7	13	16	9	7	5	6	22	6	2	1	3	3	1	1	110
	(ppb)	0.0	24.4	21.9	20.7	16.9	14.9	12.3	10.4	11.3	8.6	19.7	24.0	14.0	31.7	20.7	70.0	19.0	16.7
1.0-1.9	(hour)	0	63	106	144	151	134	125	120	134	108	110	68	84	44	38	38	49	1576
	(ppb)	0.0	27.7	19.4	18.3	17.0	15.5	14.6	12.6	12.1	12.5	22.9	25.1	23.9	23.0	29.3	31.4	23.9	18.3
2.0-2.9	(hour)	0	191	241	224	130	118	113	124	272	324	105	140	101	79	37	53	128	2501
	(ppb)	0.0	25.5	20.1	16.9	14.8	11.7	13.3	13.3	10.2	12.0	23.4	24.5	23.7	29.9	38.7	35.7	20.5	18.8
3.0-4.9	(hour)	0	100	93	206	242	72	48	155	600	605	155	100	67	41	20	42	105	2740
	(ppb)	0.0	26.1	14.0	8.5	6.8	7.8	6.7	7.0	6.4	9.7	19.7	23.4	22.6	23.3	35.5	32.9	31.3	12.0
5.0-	(hour)	0	0	1	23	74	6	0	26	91	60	11	9	2	0	0	2	10	315
	(ppb)	0.0	0.0	5.0	3.3	4.2	3.5	0.0	3.4	3.8	7.6	16.5	13.1	12.0	0.0	0.0	29.5	18.4	5.9
TOTAL		5	362	440	600	676	339	293	430	1163	1209	447	327	335	167	98	136	293	7337
		19.0	26.0	18.7	14.0	11.3	12.3	12.7	10.2	7.8	10.6	21.8	24.0	23.5	26.5	33.9	33.8	28.8	15.6

(MS2) POWER PLANT

WS \ WD		CALM	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0 -0.4	(hour)	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28
	(ppb)	14.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.7
0.5-0.9	(hour)	0	72	115	119	60	32	22	19	13	12	17	21	10	14	12	17	22	577
	(ppb)	0.0	14.3	11.7	10.4	12.1	11.9	14.0	8.3	9.2	10.8	14.1	9.3	14.1	12.0	11.8	14.1	13.8	11.9
1.0-1.9	(hour)	0	202	210	171	147	102	104	178	137	173	205	201	73	25	25	33	145	2371
	(ppb)	0.0	18.1	12.7	10.7	9.2	9.3	8.9	7.6	8.6	7.7	7.2	6.5	10.9	12.2	14.5	16.1	19.4	10.6
2.0-2.9	(hour)	0	190	154	106	58	20	20	214	331	473	272	104	54	5	2	12	177	2207
	(ppb)	0.0	14.5	7.4	5.0	5.9	5.0	8.0	6.4	7.8	6.0	5.5	4.7	6.6	7.6	12.0	11.3	19.3	8.1
3.0-4.9	(hour)	0	30	97	31	15	3	3	100	645	1160	205	22	15	1	1	12	50	2420
	(ppb)	0.0	13.4	2.9	3.2	5.1	8.3	6.0	7.5	9.0	5.5	4.3	4.9	4.8	5.0	18.0	8.7	12.7	6.6
5.0-	(hour)	0	0	0	0	0	0	0	0	33	85	7	0	0	0	0	0	1	131
	(ppb)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0	5.0	6.7	0.0	0.0	0.0	0.0	0.0	5.0	6.3
TOTAL		28	563	576	426	200	165	157	517	1164	1903	796	428	152	45	40	74	404	7734
		14.7	16.1	9.4	8.7	8.9	9.1	9.4	7.1	8.6	5.9	6.0	6.2	9.0	11.5	13.6	13.6	10.1	8.7

(MS3) MIN.DEP.OFFICE

WS \ WD		CALM	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0 -0.4	(hour)	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
	(ppb)	25.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0
0.5-0.9	(hour)	0	61	114	101	40	28	20	16	12	10	15	16	7	11	10	10	18	506
	(ppb)	0.0	24.4	21.1	18.8	20.5	18.0	20.6	11.5	16.0	13.6	15.9	13.0	11.1	16.1	13.1	17.9	24.0	19.4
1.0-1.9	(hour)	0	243	215	154	113	81	89	153	120	141	245	222	47	19	17	28	117	2004
	(ppb)	0.0	28.4	24.7	20.8	17.3	16.2	13.9	13.6	14.4	11.3	9.9	9.0	13.5	18.5	20.4	22.9	24.2	17.2
2.0-2.9	(hour)	0	151	150	124	52	21	25	174	284	416	229	74	32	3	1	6	142	1884
	(ppb)	0.0	27.2	16.7	12.1	11.7	10.8	8.7	8.4	11.0	9.7	6.9	6.6	7.3	2.0	11.0	13.0	27.8	12.8
3.0-4.9	(hour)	0	22	97	38	17	2	3	88	506	1060	173	18	11	1	0	11	56	2200
	(ppb)	0.0	24.5	8.3	10.2	8.6	13.0	13.0	5.6	8.4	8.5	5.1	6.4	3.7	0.0	0.0	13.4	23.4	8.6
5.0-	(hour)	0	0	0	0	0	0	0	0	38	85	6	0	0	0	0	0	1	130
	(ppb)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.8	6.5	7.0	0.0	0.0	0.0	0.0	0.0	17.0	6.4
TOTAL		20	477	576	417	230	132	137	431	1049	1720	668	330	97	34	28	63	334	6743
		25.0	27.4	19.1	16.8	16.0	15.7	13.9	9.8	9.8	8.9	7.7	8.5	10.2	15.7	17.4	18.9	25.5	13.2

(MS4) S.P.PRO.OFFICE

WS \ WD		CALM	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0 -0.4	(hour)	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	33
	(ppb)	26.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26.2
0.5-0.9	(hour)	0	31	125	112	50	20	25	17	6	10	16	21	9	10	12	20	22	573
	(ppb)	0.0	24.4	20.7	15.5	15.2	15.2	24.0	17.5	23.3	13.9	24.3	15.0	22.6	13.4	22.6	23.6	24.0	19.4
1.0-1.9	(hour)	0	282	231	104	145	101	97	157	122	158	208	250	63	30	23	31	143	2272
	(ppb)	0.0	31.8	25.5	20.6	16.6	16.3	14.2	12.6	13.3	11.9	10.0	10.0	13.4	21.2	21.9	27.4	34.3	18.4
2.0-2.9	(hour)	0	147	143	124	55	25	32	205	272	333	246	96	50	2	2	13	150	1905
	(ppb)	0.0	31.4	26.7	23.4	18.3	14.2	11.6	9.5	8.8	7.5	7.4	6.7	9.9	7.5	10.0	17.5	41.5	15.3
3.0-4.9	(hour)	0	22	77	30	20	3	3	101	495	982	191	16	13	1	1	7	37	2007
	(ppb)	0.0	27.9	25.9	18.8	16.8	12.3	6.0	8.8	7.4	6.0	5.3	10.1	7.2	4.0	23.0	15.1	30.8	8.5
5.0-	(hour)	0	0	0	0	0	0	0	0	30	73	7	0	0	0	0	0	0	110
	(ppb)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.6	3.2	4.7	0.0	0.0	0.0	0.0	0.0	0.0	4.0
TOTAL		33	512	576	450	278	158	157	480	925	1616	729	383	135	43	38	71	352	6950
		26.2	30.4	24.8	20.0	16.7	15.7	15.1	10.6	8.6	6.9	8.2	9.4	12.1	18.3	21.9	23.3	37.2	14.6

(MS5) H. & I. ESTATE

WS \ WD		CALM	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0 -0.4	(hour)	220	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	220
	(ppb)	9.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.2
0.5-0.9	(hour)	0	63	77	150	125	75	54	88	76	79	58	60	90	94	53	56	86	1232
	(ppb)	0.0	13.7	12.0	11.3	9.8	8.3	6.6	5.5	4.3	3.8	4.6	4.8	4.2	6.9	8.7	9.7	13.3	8.1
1.0-1.9	(hour)	0	127	100	216	233	175	143	172	257	370	251	126	134	110	75	80	93	2751
	(ppb)	0.0	7.1	8.0	9.3	9.1	8.8	6.3	4.4	3.4	2.7	3.2	3.7	2.9	5.9	9.5	12.0	7.5	5.9
2.0-2.9	(hour)	0	62	141	121	74	51	47	65	77	383	557	168	43	40	23	24	23	1905
	(ppb)	0.0	3.8	3.3	4.6	5.3	6.4	4.2	3.7	2.7	2.0	1.9	2.2	2.7	4.1	8.1	7.5	5.6	2.9
3.0-4.9	(hour)	0	13	82	112	51	15	8	9	5	81	687	127	11	18	3	10	6	1238
	(ppb)	0.0	3.2	2.0	2.7	4.5	5.1	3.6	2.3	1.8	2.0	1.5	1.6	2.6	3.7	9.7	6.7	7.2	2.0
5.0-	(hour)	0	0	2	30	2	1	0	0	0	0	58	6	0	1	0	0	0	100
	(ppb)	0.0	0.0	1.5	1.4	4.0	3.0	0.0	0.0	0.0	0.0	1.7	0.3	0.0	0.0	0.0	0.0	0.0	1.6
TOTAL		220	265	491	629	485	317	252	334	415	913	1611	486	287	263	151	170	214	7506
		9.2	7.5	6.2	7.3	8.2	8.1	5.9	4.5	3.4	2.4	2.0	2.7	3.3	5.8	9.1	10.3	9.5	4.9

Table 1-23 (3) Concentration by Wind Direction and by Wind Velocity Level (NO_x)

(MS1) ONEB STATION

WS \ WD		CALM	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0 -0.4	(hour)	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
	(ppb)	26.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26.6
0.5-0.9	(hour)	0	8	7	13	16	9	7	5	6	22	6	2	1	3	3	1	1	110
	(ppb)	0.0	48.3	45.0	30.5	37.1	25.4	21.1	18.0	18.7	22.3	52.5	34.5	100.0	56.3	65.7	170.0	74.0	36.7
1.0-1.9	(hour)	0	63	106	144	151	134	125	120	134	168	110	68	84	44	38	37	49	1575
	(ppb)	0.0	79.1	54.2	44.2	40.5	31.0	30.6	24.2	20.8	27.1	64.9	69.0	92.5	97.3	102.5	132.1	96.4	50.9
2.0-2.9	(hour)	0	131	241	224	133	118	113	124	272	324	165	148	181	79	37	52	128	2500
	(ppb)	0.0	63.3	42.6	32.8	31.4	20.2	22.1	19.9	15.7	20.8	57.3	85.7	83.1	90.6	90.0	101.5	81.1	45.9
3.0-4.9	(hour)	0	100	93	205	242	72	48	155	600	635	155	100	67	41	20	42	106	2740
	(ppb)	0.0	45.4	22.5	13.2	11.5	11.8	9.8	10.0	10.9	16.9	46.2	71.5	60.4	58.0	74.9	78.6	61.8	23.7
5.0-	(hour)	0	0	1	23	74	6	0	26	91	60	11	9	2	0	0	2	10	315
	(ppb)	0.0	0.0	5.0	6.9	6.2	4.7	0.0	5.7	9.3	15.3	47.1	40.0	25.0	0.0	0.0	50.5	30.4	12.7
TOTAL		5	302	440	600	676	339	290	430	1163	1200	447	327	335	167	98	134	283	7335
		26.6	60.8	41.1	28.1	23.7	22.5	23.7	16.7	13.1	19.4	55.0	80.5	84.0	83.0	94.4	102.5	75.3	37.1

(MS2) POWER PLANT

WS \ WD		CALM	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0 -0.4	(hour)	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28
	(ppb)	37.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	37.5
0.5-0.9	(hour)	0	72	115	139	80	32	22	19	13	12	17	21	10	14	12	17	22	577
	(ppb)	0.0	30.8	23.8	20.5	22.9	20.3	22.5	16.0	13.6	16.4	24.2	17.5	25.0	21.1	26.6	24.4	25.5	22.9
1.0-1.9	(hour)	0	202	210	171	147	102	104	178	137	173	205	231	73	25	25	33	145	2371
	(ppb)	0.0	31.0	21.7	17.7	14.7	16.1	16.9	14.6	14.5	14.4	15.1	13.3	17.0	23.4	24.5	26.8	36.6	19.4
2.0-2.9	(hour)	0	130	154	106	58	28	28	214	331	473	272	104	54	5	2	12	177	2207
	(ppb)	0.0	25.2	14.8	11.7	11.9	8.0	15.0	13.3	16.3	12.5	12.7	10.2	13.2	19.2	23.0	10.5	31.1	15.8
3.0-4.9	(hour)	0	30	97	31	15	3	3	106	645	1106	205	22	15	1	1	12	50	2400
	(ppb)	0.0	24.2	9.3	6.3	9.8	15.7	7.3	16.9	21.6	13.7	10.7	11.7	10.7	11.0	20.0	11.8	10.5	15.6
5.0-	(hour)	0	0	0	0	0	0	0	0	30	85	7	0	0	0	0	0	1	131
	(ppb)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26.7	15.9	15.1	0.0	0.0	0.0	0.0	0.0	5.0	18.9
TOTAL		28	563	576	426	200	165	157	517	1164	1900	796	438	152	45	40	74	404	7734
		37.5	23.9	18.2	16.2	15.6	15.5	17.2	14.6	19.3	13.6	13.3	12.7	15.5	22.0	24.9	22.5	30.9	17.5

(MS3) MIN.DEP.OFFICE

WS \ WD		CALM	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0 -0.4	(hour)	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
	(ppb)	49.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	49.6
0.5-0.9	(hour)	0	57	109	96	46	26	20	16	12	10	15	16	6	11	10	10	10	406
	(ppb)	0.0	62.1	57.4	43.7	44.7	35.7	35.9	24.9	24.0	23.0	27.5	20.6	20.5	37.4	18.7	31.6	59.3	44.9
1.0-1.9	(hour)	0	238	211	149	107	78	84	148	120	138	243	222	47	19	17	28	115	1938
	(ppb)	0.0	60.7	44.9	35.6	28.0	26.1	24.3	23.0	23.9	18.4	17.5	15.3	21.3	31.8	30.3	37.0	51.1	31.5
2.0-2.9	(hour)	0	150	150	123	50	20	24	170	278	401	224	74	32	3	1	6	141	1847
	(ppb)	0.0	42.0	24.5	19.8	18.3	15.4	18.1	15.3	19.6	16.4	11.6	10.3	11.4	11.7	25.0	25.5	41.2	20.0
3.0-4.9	(hour)	0	22	97	38	15	2	3	80	506	1053	173	18	11	1	0	11	56	2106
	(ppb)	0.0	32.7	12.5	17.6	14.3	15.0	22.7	14.5	16.9	15.7	9.3	9.4	6.5	4.0	0.0	10.1	27.0	15.7
5.0-	(hour)	0	0	0	0	0	0	0	0	38	84	6	0	0	0	0	0	1	129
	(ppb)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.6	15.0	9.5	0.0	0.0	0.0	0.0	0.0	18.0	15.3
TOTAL		20	467	567	406	218	127	131	414	1034	1086	661	330	96	34	28	63	331	6513
		49.6	53.6	36.4	31.0	28.4	26.2	24.9	18.3	18.5	16.1	13.5	14.5	16.3	31.0	26.0	31.2	43.2	24.1

(MS4) S.P.PRO.OFFICE

WS \ WD		CALM	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0 -0.4	(hour)	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	33
	(ppb)	92.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	92.8
0.5-0.9	(hour)	0	81	125	112	58	29	25	17	6	10	16	21	9	10	12	20	22	573
	(ppb)	0.0	76.7	63.2	45.7	45.3	40.0	49.5	33.4	40.3	31.0	51.4	28.8	37.8	32.6	59.0	49.9	52.7	53.1
1.0-1.9	(hour)	0	202	230	184	145	101	95	157	122	158	209	256	63	30	23	31	143	2270
	(ppb)	0.0	77.1	62.2	46.0	37.5	37.5	29.1	27.0	26.5	24.4	20.8	21.0	23.0	45.1	42.0	46.7	77.4	41.4
2.0-2.9	(hour)	0	147	143	124	55	25	32	206	272	393	246	96	50	2	2	13	149	1954
	(ppb)	0.0	65.7	49.9	45.0	36.1	24.9	26.2	22.1	20.0	16.2	18.0	16.6	25.5	14.5	33.0	30.7	83.3	30.8
3.0-4.9	(hour)	0	22	75	38	20	3	3	101	435	982	191	16	13	1	1	7	37	2006
	(ppb)	0.0	47.7	45.1	40.7	36.0	32.7	23.3	19.4	17.5	16.5	14.5	18.0	15.2	6.0	28.0	30.4	57.0	19.6
5.0-	(hour)	0	0	0	0	0	0	0	0	30	73	7	0	0	0	0	0	0	110
	(ppb)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.8	12.2	8.7	0.0	0.0	0.0	0.0	0.0	0.0	12.7
TOTAL		33	512	573	458	278	158	156	480	925	1616	729	389	135	43	38	71	351	6945
		92.8	72.5	57.1	45.2	30.8	35.8	31.6	23.7	19.4	17.1	18.7	20.2	27.0	39.9	46.5	43.1	70.3	32.9

(MS5) II. & I. ESTATE

WS \ WD		CALM	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0 -0.4	(hour)	220	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	220
	(ppb)	19.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.9
0.5-0.9	(hour)	0	53	77	150	125	75	54	87	76	79	58	60	90	94	53	56	86	1221
	(ppb)	0.0	24.2	22.8	23.2	19.4	15.2	11.0	8.8	8.3	6.7	9.2	8.2	6.8	12.0	17.0	16.4	23.1	15.0
1.0-1.9	(hour)	0	127	189	216	233	175	143	172	257	370	251	126	134	110	75	80	93	2751
	(ppb)	0.0	11.3	11.8	13.9	15.6	15.0	10.8	9.0	6.4	5.3	5.6	6.1	5.0	10.2	15.1	16.9	12.2	9.9
2.0-2.9	(hour)	0	62	141	121	74	51	47	65	77	383	557	168	43	40	23	24	29	1905
	(ppb)	0.0	7.1	6.0	7.0	8.4	12.2	7.0	6.8	5.2	4.6	4.5	4.4	5.0	7.8	14.6	12.0	11.2	5.8
3.0-4.9	(hour)	0	13	82	112	51	15	8	9	5	81	687	127	11	18	3	10	6	1238
	(ppb)	0.0	6.6	3.9	4.6	7.3	7.2	5.1	4.6	3.6	3.8	3.6	3.5	4.1	6.1	13.7	13.1	14.7	4.2
5.0-	(hour)	0	0	2	30	2	1	0	0	0	0	58	6	0	1	0	0	0	100
	(ppb)	0.0	0.0	3.0	3.2	7.0	3.0	0.0	0.0	0.0	0.0	3.8	1.8	0.0	1.0	0.0	0.0	0.0	3.5
TOTAL		220	235	491	629	485	317	252	333	415	913	1611	490	278	263	154	170	214	7505
		19.9	12.7	10.5	12.6	14.6	14.2	9.9	8.4	6.5	5.0	4.4	5.1	5.6	10.2	15.6	15.9	16.5	9.0

Table 1-23 (4) Concentration by Wind Direction and by Wind Velocity Level (SPM)

(MS1) ONEB STATION

WS \ WD	CALM	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0 -0.4 (hour)	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
(µg/m³)	113.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	113.4
0.5-0.9 (hour)	0	8	7	13	17	9	7	5	7	22	6	2	1	3	3	1	1	112
(µg/m³)	0.0	124.4	142.3	103.0	102.0	84.4	70.7	91.8	63.3	61.4	105.0	90.5	171.0	103.0	117.3	155.0	65.0	93.4
1.0-1.9 (hour)	0	57	104	143	153	137	125	119	137	168	113	67	84	41	36	36	46	1506
(µg/m³)	0.0	102.6	87.3	76.9	68.9	65.0	62.6	58.8	61.9	64.4	93.9	120.9	102.0	90.0	108.8	121.3	91.3	78.8
2.0-2.9 (hour)	0	170	214	218	191	119	112	126	277	330	166	148	100	79	37	50	111	2520
(µg/m³)	0.0	89.2	76.7	66.8	55.4	45.9	48.4	45.6	48.9	55.9	86.4	107.7	80.2	80.1	100.5	107.0	100.4	70.9
3.0-4.9 (hour)	0	97	86	193	237	72	50	150	673	647	158	100	70	41	20	42	39	2744
(µg/m³)	0.0	72.8	54.8	40.5	34.3	31.7	26.4	28.8	33.5	38.2	57.8	68.5	51.4	55.6	60.1	90.3	81.5	43.2
5.0- (hour)	0	0	1	19	73	6	1	26	91	63	11	9	2	0	0	2	10	314
(µg/m³)	0.0	0.0	33.0	30.4	25.6	14.3	3.0	21.0	27.4	30.6	48.7	49.7	14.0	0.0	0.0	101.0	50.0	23.7
TOTAL	5	332	412	586	671	343	295	435	1185	1230	454	326	337	164	96	131	207	7200
	113.4	87.6	75.8	60.2	49.0	51.0	51.0	42.4	40.1	46.5	77.6	96.8	84.4	83.2	100.0	100.7	90.1	60.8

(MS2) POWER PLANT

WS \ WD	CALM	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0 -0.4 (hour)	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35
(µg/m³)	143.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	143.0
0.5-0.9 (hour)	0	81	137	126	66	33	26	20	13	14	19	22	13	14	14	21	24	643
(µg/m³)	0.0	113.1	96.3	80.7	75.1	93.5	79.9	63.9	86.0	85.7	84.7	63.0	100.8	77.7	90.1	92.4	101.6	89.1
1.0-1.9 (hour)	0	341	279	203	102	112	111	176	135	178	314	316	76	33	25	37	189	2636
(µg/m³)	0.0	108.5	89.4	68.4	53.5	52.1	45.8	42.8	52.1	64.3	52.5	44.9	56.9	73.5	97.4	80.1	90.2	67.2
2.0-2.9 (hour)	0	244	200	143	73	28	34	224	325	478	292	114	54	5	2	12	217	2445
(µg/m³)	0.0	81.1	47.9	36.1	42.0	41.4	29.3	29.6	41.7	45.8	41.2	30.2	32.1	24.2	73.5	56.4	80.5	40.8
3.0-4.9 (hour)	0	46	122	48	22	3	3	111	621	1145	207	24	15	2	1	12	66	2448
(µg/m³)	0.0	65.0	28.7	27.9	35.5	26.3	32.0	31.8	45.8	38.6	30.2	24.7	22.1	17.0	91.0	56.8	80.6	40.1
5.0- (hour)	0	0	0	0	0	0	0	0	37	85	7	0	0	0	0	0	1	130
(µg/m³)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	49.3	41.2	26.3	0.0	0.0	0.0	0.0	0.0	62.0	42.9
TOTAL	35	712	738	520	263	176	174	531	1131	1900	839	476	158	54	42	82	497	8337
	143.0	96.8	65.8	58.8	54.1	57.7	47.5	35.7	45.9	43.3	43.6	41.2	40.5	67.9	93.7	76.4	92.6	55.5

(MS3) MIN.DEP.OFFICE

WS \ WD	CALM	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0 -0.4 (hour)	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35
(µg/m³)	122.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	122.0
0.5-0.9 (hour)	0	83	135	122	66	33	26	20	13	13	19	22	13	14	14	22	24	639
(µg/m³)	0.0	112.6	116.4	113.0	100.2	96.5	103.0	69.7	94.2	67.7	86.5	75.8	90.1	96.9	81.9	96.4	111.0	105.2
1.0-1.9 (hour)	0	301	275	190	152	111	111	183	139	180	312	316	76	32	25	37	106	2665
(µg/m³)	0.0	92.1	96.0	89.0	87.8	74.9	72.1	74.0	76.6	63.7	50.2	40.3	63.0	72.3	80.8	81.2	92.0	76.1
2.0-2.9 (hour)	0	238	190	141	71	28	32	231	306	472	208	116	40	5	2	12	217	2436
(µg/m³)	0.0	73.2	62.7	46.8	51.5	59.8	49.7	52.3	63.1	50.9	39.6	31.7	35.4	22.2	49.0	60.4	77.9	55.6
3.0-4.9 (hour)	0	47	127	44	22	2	3	100	600	1178	206	23	15	2	1	12	65	2516
(µg/m³)	0.0	62.0	52.3	49.5	46.3	31.0	44.0	41.8	53.5	43.2	35.5	26.5	21.1	14.5	28.0	47.1	61.7	46.3
5.0- (hour)	0	0	0	0	0	0	0	0	40	90	6	0	0	0	0	0	1	137
(µg/m³)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	41.1	39.5	17.7	0.0	0.0	0.0	0.0	0.0	67.0	39.2
TOTAL	35	669	735	506	311	174	172	543	1108	1933	831	477	153	53	42	83	453	8428
	122.0	86.1	82.8	79.6	80.9	76.0	72.1	58.1	50.0	47.0	46.5	45.1	53.1	71.9	83.8	79.7	82.7	63.1

(MS4) S.P.PRO.OFFICE

WS \ WD	CALM	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0 -0.4 (hour)	34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	34
(µg/m³)	155.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	155.3
0.5-0.9 (hour)	0	82	125	121	63	33	26	19	12	14	19	22	13	13	14	22	24	622
(µg/m³)	0.0	130.3	122.2	90.6	92.8	89.5	114.1	75.0	86.5	84.5	106.3	66.0	112.8	93.8	113.9	118.1	119.8	106.2
1.0-1.9 (hour)	0	330	263	199	158	101	110	180	140	177	311	315	76	32	25	36	190	2643
(µg/m³)	0.0	137.3	100.9	87.0	74.7	72.1	65.5	61.8	63.1	59.8	58.4	57.3	83.2	90.1	93.4	105.1	139.6	85.7
2.0-2.9 (hour)	0	237	184	137	74	30	33	222	334	474	280	113	54	5	2	13	200	2410
(µg/m³)	0.0	124.9	77.5	58.1	61.5	57.1	41.0	45.2	44.3	40.0	44.0	43.9	46.6	52.8	83.0	74.5	139.8	63.2
3.0-4.9 (hour)	0	50	118	45	22	3	3	111	654	1105	208	21	13	1	1	12	60	2507
(µg/m³)	0.0	113.2	65.0	56.4	54.2	39.3	45.0	41.7	40.0	33.5	39.6	37.1	30.5	24.0	105.0	65.1	116.2	41.9
5.0- (hour)	0	0	0	0	0	0	0	0	40	89	7	0	0	0	0	0	1	137
(µg/m³)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	32.6	30.1	38.0	0.0	0.0	0.0	0.0	0.0	50.0	31.6
TOTAL	34	699	690	502	317	167	172	532	1180	1939	834	471	156	51	42	83	481	8353
	155.3	130.5	95.4	77.2	73.8	72.2	67.8	51.2	44.2	37.7	40.6	54.5	68.6	93.3	103.6	98.0	125.7	67.2

(MS5) N. & I. ESTATE

WS \ WD	CALM	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0 -0.4 (hour)	243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	243
(µg/m³)	63.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	63.5
0.5-0.9 (hour)	0	82	96	170	145	77	56	88	76	81	58	60	100	96	62	65	101	1422
(µg/m³)	0.0	78.3	71.4	66.0	57.5	54.9	40.0	36.8	34.2	35.1	35.0	31.7	34.8	40.2	70.5	67.2	74.4	53.8
1.0-1.9 (hour)	0	147	235	278	267	109	143	169	257	370	259	127	134	114	76	96	107	2888
(µg/m³)	0.0	60.6	62.8	50.5	56.5	48.7	39.0	32.9	31.6	31.6	37.6	36.1	30.3	47.0	50.7	77.5	58.1	46.1
2.0-2.9 (hour)	0	77	188	179	98	49	48	67	75	384	558	166	44	40	23	24	28	2048
(µg/m³)	0.0	43.8	40.1	53.0	49.9	37.5	32.4	28.5	28.9	28.2	30.1	31.7	30.9	32.6	46.3	39.3	38.4	35.7
3.0-4.9 (hour)	0	20	134	174	69	15	8	9	5	82	600	123	13	19	3	10	6	1336
(µg/m³)	0.0	40.1	47.6	44.7	50.4	24.9	18.1	23.3	20.4	28.5	26.5	25.9	22.5	34.1	31.3	40.5	23.3	32.4
5.0- (hour)	0	0	5	35	4	1	0	0	0	0	59	6	0	1	0	0	0	111
(µg/m³)	0.0	0.0	49.6	46.9	30.0	5.0	0.0	0.0	0.0	0.0	30.5	22.3	0.0	11.0	0.0	0.0	0.0	35.7
TOTAL	243	326	658	836	583	251	255	333	413	917	1533	497	291	270	164	195	242	8107
	63.5	60.3	56.9	55.5	54.3	47.3	37.3	32.8	31.4	30.2	30.0	31.2	31.6	44.2	61.4	67.4	51.8	42.9

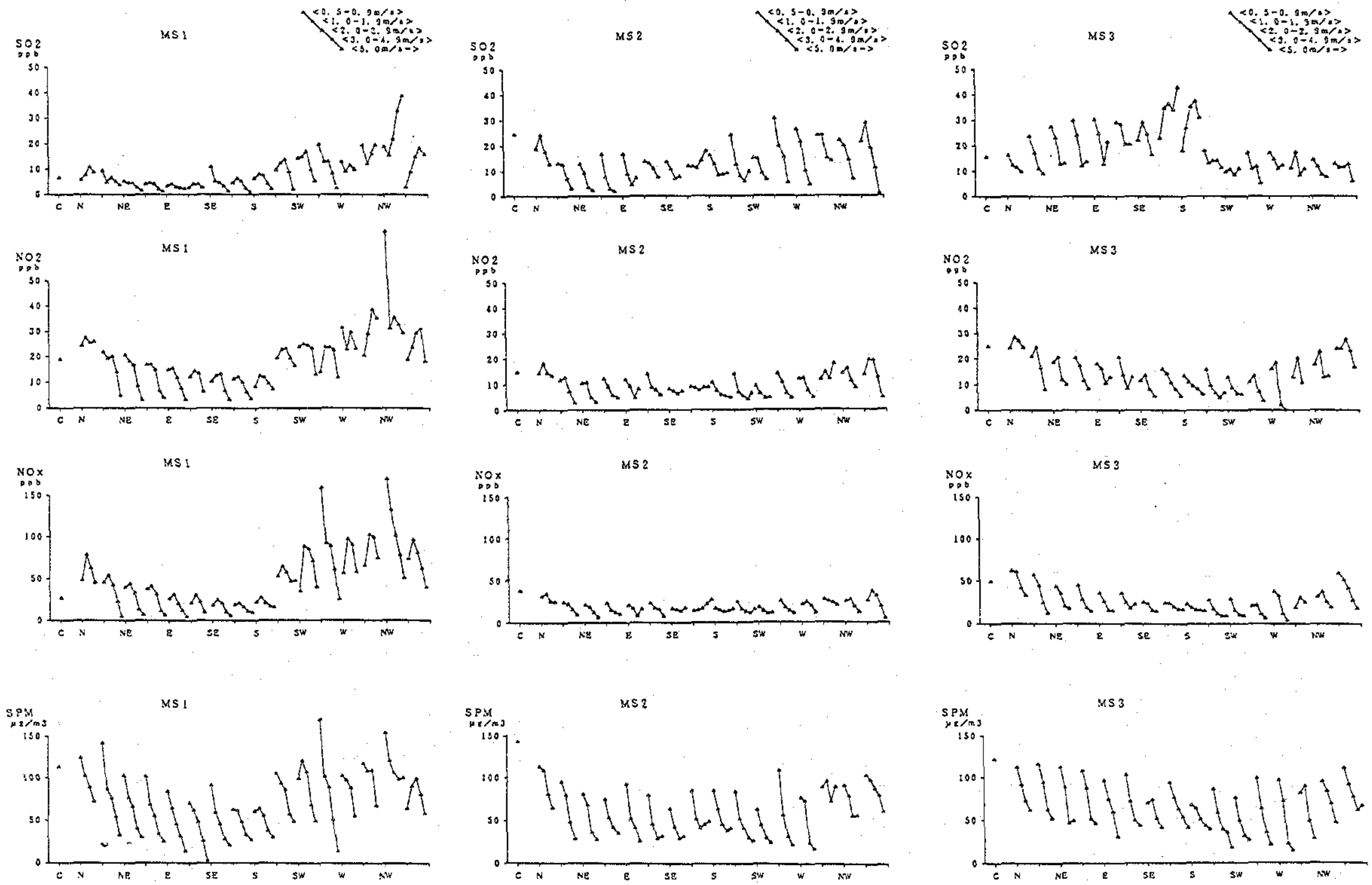

Fig. 1-27 (1) Average Atmospheric Pollutant Concentration by Wind Direction and by Wind Velocity Rank

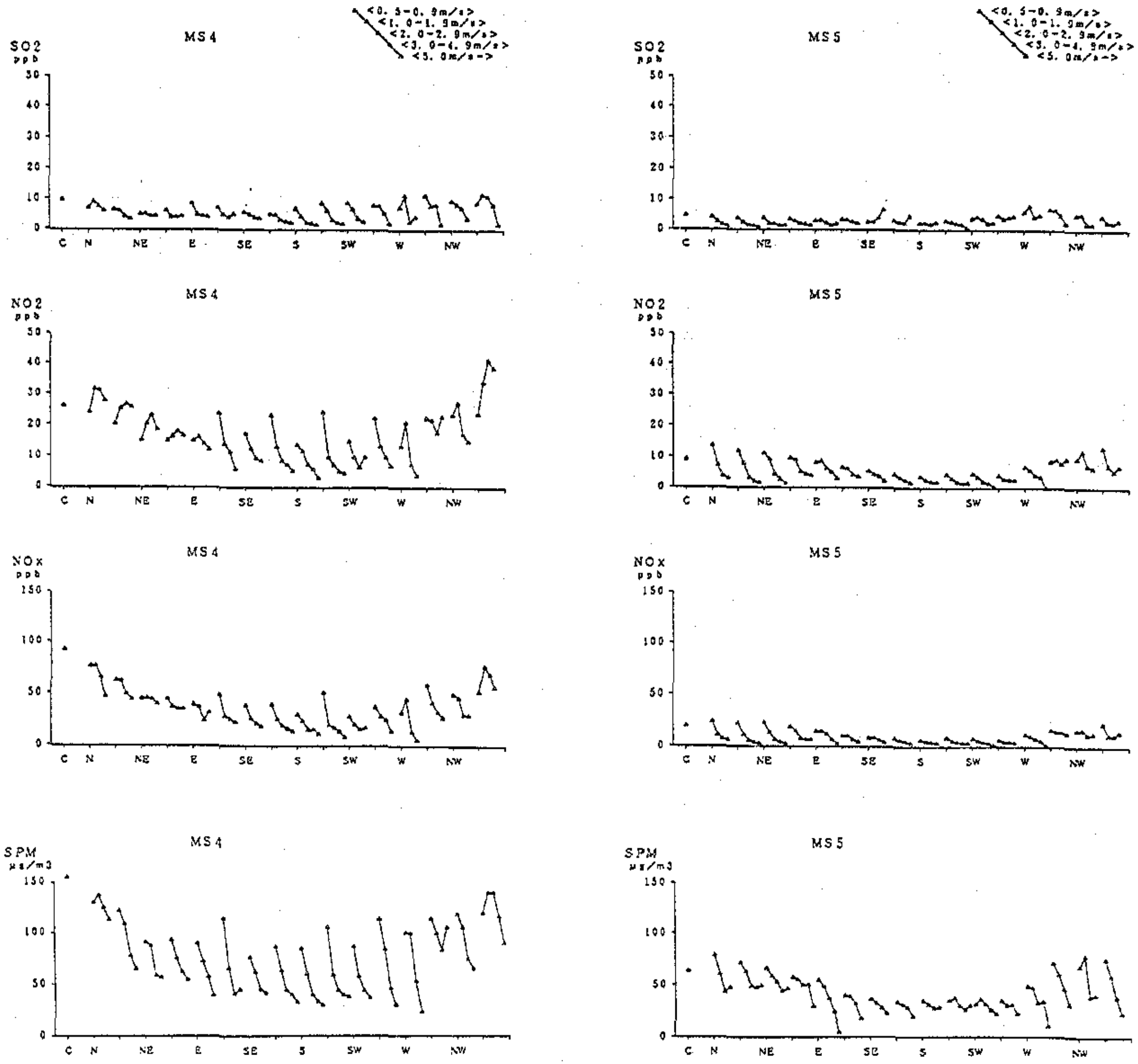

Fig. 1-27 (2) Average Atmospheric Pollutant Concentration
by Wind Direction and by Wind Velocity Rank

1.4.2 Average Pollutant Concentrations by Wind Velocity Range and by Atmospheric Stability

The atmospheric stability can be classified as shown in Table 1-6 according to such factors as wind velocity, solar radiation and net radiation and the plume spread (width) increases as atmospheric stability is destroyed (Fig. 1-13).

Table 1-24 and Fig. 1-28 show average concentrations of SO_2, NO_2, NO_x and SPM observed at each monitoring station by wind velocity range and by atmospheric stability. Concentrations, regardless of pollutant type, increase as atmospheric stability improves. The trend is more pronouncedly seen in SO_2 of MS2 and MS3, in NO_2 and NO_x of MS1, MS3 and MS4, and in SPM concentration of MS1, MS2, MS3 and MS4.

In addition, the atmospheric stability takes A, B, C and D type in the daytime as shwon in Table 1-8 but mostly E and F type at night. The frequency of these appearances seems well correlated to the atmospheric pollutant concentrations. Namely, in the daytime the concentrations increase in the ascending order of A to D while in the night time the concentrations samely increase from E to F although average level stays lower at stability D. The concentration difference between D in daytime and F in night is thought due to that of source activities.

When viewed in term of wind velocity range, the pollutant concentrations increase as so does wind velocity so long as atmospheric stability is maintained. The trend is clearly shown by SO_2 of MS3. Worthy of mentioning here is that atmospheric concentration varies depending on air stability change but is greatly dependent on other factors such as changes of wind velocity and its direction, fluctuation of source activities, relative position between source and monitoring station and others.

Table 1-24 (1) Pollutant Concentrations by Wind Velocity Range and by Atmospheric Stability

UPPER ; number of data
LOWER ; concentration (ppb)

SO_2

(MS1) ONEB STATION

Wind velocity (m/s)	Solar radiation (W/m²)				Net radiation (W/m²)	
	T≧ 580	580 ~ 290	290 ~ 151	151 >T	Q≧ −34	−34 >Q
0.0-0.4	CA 2 / 5.5	CB 1 / 8.0	CC 0 / –		CC 0 / –	CD 2 / 7.5
0.5-0.9	A 7 / 9.1	B 23 / 7.9		D 10 / 6.3	E 16 / 8.0	F 56 / 6.0
1.0-1.9	B 218 / 6.6		C 113 / 8.6	D 144 / 8.5	E 412 / 6.1	F 713 / 8.3
2.0-2.9	B 487 / 7.2		C 183 / 8.1	D 243 / 8.4	E 500 / 7.2	F 1218 / 10.3
3.0-4.9	B 597 / 3.7	C 811 / 5.4		D 280 / 5.8	D 241 / 6.0	E 842 / 6.6
5.0-	C 106 / 1.7	D 150 / 2.7			D 56 / 2.7	

(MS2) POWER PLANT

Wind velocity (m/s)	Solar radiation (W/m²)				Net radiation (W/m²)	
	T≧ 580	580 ~ 290	290 ~ 151	151 >T	Q≧ −34	−34 >Q
0.0-0.4	CA 0 / –	CB 0 / –	CC 3 / 26.7		CC 3 / 16.0	CD 28 / 25.3
0.5-0.9	A 3 / 5.3	B 54 / 21.2		D 46 / 18.6	E 201 / 15.3	F 333 / 15.7
1.0-1.9	B 350 / 11.5		C 183 / 14.5	D 264 / 13.3	E 622 / 12.9	F 1232 / 17.4
2.0-2.9	B 811 / 6.8		C 201 / 9.3	D 212 / 9.5	E 328 / 11.0	F 821 / 13.1
3.0-4.9	B 572 / 7.5	C 700 / 7.2		D 207 / 8.9	D 216 / 9.9	E 745 / 13.4
5.0-	C 35 / 9.4	D 73 / 11.0			D 22 / 18.4	

(MS3) MIN.DEP.OFFICE

Wind velocity (m/s)	Solar radiation (W/m²)				Net radiation (W/m²)	
	T≧ 580	580 ~ 290	290 ~ 151	151 >T	Q≧ −34	−34 >Q
0.0-0.4	CA 0 / –	CB 0 / –	CC 3 / 26.0		CC 3 / 15.7	CD 28 / 14.7
0.5-0.9	A 3 / 17.7	B 55 / 35.0		D 46 / 26.6	E 201 / 22.6	F 332 / 20.3
1.0-1.9	B 355 / 18.9		C 184 / 20.9	D 261 / 20.2	E 618 / 18.7	F 1178 / 18.7
2.0-2.9	B 806 / 12.3		C 193 / 16.3	D 206 / 16.8	E 319 / 22.4	F 807 / 33.1
3.0-4.9	B 556 / 14.1	C 680 / 19.4		D 206 / 27.4	D 215 / 35.2	E 743 / 53.3
5.0-	C 37 / 20.3	D 74 / 31.9			D 22 / 63.0	

(MS4) S.P.PRO.OFFICE

Wind velocity (m/s)	Solar radiation (W/m²)				Net radiation (W/m²)	
	T≧ 580	580 ~ 290	290 ~ 151	151 >T	Q≧ −34	−34 >Q
0.0-0.4	CA 0 / –	CB 0 / –	CC 3 / 6.0		CC 3 / 4.3	CD 28 / 11.2
0.5-0.9	A 3 / 6.3	B 56 / 7.1		D 46 / 7.6	E 198 / 6.0	F 334 / 7.7
1.0-1.9	B 340 / 5.9		C 183 / 7.0	D 261 / 7.2	E 612 / 5.5	F 1213 / 7.5
2.0-2.9	B 800 / 3.9		C 199 / 4.7	D 215 / 5.0	E 323 / 4.2	F 811 / 5.4
3.0-4.9	B 576 / 2.5	C 701 / 2.5		D 208 / 2.7	D 213 / 3.2	E 740 / 3.1
5.0-	C 36 / 1.3	D 73 / 1.9			D 22 / 2.9	

(MS5) H. & I. ESTATE

Wind velocity (m/s)	Solar radiation (W/m²)				Net radiation (W/m²)	
	T≧ 580	580 ~ 290	290 ~ 151	151 >T	Q≧ −34	−34 >Q
0.0-0.4	CA 0 / –	CB 1 / 9.0	CC 7 / 7.9		CC 64 / 5.2	CD 136 / 4.3
0.5-0.9	A 8 / 2.1	B 88 / 4.3		D 76 / 3.1	E 340 / 4.1	F 720 / 4.0
1.0-1.9	B 399 / 3.1		C 205 / 3.3	D 298 / 2.5	E 499 / 3.2	F 1205 / 3.1
2.0-2.9	B 686 / 2.4		C 189 / 2.9	D 176 / 2.2	E 165 / 3.5	F 532 / 1.6
3.0-4.9	B 413 / 1.8	C 429 / 2.0		D 103 / 1.8	D 57 / 3.6	E 130 / 1.8
5.0-	C 57 / 1.1	D 40 / 1.1			D 2 / 1.5	

NO_2

UPPER ; number of data
LOWER ; concentration (ppb)

(MS1) ONEB STATION

Wind velocity (m/s)	Solar radiation (W/m²)				Net radiation (W/m²)	
	T≧ 580	580 ~ 290	290 ~ 151	151 >T	Q≧ −34	−34 >Q
0.0-0.4	CA 2 / 17.0	CB 1 / 28.0	CC 0 / –		CC 0 / –	CD 2 / 16.5
0.5-0.9	A 7 / 13.4	B 21 / 17.3		D 10 / 11.9	E 16 / 13.9	F 56 / 18.6
1.0-1.9	B 217 / 15.1		C 108 / 20.6	D 139 / 21.2	E 405 / 17.1	F 712 / 19.1
2.0-2.9	B 479 / 16.3		C 178 / 19.2	D 242 / 20.8	E 494 / 17.8	F 1200 / 19.8
3.0-4.9	B 581 / 8.9	C 802 / 12.1		D 274 / 16.4	D 240 / 13.6	E 834 / 12.1
5.0-	C 106 / 4.3	D 149 / 6.9			D 56 / 6.3	

(MS2) POWER PLANT

Wind velocity (m/s)	Solar radiation (W/m²)				Net radiation (W/m²)	
	T≧ 580	580 ~ 290	290 ~ 151	151 >T	Q≧ −34	−34 >Q
0.0-0.4	CA 0 / –	CB 0 / –	CC 2 / 14.5		CC 2 / 19.5	CD 23 / 14.7
0.5-0.9	A 2 / 12.0	B 50 / 13.0		D 41 / 11.6	E 180 / 10.4	F 297 / 12.8
1.0-1.9	B 322 / 9.7		C 159 / 10.1	D 220 / 11.0	E 562 / 9.7	F 1059 / 11.7
2.0-2.9	B 701 / 6.6		C 180 / 7.9	D 191 / 9.3	E 308 / 8.7	F 757 / 9.3
3.0-4.9	B 541 / 5.3	C 668 / 6.0		D 203 / 7.3	D 214 / 7.1	E 725 / 8.1
5.0-	C 34 / 5.5	D 72 / 6.2			D 22 / 8.2	

(MS3) MIN.DEP.OFFICE

Wind velocity (m/s)	Solar radiation (W/m²)				Net radiation (W/m²)	
	T≧ 580	580 ~ 290	290 ~ 151	151 >T	Q≧ −34	−34 >Q
0.0-0.4	CA 0 / –	CB 0 / –	CC 2 / 23.0		CC 1 / 3.0	CD 16 / 27.4
0.5-0.9	A 2 / 2.0	B 36 / 19.1		D 43 / 20.2	E 146 / 14.2	F 270 / 22.3
1.0-1.9	B 265 / 15.6		C 128 / 16.7	D 202 / 18.5	E 415 / 12.4	F 939 / 19.8
2.0-2.9	B 597 / 9.5		C 156 / 12.0	D 147 / 13.6	E 239 / 10.9	F 671 / 16.6
3.0-4.9	B 500 / 5.2	C 585 / 6.8		D 171 / 9.5	D 182 / 9.1	E 689 / 12.7
5.0-	C 36 / 6.3	D 69 / 5.7			D 22 / 8.9	

(MS4) S.P.PRO.OFFICE

Wind velocity (m/s)	Solar radiation (W/m²)				Net radiation (W/m²)	
	T≧ 580	580 ~ 290	290 ~ 151	151 >T	Q≧ −34	−34 >Q
0.0-0.4	CA 0 / –	CB 0 / –	CC 3 / 33.3		CC 3 / 12.7	CD 26 / 27.7
0.5-0.9	A 3 / 7.3	B 49 / 13.7		D 38 / 24.2	E 193 / 14.3	F 283 / 23.5
1.0-1.9	B 284 / 17.1		C 155 / 18.5	D 232 / 24.3	E 553 / 13.2	F 991 / 20.5
2.0-2.9	B 645 / 14.0		C 168 / 16.7	D 170 / 19.9	E 276 / 10.8	F 621 / 17.1
3.0-4.9	B 446 / 8.4	C 567 / 8.1		D 175 / 9.6	D 190 / 8.7	E 556 / 8.5
5.0-	C 32 / 3.8	D 57 / 4.5			D 18 / 2.3	

(MS5) H. & I. ESTATE

Wind velocity (m/s)	Solar radiation (W/m²)				Net radiation (W/m²)	
	T≧ 580	580 ~ 290	290 ~ 151	151 >T	Q≧ −34	−34 >Q
0.0-0.4	CA 0 / –	CB 1 / 10.0	CC 7 / 9.1		CC 75 / 8.6	CD 132 / 9.5
0.5-0.9	A 9 / 7.2	B 97 / 7.7		D 71 / 8.5	E 373 / 7.4	F 718 / 8.5
1.0-1.9	B 419 / 4.7		C 224 / 5.6	D 287 / 6.4	E 566 / 5.9	F 1194 / 6.3
2.0-2.9	B 737 / 2.7		C 197 / 3.3	D 178 / 3.7	E 201 / 3.7	F 545 / 2.7
3.0-4.9	B 409 / 1.8	C 453 / 2.0		D 116 / 2.6	D 71 / 3.5	E 140 / 1.9
5.0-	C 52 / 1.8	D 43 / 1.3			D 4 / 1.0	

Table 1-24 (2) Pollutant Concentrations by Wind Velocity Range and by Atmospheric Stability

NO_x

UPPER ; number of data
LOWER ; concentration(ppb)

(MS1) GNEB STATION

Wind velocity (m/s)	Solar radiation (W/㎡)				Net radiation (W/㎡)	
	T≧ 580	580 ~ 290	290 ~ 151	151 >T	Q≧ −34	−34 >Q
0.0-0.4	CA 2 22.0	CB 1 36.0	CC 0 —		CC 0 —	CD 2 26.5
0.5-0.9	A 7 21.9	B 21 30.1		D 10 47.5	E 16 45.9	F 56 36.4
1.0-1.9	B 217 24.5		C 108 51.7	D 139 62.2	E 405 56.4	F 711 53.3
2.0-2.9	B 479 27.3		C 178 45.1	D 242 48.7	E 494 53.4	F 1199 49.8
3.0-4.9	B 581 16.9	C 802 25.0		D 274 28.9	D 240 33.4	E 834 22.7
5.0-	C 106 9.2	D 149 14.4			D 56 13.9	

(MS2) POWER PLANT

Wind velocity (m/s)	Solar radiation (W/㎡)				Net radiation (W/㎡)	
	T≧ 580	580 ~ 290	290 ~ 151	151 >T	Q≧ −34	−34 >Q
0.0-0.4	CA 0 —	CB 0 —	CC 2 23.0		CC 2 30.5	CD 23 39.9
0.5-0.9	A 2 23.0	B 50 24.8		D 41 25.5	E 180 21.9	F 297 22.9
1.0-1.9	B 322 18.1		C 159 19.9	D 220 20.5	E 562 18.4	F 1059 20.5
2.0-2.9	B 701 14.3		C 180 16.6	D 191 17.2	E 308 17.3	F 757 16.6
3.0-4.9	B 541 14.1	C 668 15.0		D 203 16.1	D 214 15.6	E 725 17.6
5.0-	C 34 17.6	D 72 19.3			D 22 21.4	

(MS3) MIN.DEP.OFFICE

Wind velocity (m/s)	Solar radiation (W/㎡)				Net radiation (W/㎡)	
	T≧ 580	580 ~ 290	290 ~ 151	151 >T	Q≧ −34	−34 >Q
0.0-0.4	CA 0 —	CB 0 —	CC 2 29.0		CC 1 13.0	CD 16 52.5
0.5-0.9	A 2 4.0	B 34 52.9		D 40 59.3	E 140 39.1	F 262 44.8
1.0-1.9	B 255 24.1		C 124 33.4	D 199 38.6	E 408 25.3	F 924 34.5
2.0-2.9	B 584 15.4		C 154 21.8	D 144 23.3	E 234 20.9	F 660 24.9
3.0-4.9	B 497 10.0	C 579 13.5		D 167 16.5	D 182 15.7	E 668 22.0
5.0-	C 36 13.5	D 68 14.8			D 22 20.7	

(MS4) S.P.PRO.OFFICE

Wind velocity (m/s)	Solar radiation (W/㎡)				Net radiation (W/㎡)	
	T≧ 580	580 ~ 290	290 ~ 151	151 >T	Q≧ −34	−34 >Q
0.0-0.4	CA 0 —	CB 0 —	CC 3 65.3		CC 3 34.7	CD 26 104.8
0.5-0.9	A 3 13.7	B 49 38.9		D 38 67.9	E 193 43.5	F 283 60.8
1.0-1.9	B 232 33.4		C 155 44.0	D 232 55.2	E 553 31.8	F 991 45.6
2.0-2.9	B 645 28.5		C 168 34.9	D 170 38.4	E 276 22.8	F 620 33.4
3.0-4.9	B 444 20.6	C 567 19.3		D 175 20.2	D 190 18.5	E 556 19.2
5.0-	C 32 11.2	D 57 14.2			D 18 9.7	

(MS5) H. & I. ESTATE

Wind velocity (m/s)	Solar radiation (W/㎡)				Net radiation (W/㎡)	
	T≧ 580	580 ~ 290	290 ~ 151	151 >T	Q≧ −34	−34 >Q
0.0-0.4	CA 0 —	CB 1 23.0	CC 7 25.1		CC 75 19.8	CD 132 19.6
0.5-0.9	A 9 9.2	B 97 15.1		D 71 17.4	E 373 14.4	F 717 15.1
1.0-1.9	B 419 8.7		C 224 12.2	D 287 11.4	E 556 10.7	F 1194 9.0
2.0-2.9	B 737 5.8		C 197 6.8	D 178 6.7	E 201 7.7	F 545 4.5
3.0-4.9	B 403 3.7	C 453 4.5		D 116 4.9	D 71 5.9	E 140 3.3
5.0-	C 52 3.8	D 43 3.1			D 4 2.3	

SPM

UPPER ; number of data
LOWER ; concentration(μg/㎥)

(MS1) ONEB STATION

Wind velocity (m/s)	Solar radiation (W/㎡)				Net radiation (W/㎡)	
	T≧ 580	580 ~ 290	290 ~ 151	151 >T	Q≧ −34	−34 >Q
0.0-0.4	CA 2 67.5	CB 1 98.0	CC 0 —		CC 0 —	CD 2 167.0
0.5-0.9	A 7 63.9	B 23 90.2		D 10 120.3	E 16 81.6	F 56 96.9
1.0-1.9	B 225 61.3		C 111 92.9	D 141 95.6	E 405 64.0	F 689 87.0
2.0-2.9	B 476 56.0		C 176 71.7	D 231 74.6	E 480 60.1	F 1167 80.4
3.0-4.9	B 593 33.4	C 791 41.3		D 276 48.2	D 240 42.8	E 834 50.7
5.0-	C 106 25.9	D 148 31.4			D 56 32.4	

(MS2) POWER PLANT

Wind velocity (m/s)	Solar radiation (W/㎡)				Net radiation (W/㎡)	
	T≧ 580	580 ~ 290	290 ~ 151	151 >T	Q≧ −34	−34 >Q
0.0-0.4	CA 0 —	CB 0 —	CC 3 111.0		CC 3 66.7	CD 28 156.8
0.5-0.9	A 3 46.0	B 55 89.0		D 46 105.2	E 198 69.0	F 333 99.5
1.0-1.9	B 344 59.0		C 185 67.3	D 263 74.8	E 618 53.2	F 1219 75.2
2.0-2.9	B 824 39.2		C 201 54.6	D 214 51.6	E 324 45.4	F 805 58.2
3.0-4.9	B 561 32.3	C 695 35.8		D 204 42.8	D 214 39.0	E 699 51.4
5.0-	C 35 38.9	D 72 42.7			D 20 54.1	

(MS3) MIN.DEP.OFFICE

Wind velocity (m/s)	Solar radiation (W/㎡)				Net radiation (W/㎡)	
	T≧ 580	580 ~ 290	290 ~ 151	151 >T	Q≧ −34	−34 >Q
0.0-0.4	CA 0 —	CB 0 —	CC 3 77.0		CC 3 66.0	CD 28 133.9
0.5-0.9	A 3 48.3	B 55 111.3		D 45 140.8	E 200 91.4	F 328 108.5
1.0-1.9	B 346 70.9		C 182 82.5	D 257 85.1	E 600 66.5	F 1223 80.0
2.0-2.9	B 811 43.3		C 200 54.5	D 215 59.7	E 318 51.9	F 815 68.8
3.0-4.9	B 583 33.4	C 699 39.2		D 206 48.8	D 212 46.2	E 741 64.1
5.0-	C 37 37.8	D 75 35.5			D 22 56.2	

(MS4) S.P.PRO.OFFICE

Wind velocity (m/s)	Solar radiation (W/㎡)				Net radiation (W/㎡)	
	T≧ 580	580 ~ 290	290 ~ 151	151 >T	Q≧ −34	−34 >Q
0.0-0.4	CA 0 —	CB 0 —	CC 3 119.3		CC 2 116.5	CD 28 164.5
0.5-0.9	A 3 79.7	B 51 88.8		D 43 115.5	E 186 85.7	F 332 119.8
1.0-1.9	B 339 72.9		C 180 85.2	D 262 101.0	E 599 66.3	F 1206 96.8
2.0-2.9	B 802 52.5		C 199 67.4	D 212 80.9	E 317 54.5	F 806 74.5
3.0-4.9	B 583 37.9	C 701 38.8		D 203 50.7	D 213 44.0	E 736 45.9
5.0-	C 37 29.4	D 75 30.4			D 22 39.0	

(MS5) H. & I. ESTATE

Wind velocity (m/s)	Solar radiation (W/㎡)				Net radiation (W/㎡)	
	T≧ 580	580 ~ 290	290 ~ 151	151 >T	Q≧ −34	−34 >Q
0.0-0.4	CA 0 —	CB 1 38.0	CC 7 67.1		CC 76 51.7	CD 154 67.9
0.5-0.9	A 10 45.3	B 100 53.4		D 81 65.1	E 375 41.2	F 832 58.6
1.0-1.9	B 446 44.2		C 231 50.5	D 315 50.6	E 572 34.3	F 1340 49.7
2.0-2.9	B 805 35.4		C 213 38.9	D 195 38.8	E 204 24.8	F 584 38.1
3.0-4.9	B 489 32.1	C 517 33.7		D 120 33.8	D 70 20.8	E 145 35.4
5.0-	C 60 37.9	D 46 34.3			D 4 16.5	

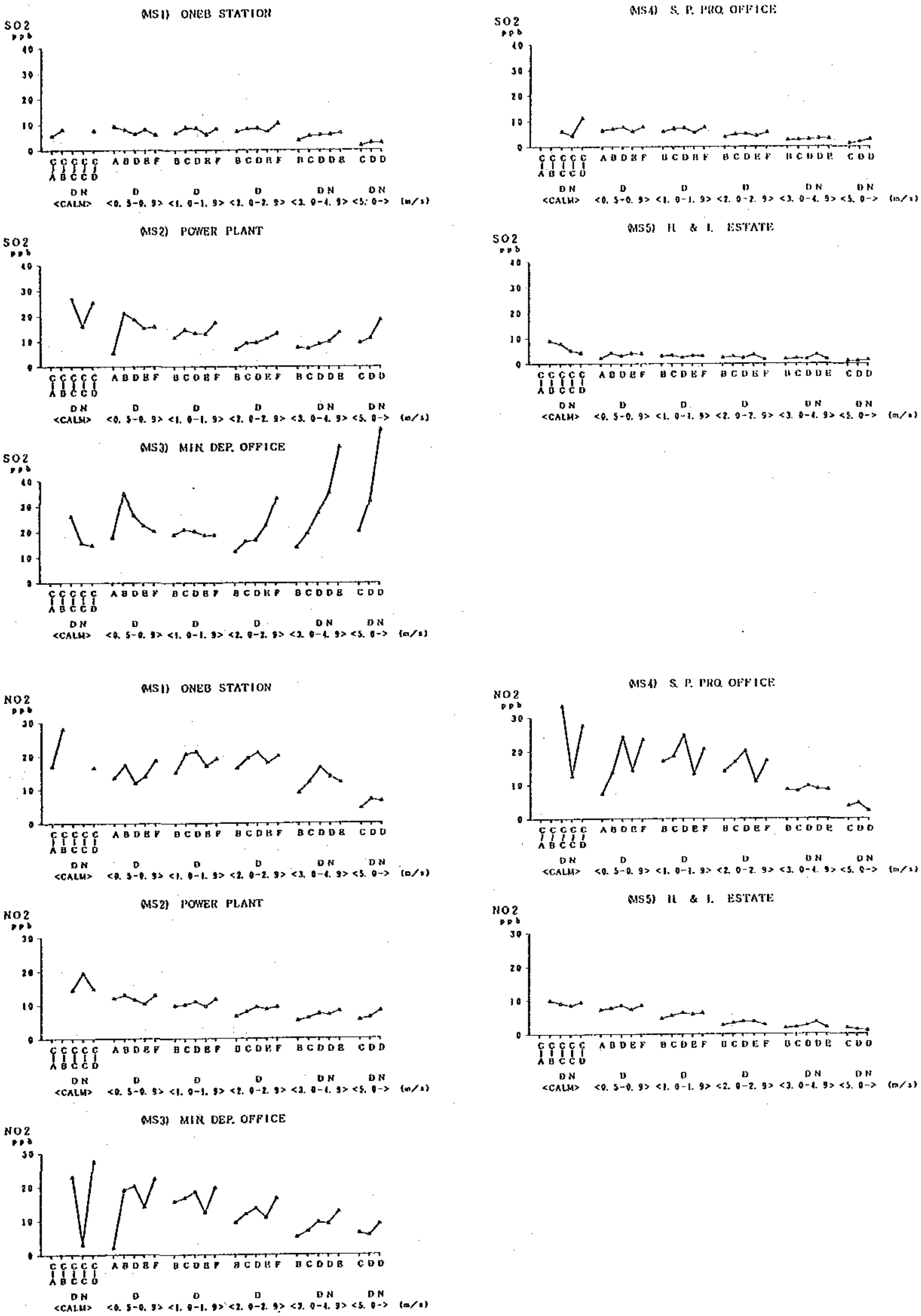

Fig. 1-28 (1) Pollutant Concentrations by Wind Velocity Range and by Atmospheric Stability

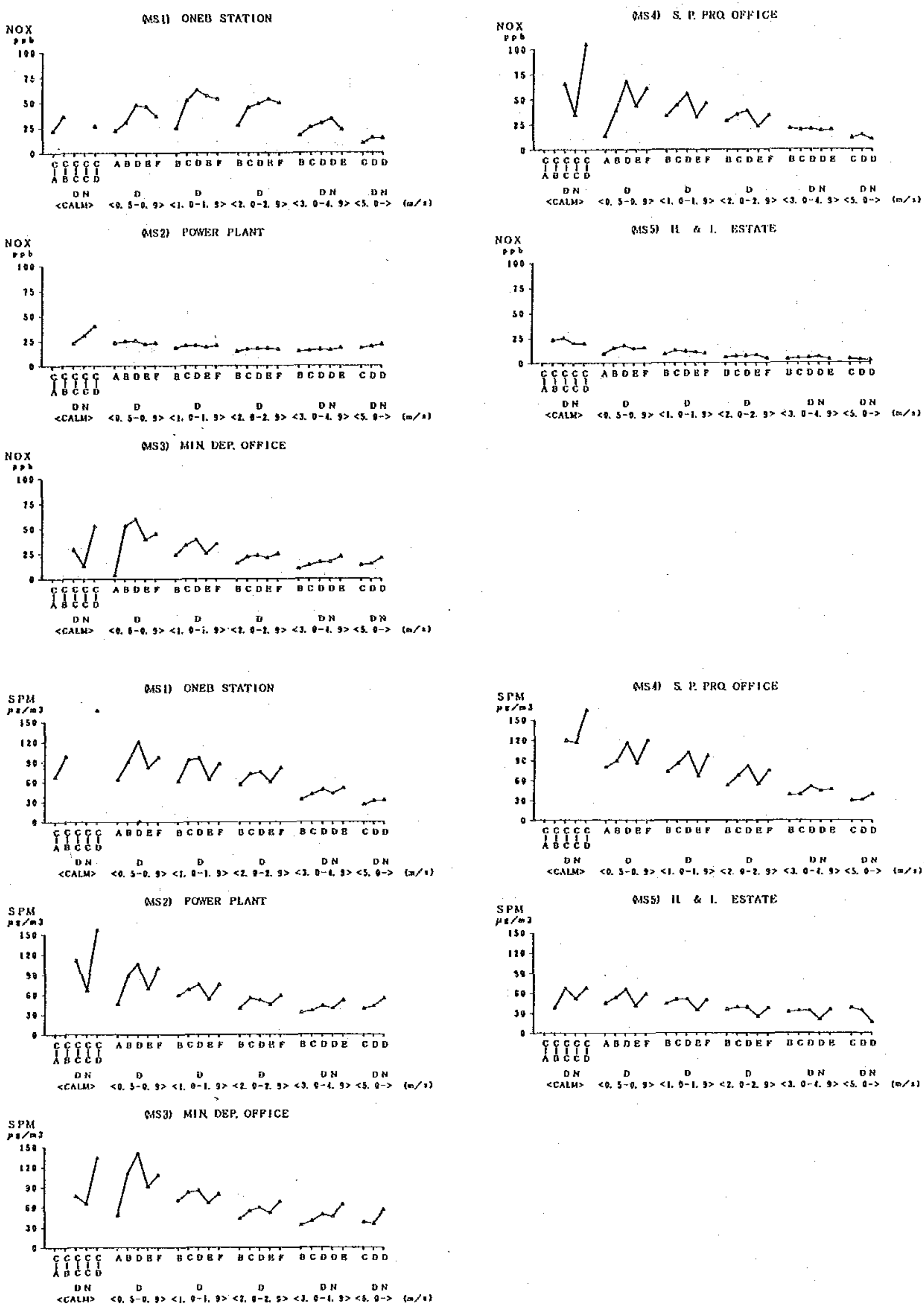

Fig. 1-28 (2) Pollutant Concentrations by Wind Velocity Range and by Atmospheric Stability

1.4.3 Analytical Study on High Pollutant Concentrations

The study was thought important to clarify the effect of meteorological conditions on appearance of high hourly or daily average values in terms of SO_2, NO_2, NO_x and SPM concentrations.

(1) Study of hourly values

Data base for this study are top fifty hourly values extracted (hourly values observed during fifty discrete hours which correspond to 0.6 pct of annual observation period) and are subject to analytical study from the viewpoint of knowing how they are correlated to variables such as appearance time, wind direction, wind velocity, atmospheric stability and other pollutant concentrations. Table 1-25 summarizes the result of such study effort.

Interesting is a fact as seen in Table 1-26 that high concentration values about all pollutants appear during the time frame of 17:00 through 9:00, i.e., from evening until early morning (with exception of high SO_2 value at MS5 and high NO_2 values at MS1, MS2 and MS3 in the daytime). The meteorological conditions about each station that seem associated with such high concentrations are:

MS5; The wind maintains NNW and SW direction while atmospheric stability is mostly B.

MS1; The wind direction is mostly W and atmospheric stability drops mostly in B. The appearance of high concentrations is thought due to the effect of the traffic on Sukhumvit roadway.

MS2; The wind maintains N direction while atmospheric stability is kept in B and high concentrations appears in the daytime.

MS3; The wind maintains mostly N and E direction and atmospheric stability drops in B. High concentrations appear in the daytime.

Table 1-27 summarizes frequency of high concentration appearance by wind direction at each monitoring station. As for MS1, SO_2 appears high in S~W~NNW wind and NO_2 as well as NO_x appear high in N~W~SSW wind. Those observations may be attributable to First Stage Express Way and Bang Na-Trat High Way to the north and SuKumvit to the WNW direction. It is found difficult to define the wind direction associated with high concentration appearance of SPM.

At MS2, concentrations of SO_2, NO_2 and NO_x appear somewhat high in N and NNW wind but maintain high in other wind directions as well. It is found difficult to define the wind direction for high SPM concentrations.

At MS3, high SO_2 concentration appeared in SSE and S wind (by 96 pct of appearances). This may be due to the SO_2 source existing in such wind directions. As for other pollutants, NO_2 and NO_x, high concentrations appeared in NNW~N~ENE wind and the wind direction to cause high SPM concentration is again found indefinable.

Table 1-25 (1) Highest 50 hours of SO_2 Concentrations

(OS1) ONEB STATION

Rank	date		hour	SO_2 ppb	NO_x ppb	NO_2 ppb	SPM $\mu g/m^3$	WD	WS m/s	ST
1)	12	20	21	109	125	40	167(258)	NNW	3.3	E
2)	12	19	21	99	135(245)	38	159	NW	2.7	F
3)	12	22	21	93	126	42	182(200)	NW	3.1	E
4)	12	22	20	85	113	44(257)	161(282)	NW	4.0	E
5)	12	24	22	85	140(215)	49(174)	312(5)	WSW	2.2	F
6)	12	24	21	79	126	50(160)	275(22)	WSW	2.0	F
7)	1	4	21	76	118	56(101)	128	NW	3.5	E
8)	2	23	21	73	108	69(30)	332(2)	SW	2.3	F
9)	10	21	19	72	113	37	250(46)	WSW	2.2	F
10)	9	12	17	71	164(130)	129(3)	133	NW	2.7	C
11)	12	21	20	70	99	45(245)	289(27)	W	2.2	F
12)	12	19	19	68	109	52(141)	161(282)	NW	2.9	F
13)	1	4	22	68	141(208)	53(123)	181(209)	WNW	1.6	F
14)	12	23	20	67	106	44(257)	242(53)	W	2.2	F
15)	10	21	18	66	96	35	228(80)	SW	2.0	D-d
16)	12	12	21	66	90	48(197)	96	NNW	3.9	E
17)	12	14	20	66	111	48(197)	157	NW	3.2	E
18)	12	20	20	66	113	40	141	NW	3.6	E
19)	9	10	17	65	222(56)	94(5)	101	NW	2.7	D-d
20)	12	19	20	64	97	39	145	NW	3.1	E
21)	9	12	18	63	152(162)	121(2)	150	ENE	1.2	D-d
22)	12	21	21	63	122	39	224(88)	NW	2.0	F
23)	7	29	6	61	122	26	140	SW	2.0	F
24)	8	13	22	61	146(191)	26	181(209)	SW	2.8	F
25)	12	22	19	61	82	44(257)	129	NW	4.1	E
26)	1	3	19	61	79	46(229)	78	NNW	3.9	E
27)	1	7	16	61	51	24	85	SW	3.1	C
28)	12	27	21	59	125	47(212)	137	***	***	***
29)	1	21	24	59	85	43(234)	216(100)	SSW	1.7	F
30)	3	10	22	58	125	62(56)	269(27)	SW	1.3	F
31)	1	3	20	58	83	44(257)	68	NNW	4.2	E
32)	12	7	19	56	121	46(229)	258(38)	WSW	2.3	F
33)	12	7	20	56	115	44(257)	320(3)	SW	2.2	F
34)	9	1	14	55	58	32	48	S	2.9	B
35)	12	22	22	55	103	36	111	NNW	3.1	E
36)	1	22	1	55	61	41	263(32)	SSW	2.0	F
37)	8	5	7	54	184(100)	24	139	SW	2.0	E
38)	9	15	8	54	125	31	203(115)	S	2.0	C
39)	1	4	20	54	94	49(174)	160(280)	NW	4.0	E
40)	1	21	23	54	47	37	195(143)	SSW	2.3	F
41)	8	13	24	52	147(186)	22	223(63)	WSW	2.2	F
42)	12	14	21	52	118	44(257)	143	NNW	3.0	E
43)	12	24	23	52	111	37	199(136)	WNW	2.2	F
44)	12	21	22	51	135(245)	35	167(258)	NW	2.1	F
45)	12	24	20	51	105	42	251(34)	WSW	2.5	F
46)	3	8	22	51	69	57(90)	150	SW	2.0	F
47)	8	13	23	50	131(273)	23	198(137)	SW	2.5	F
48)	11	9	9	50	86	33	157	WSW	1.2	D-d
49)	7	20	5	49	84	21	160(200)	WSW	2.4	F
50)	10	28	24	49	***	75(18)	***	SW	2.1	F

(OS2) POWER PLANT

Rank	date		hour	SO_2 ppb	NO_x ppb	NO_2 ppb	SPM $\mu g/m^3$	WD	WS m/s	ST
1)	12	27	23	112	***	***	148	N	2.0	***
2)	12	6	22	103	47(245)	42(14)	430(9)	NNW	1.1	F
3)	12	24	3	100	***	***	125	NNW	1.2	F
4)	12	23	22	97	***	***	120	W	1.0	F
5)	12	28	1	97	***	***	226(89)	NNW	0.6	F
6)	12	12	4	91	***	***	112	N	1.4	F
7)	10	28	17	88	58(116)	36(35)	265(54)	NNW	0.7	D-d
8)	12	23	23	88	***	***	125	N	1.0	F
9)	10	26	19	85	65(65)	36(35)	314(25)	N	1.1	E
10)	12	27	24	85	***	***	143	N	1.9	***
11)	10	10	19	83	***	***	270(46)	NNW	0.6	E
12)	12	30	1	83	***	***	115	N	1.4	F
13)	10	21	1	82	84(23)	27(182)	230(84)	NNW	0.7	F
14)	12	6	21	81	37	31(109)	156(139)	NNW	1.2	F
15)	12	5	1	81	85(20)	29(137)	137	N	1.7	F
16)	10	1	22	79	33	25(243)	100	E	1.2	F
17)	10	24	7	78	***	***	233(62)	N	1.6	F
18)	5	23	20	75	13	4	51	SSE	2.0	F
19)	12	15	5	75	78(31)	22	111	N	2.1	F
20)	12	15	4	75	67(55)	17	124	N	1.2	F
21)	12	24	23	75	***	***	153	N	0.5	F
22)	12	15	3	74	91(14)	22	131	N	1.0	F
23)	12	14	3	74	***	***	183(179)	NNW	0.5	F
24)	12	23	8	72	57(123)	31(100)	358(18)	NNE	1.2	D-d
25)	2	23	9	71	59(105)	43(8)	193	ENE	0.7	F
26)	10	1	21	70	40	29(137)	123	N	1.2	B
27)	10	21	8	70	***	***	159(122)	NNW	1.4	D-d
28)	1	4	8	70	***	***	134	NNW	1.3	D-d
29)	2	22	21	70	64(70)	59(2)	248(66)	NNW	1.3	F
30)	7	9	8	70	14	6	101	SSW	0.6	B
31)	12	28	3	69	57(123)	17	94	SSW	1.4	D-n
32)	8	4	9	68	27	2	114	E	0.7	D-d
33)	8	12	4	67	43	11	50	E	1.1	F
34)	12	28	23	67	122(1)	23(159)	366(15)	NNW	0.7	F
35)	11	10	5	67	83(79)	30(117)	157	NNW	2.3	F
36)	11	14	24	67	82(89)	26(211)	142	NNW	1.9	***
37)	12	15	4	67	91(14)	21	132	N	2.0	***
38)	2	21	21	67	***	***	125	C	0.4	CD
39)	11	9	23	66	93(11)	34(53)	186(144)	NNW	1.4	F
40)	12	14	24	65	92(12)	30(117)	159(281)	NNW	2.4	F
41)	11	9	22	65	85(25)	38(24)	192(150)	NNW	1.7	F
42)	12	15	8	65	73(43)	20	204(122)	NNW	1.3	D-d
43)	12	10	8	65	55(148)	16	175(204)	NNW	1.7	D-d
44)	10	15	21	64	37	27(182)	103	N	0.3	F
45)	10	23	22	64	94(9)	24(228)	192	N	1.6	F
46)	1	21	2	64	60(98)	32(3)	274(44)	NNW	1.5	E
47)	12	22	22	63	71(47)	32(3)	283(51)	NNW	1.1	F
48)	10	10	7	63	46(270)	17	157(233)	***	***	***
49)	11	10	4	63	45(377)	23(159)	83	N	1.7	F
50)	12	6	23	63	36	33(66)	239(31)	N	0.5	F

(OS3) MIN.DEP.OFFICE

Rank	date		hour	SO_2 ppb	NO_x ppb	NO_2 ppb	SPM $\mu g/m^3$	WD	WS m/s	ST
1)	2	6	1	193	58	21	91	S	3.3	E
2)	1	31	7	180	62	26	86	S	3.5	E
3)	7	15	3	179	30	7	58	SSE	4.3	D-n
4)	3	18	1	179	38	11	53	S	4.3	E
5)	2	9	1	176	48	20	99	S	3.5	E
6)	1	25	24	172	33	13	62	S	2.7	F
7)	1	22	22	168	40	35	128	SSE	1.5	F
8)	5	13	22	166	25	12	75	SSE	2.3	F
9)	2	2	2	166	45	25	57	S	3.1	E
10)	3	1	5	164	36	17	82	S	4.0	E
11)	3	15	4	163	37	10	58	S	3.4	E
12)	1	31	1	162	51	29	100	S	2.9	F
13)	1	31	4	157	47	22	86	S	3.4	E
14)	7	15	1	154	26	5	46	SSE	4.6	D-n
15)	3	1	24	152	32	16	108	S	3.6	E
16)	2	14	24	151	29	27	83	S	3.2	E
17)	2	27	1	151	34	17	52	S	4.4	E
18)	5	5	23	150	33	18	30	SSE	2.0	F
19)	1	23	8	150	33	12	101	S	3.9	D-d
20)	2	23	4	150	63	44	125	ENE	0.7	F
21)	1	31	8	149	43	22	74	S	3.2	D-d
22)	2	14	2	149	35	30	61	S	2.8	F
23)	3	17	24	149	34	10	82	S	4.1	E
24)	2	15	3	147	40	30	81	S	2.7	F
25)	1	24	21	146	31	20	64	SSE	2.2	F
26)	2	1	5	145	43	24	102	S	3.1	E
27)	2	3	3	145	41	17	67	S	3.0	E
28)	2	4	24	144	39	24	106	S	4.4	E
29)	3	19	2	142	33	11	57	S	3.6	E
30)	2	29	24	140	35	18	10	S	3.2	E
31)	3	1	3	140	18	10	38	S	4.0	E
32)	1	6	24	139	44	22	70	S	2.4	F
33)	3	22	4	138	33	12	80	S	3.5	E
34)	5	13	21	137	22	13	39	SSE	2.4	F
35)	7	15	5	137	23	5	53	SSE	4.6	D-n
36)	1	27	22	137	28	15	77	S	3.3	E
37)	1	12	7	136	34	15	79	SSE	2.2	F
38)	4	17	1	135	42	33	81	SSE	1.7	F
39)	7	13	22	135	25	6	54	SSE	4.7	D-n
40)	1	12	2	135	29	18	67	SSE	3.5	E
41)	1	26	1	133	20	11	42	S	2.7	F
42)	3	22	5	133	32	11	84	S	3.4	E
43)	3	27	2	133	48	31	78	S	4.6	E
44)	3	15	3	132	33	9	62	SSW	3.4	E
45)	3	16	21	132	35	12	77	S	4.2	E
46)	2	5	2	131	37	22	87	S	3.3	E
47)	2	27	24	130	35	19	15	S	4.3	E
48)	1	26	2	129	25	11	61	S	2.4	F
49)	2	1	7	129	43	28	90	S	2.3	F
50)	1	31	6	128	43	23	95	S	3.4	E

(OS4) S.P.PRO.OFFICE

Rank	date		hour	SO_2 ppb	NO_x ppb	NO_2 ppb	SPM $\mu g/m^3$	WD	WS m/s	ST
1)	12	23	21	79	87	54(206)	198	C	0.4	CD
2)	12	14	8	60	241(25)	66(100)	269(111)	NNW	1.8	D-d
3)	12	14	21	60	206(46)	116(4)	308(53)	NNW	2.9	F
4)	12	23	22	52	107(278)	55(168)	205	W	1.0	F
5)	12	14	22	51	320(4)	111(5)	303(52)	NNW	2.5	F
6)	2	22	23	51	***	***	332(10)	E	0.8	F
7)	1	20	24	50	44	34	211(239)	ENE	0.6	F
8)	2	22	22	50	***	***	351(24)	WSW	1.1	F
9)	12	14	23	47	302(10)	90(14)	242(174)	N	2.4	F
10)	1	20	23	46	41	35	329(33)	N	1.0	F
11)	10	19	9	45	96	44	170	N	1.1	C
12)	12	22	22	45	139(136)	71(71)	223(246)	NNW	2.1	F
13)	12	14	9	43	170(83)	91(12)	253(149)	N	2.0	B
14)	6	15	4	42	21	8	38	SW	1.4	***
15)	11	21	20	42	76	54(206)	141	NNW	3.3	E
16)	3	7	20	42	45	30	207	S	1.7	F
17)	12	13	21	40	254(17)	124(3)	327(38)	NNW	1.9	F
18)	12	14	7	40	253(19)	62(123)	227(234)	NNW	2.1	F
19)	1	9	12	40	***	***	225(236)	NE	1.2	B
20)	10	25	19	39	96	68(85)	241(176)	S	1.1	E
21)	10	28	23	39	223(35)	77(43)	278(90)	NNW	1.2	F
22)	11	3	3	39	***	***	165	N	1.4	F
23)	11	3	4	39	***	***	146	NNW	2.0	E
24)	12	2	21	39	132(159)	84(25)	190	N	2.0	F
25)	2	23	8	39	***	***	329(33)	NNE	1.2	D-d
26)	6	15	6	38	28	10	87	SW	1.6	***
27)	1	16	21	38	***	***	196	NNW	2.9	F
28)	1	20	22	38	48	31	169	W	1.0	F
29)	1	21	1	38	50	32	306(55)	ENE	1.0	F
30)	9	29	19	37	42	24	123	SSW	3.7	D-n
31)	10	24	21	37	66	26	138	SE	1.4	F
32)	12	20	22	37	98	59(147)	215(283)	NNW	2.8	F
33)	3	8	23	37	58	35	186	N	1.4	F
34)	10	22	6	36	104	31	296(65)	WNW	0.8	F
35)	10	27	21	36	107(64)	30	146	***	***	***
36)	12	27	22	35	164(97)	80(34)	206	N	2.0	***
37)	10	22	5	34	63	35	238(185)	NW	0.7	F
38)	2	22	24	34	***	***	340(31)	E	1.1	F
39)	2	23	7	34	***	***	284(84)	NNE	1.1	F
40)	10	11	7	33	65	19	110	NNW	1.7	E
41)	10	21	1	33	149(119)	31	329(30)	WNW	0.7	E
42)	10	28	7	33	63	16	111	***	***	***
43)	12	23	23	33	124(154)	49(280)	273(101)	N	1.9	F
44)	2	12	2	33	12	9	100	ESE	1.4	E
45)	9	2	6	32	125(184)	10	130	***	***	***
46)	12	14	24	32	310(7)	76(45)	220(259)	N	2.4	F
47)	1	21	8	32	124(183)	30	303(52)	NE	1.1	D-d
48)	6	15	1	31	20	12	30	SW	2.2	***
49)	9	12	10	31	58	36	105	WSW	1.1	B
50)	10	11	23	31	102	34	261(131)	N	1.5	E

(OS5) H.& I.ESTATE

Rank	date		hour	SO_2 ppb	NO_x ppb	NO_2 ppb	SPM $\mu g/m^3$	WD	WS m/s	ST
1)	1	14	18	48	1	0	28	SSW	3.6	D-d
2)	12	6	22	37	***	***	250(12)	N	0.7	F
3)	12	23	22	35	***	***	178(67)	N	1.1	F
4)	1	20	22	35	46(82)	43(2)	184(52)	W	0.7	F
5)	10	26	9	30	41(102)	12	135(224)	WNW	0.7	B
6)	7	7	4	28	25	15	76	NW	0.8	F
7)	12	6	21	28	***	***	196(37)	NW	0.7	F
8)	7	7	5	27	24	11	73	W	1.2	F
9)	7	7	9	27	15	13	38	W	1.3	B
10)	7	15	1	27	3	1	18	SSE	1.4	E
11)	10	26	10	27	37(135)	15	96	NNW	1.0	B
12)	12	24	24	27	***	***	242(17)	C	0.2	CD
13)	7	8	10	26	22	14	34	WSW	2.2	B
14)	1	20	21	26	25	24(104)	181(59)	NW	1.8	F
15)	10	2	3	25	62(21)	32(27)	244(15)	NW	1.2	F
16)	7	7	10	24	15	15	46	WNW	1.0	B
17)	7	8	8	24	9	9	66	W	1.7	C
18)	7	8	9	24	17	11	52	W	2.5	B
19)	7	15	13	24	5	2	28	S	2.7	C
20)	1	20	19	24	11	9	99	W	1.5	F
21)	7	7	3	23	7	7	19	WNW	1.2	F
22)	7	7	8	23	11	10	60	N	0.6	B
23)	7	7	11	23	11	11	66	SW	1.2	B
24)	7	8	11	23	12	11	42	WSW	1.9	B
25)	7	16	5	23	4	1	23	ESE	1.7	E
26)	8	25	23	23	10	8	47	ESE	0.3	F
27)	12	23	21	23	***	***	152(115)	WNW	1.8	F
28)	7	7	6	22	14	12	58	SE	1.1	F
29)	7	12	9	22	29(225)	14	127(217)	WNW	0.9	B
30)	12	21	21	22	***	***	157(34)	NNE	0.8	F
31)	7	6	20	21	7	7	24	SSW	1.1	F
32)	7	6	21	21	6	6	54	SSW	1.6	F
33)	7	7	2	21	3	3	14	W	0.6	F
34)	7	7	13	21	4	4	32	SW	2.5	B
35)	7	7	14	21	3	3	23	SW	2.7	B
36)	7	7	24	21	7	7	23	S	1.4	F
37)	7	8	7	21	9	9	86	W	1.3	E
38)	7	19	11	21	6	2	4	SW	3.8	B
39)	1	20	23	21	12	10	190(44)	WNW	1.5	F
40)	6	2	8	20	36(153)	12	62	C	0.4	CD
41)	7	7	1	20	2	2	13	WSW	0.8	F
42)	7	7	12	20	9	9	59	SW	1.6	B
43)	7	8	12	20	9	9	48	SW	2.0	C
44)	9	2	20	20	14	7	250(12)	SSE	1.2	F
45)	12	25	1	20	***	***	304(23)	E	1.0	F
46)	7	6	19	19	4	4	15	S	1.0	F
47)	7	7	21	19	12	10	32	E	0.8	E
48)	7	7	22	19	7	7	17	S	1.0	F
49)	7	7	23	19	7	7	42	S	1.2	F
50)	7	8	1	19	3	3	30	S	1.8	F

Table 1-25 (2) Highest 50 hours of NO_2 Concentrations

(MS1) ONEB STATION

Rank	date		hour	NO_2 ppb	NO_x ppb	SO_2 ppb	SPM $\mu g/m^3$	WD	WS m/s	ST
1)	9	12	19	138	158(145)	21	142	ENE	1.6	F
2)	9	12	18	131	152(152)	63(21)	150	ENE	1.2	D d
3)	9	12	17	129	164(133)	71(10)	133	NW	2.7	C
4)	9	12	20	109	120	12	150	SE	2.3	F
5)	9	10	17	94	222(56)	65(19)	101	NW	2.7	D d
6)	9	29	17	94	127	1	97	N	1.6	D-d
7)	9	26	12	92	219(61)	7	192(153)	WNW	2.8	D d
8)	9	20	13	87	149(177)	15	97	SW	3.0	C
9)	2	22	22	86	195(97)	42(85)	294(13)	NW	1.3	F
10)	2	22	21	83	165(130)	31(194)	286(15)	NW	1.3	F
11)	9	26	13	81	150(170)	5	147	W	2.4	C
12)	8	21	17	79	111	13	94	N	1.4	D-d
13)	9	26	14	79	117	3	102	SSW	2.2	B
14)	2	22	23	79	173(112)	28(250)	313(4)	E	1.5	F
15)	8	25	15	77	134(255)	10	144	NNW	2.7	B
16)	9	10	18	76	176(109)	37(116)	102	ENE	2.3	D d
17)	9	21	10	76	129(289)	17	97	NW	3.5	C
18)	8	21	16	75	121	21	89	N	1.7	D d
19)	10	28	24	75	***	43(49)	***	NW	2.1	F
20)	2	23	20	75	107	34(137)	303(9)	WSW	1.7	F
21)	8	21	15	73	116	30(206)	43	NW	1.7	C
22)	10	28	23	73	***	48(52)	***	NW	1.6	F
23)	9	26	17	72	121	11	93	WNW	2.5	D d
24)	9	12	16	71	81	11	86	N	3.2	C
25)	10	29	1	71	254(26)	31(194)	***	NNW	2.1	F
26)	2	23	19	71	97	34(137)	168(172)	WSW	2.0	F
27)	9	22	8	70	171(118)	22	136	N	2.4	C
28)	9	25	18	70	161(135)	13	113	W	2.7	D d
29)	2	21	20	70	170(123)	19	155	NW	0.9	F
30)	9	10	16	69	101	20	60	WNW	3.9	D d
31)	10	3	14	69	90	15	88	SW	3.6	C
32)	2	22	20	69	125	24	152(230)	N	1.9	F
33)	2	23	21	69	108	73(8)	392(2)	SW	2.3	F
34)	8	25	16	68	86	9	99	N	2.9	B
35)	9	1	17	68	102	16	98	SSW	1.5	C
36)	9	10	20	68	135(245)	6	105	ENE	2.4	E
37)	9	12	11	68	73	11	69	NE	1.9	B
38)	9	25	16	68	108	12	60	WNW	3.2	D d
39)	9	25	19	68	159(142)	1	91	SW	3.0	D n
40)	3	10	20	68	100	35(128)	229(63)	SW	1.4	F
41)	9	26	16	67	85	0	79	N	3.1	D d
42)	10	3	13	67	100	12	61	WSW	3.4	B
43)	10	3	19	66	161(135)	25	125	SSW	2.8	F
44)	10	3	20	66	173(112)	29(222)	161(232)	WSW	2.1	F
45)	2	21	21	66	130(281)	20	190(163)	WNW	1.0	F
46)	2	23	22	66	105	47(59)	270(26)	SW	1.6	F
47)	8	23	13	65	97	12	65	WSW	2.0	C
48)	9	25	19	65	152(162)	10	117	N	2.0	E
49)	1	9	19	65	95	35(128)	165(260)	WNW	3.0	E
50)	9	3	16	64	86	10	64	WSW	3.4	C

(MS2) POWER PLANT

Rank	date		hour	NO_2 ppb	NO_x ppb	SO_2 ppb	SPM $\mu g/m^3$	WD	WS m/s	ST
1)	3	16	6	69	123(2)	3	***	S	2.0	F
2)	2	22	21	59	64(73)	70(26)	242(66)	SSW	1.3	F
3)	2	22	22	53	71(47)	84(44)	268(51)	WSW	1.1	F
4)	1	9	11	49	53(161)	***	***	N	1.3	B
5)	11	8	20	46	74(39)	16	102	NNW	2.3	E
6)	12	17	20	44	66(60)	38	119	NNW	2.0	F
7)	2	22	24	44	65(66)	33	310(29)	E	1.1	F
8)	12	17	21	43	81(28)	53(106)	154	NNW	1.7	F
9)	1	9	10	43	51(182)	38	163(250)	N	2.0	B
10)	1	9	12	43	44	45(183)	185(171)	NE	1.2	B
11)	2	21	23	43	46(270)	16	229(85)	E	1.1	F
12)	2	22	23	43	55(146)	32	267(52)	E	0.8	F
13)	2	23	9	43	59(105)	71(25)	***	ENE	0.7	B
14)	11	10	20	42	53(161)	51(121)	231(81)	N	1.6	F
15)	12	6	22	42	47(245)	103(2)	430(9)	WNW	1.1	F
16)	11	8	21	41	66(60)	2	87	N	2.4	E
17)	2	23	1	41	51(182)	19	234(77)	ENE	1.3	F
18)	11	8	19	40	64(73)	6	87	NNW	2.7	E
19)	11	8	22	40	62(79)	3	132	N	1.7	E
20)	11	8	23	40	68(53)	6	126	N	1.2	E
21)	12	3	22	40	56(133)	5	186(166)	NNW	2.1	F
22)	11	8	2	39	62(89)	38	103	NNE	0.6	F
23)	12	3	21	39	43	3	162(259)	NNW	2.6	F
24)	11	9	21	38	67(55)	30	191(152)	N	1.3	F
25)	11	9	22	38	83(25)	65(41)	192(150)	NNW	1.7	F
26)	11	10	24	38	54(155)	***	***	NNW	1.8	F
27)	12	13	21	38	48(225)	40(266)	175(204)	NNW	1.9	F
28)	2	21	21	38	38	50(129)	155	NW	1.2	F
29)	9	25	21	37	54(155)	14	103	N	2.5	E
30)	9	25	22	37	59(105)	26	122	WNW	1.3	E
31)	11	7	20	37	60(98)	30	91	N	2.4	F
32)	11	8	24	37	66(60)	6	121	NNE	0.6	E
33)	11	9	10	37	63(79)	1	129	N	1.9	C
34)	11	9	20	37	48(225)	25	133	N	1.2	F
35)	10	26	17	36	58(116)	88(7)	265(54)	NNE	0.7	D d
36)	10	26	19	36	65(66)	85(9)	314(25)	S	1.1	E
37)	10	29	24	36	84(23)	41(247)	195(141)	NNW	1.3	F
38)	11	8	3	36	60(98)	36	85	N	1.2	E
39)	12	6	24	36	55(146)	57(79)	311(27)	NE	1.4	F
40)	12	13	22	36	55(146)	58(71)	173(213)	N	1.7	F
41)	12	14	10	36	43	58(71)	139	N	1.6	B
42)	12	14	21	36	51(182)	20	120	NNW	2.9	F
43)	12	17	22	36	61(92)	57(79)	130	NNW	1.8	F
44)	2	21	22	36	35	23	252(64)	NE	1.0	F
45)	11	7	23	35	57(123)	36	107	N	1.8	F
46)	11	9	1	35	58(116)	2	86	NNW	1.3	E
47)	11	9	19	35	44	33(283)	85	NNW	2.5	F
48)	11	11	1	35	47(245)	***	***	NNW	2.2	F
49)	11	13	21	35	46(270)	28	122	NNW	2.4	F
50)	12	13	23	35	63(79)	55(93)	176(192)	N	1.5	F

(MS3) MIN.DEP.OFFICE

Rank	date		hour	NO_2 ppb	NO_x ppb	SO_2 ppb	SPM $\mu g/m^3$	WD	WS m/s	ST
1)	2	22	21	81	117(64)	20	234(30)	SSW	1.3	F
2)	2	23	9	77	147(20)	31	217(119)	ENE	0.7	B
3)	2	22	20	75	85(156)	20	250(60)	NNW	0.8	F
4)	2	23	10	75	106(96)	62	249(61)	SE	1.0	B
5)	12	14	10	73	90(151)	21	99	N	1.6	B
6)	2	22	24	73	100(117)	48	312(23)	E	1.1	F
7)	2	21	23	72	90(167)	23	248(62)	E	1.1	F
8)	12	6	22	69	90(167)	38	224(104)	WNW	1.1	F
9)	2	22	22	69	96(143)	27	275(39)	WSW	1.1	F
10)	12	25	10	67	107(91)	45	130	E	1.3	B
11)	2	23	1	65	82(224)	37	330(17)	ENE	1.3	F
12)	12	25	9	64	150(18)	27	159	NNE	1.6	C
13)	2	22	8	63	134(36)	24	125	NNE	1.7	D-d
14)	12	17	20	62	65	23	128	NNW	2.0	F
15)	2	21	22	62	68	16	206(138)	NE	1.0	F
16)	2	21	24	62	68	21	221(112)	E	1.2	F
17)	11	22	10	61	83(216)	19	83	NNW	2.6	B
18)	12	13	21	61	84(203)	17	133	NNW	1.9	F
19)	1	9	11	61	68	64	155	N	1.3	B
20)	12	13	20	60	62	24	147	NNW	2.0	F
21)	2	22	23	60	85(196)	20	288(34)	E	0.8	F
22)	11	22	11	59	72	19	101	N	2.8	B
23)	12	3	22	59	87(186)	12	152	NNW	2.1	F
24)	1	15	23	59	69	11	93	NNE	1.5	F
25)	12	2	23	58	137(32)	21	119	N	1.6	F
26)	12	6	21	58	67	32	198(159)	WNW	1.2	F
27)	12	7	1	58	88(180)	48	258(52)	NE	0.6	F
28)	1	15	24	58	79(243)	14	120	NNE	1.1	F
29)	3	11	9	58	99(123)	36	293(31)	ENE	1.1	B
30)	12	2	22	57	86(192)	20	116	NNE	1.3	F
31)	12	3	21	57	71	10	164	NNW	2.6	F
32)	12	14	9	57	101(110)	24	145	N	2.0	B
33)	12	29	20	57	68	25	150	NNW	1.9	F
34)	1	9	10	57	70	37	115	N	2.0	B
35)	12	6	24	56	105(95)	34	272(40)	NE	1.4	F
36)	12	13	22	56	106(100)	15	160(284)	N	1.7	F
37)	12	17	21	56	84(203)	26	154	NNW	1.7	F
38)	12	18	20	56	78(253)	12	183(201)	N	1.5	F
39)	12	6	23	55	92(154)	32	253(58)	N	0.5	F
40)	12	15	20	55	88(180)	15	110	N	1.6	F
41)	2	22	7	55	105(95)	19	170(271)	NNE	1.5	F
42)	2	22	3	55	80(216)	49	175(241)	NNE	1.9	C
43)	12	3	20	54	61	10	140	NNW	1.7	F
44)	2	23	8	54	161(11)	20	242(71)	NNE	1.2	D-d
45)	11	22	9	53	86(192)	10	85	NNW	2.5	C
46)	12	3	19	53	55	10	126	N	1.0	F
47)	12	18	21	53	100(87)	9	135(165)	N	0.8	F
48)	3	9	21	53	55	10	187(182)	NNW	1.1	F
49)	8	21	18	52	67	20	112	NE	1.2	D d
50)	11	19	20	52	75(281)	19	117	N	1.9	F

(MS4) S.P.PRO.OFFICE

Rank	date		hour	NO_2 ppb	NO_x ppb	SO_2 ppb	SPM $\mu g/m^3$	WD	WS m/s	ST
1)	11	18	13	150	199(50)	7	46	NE	2.2	B
2)	12	13	22	130	237(28)	29(67)	287(80)	N	1.7	F
3)	12	13	21	124	254(17)	40(17)	327(38)	NNW	1.9	F
4)	12	14	21	116	206(46)	60(2)	308(53)	NNW	2.9	F
5)	12	14	22	111	320(4)	51(5)	303(58)	NNW	2.5	F
6)	12	14	20	106	146(126)	14	268(115)	NNW	3.2	E
7)	12	6	23	97	141(133)	27(93)	300(61)	N	0.5	F
8)	1	6	7	97	177(73)	10	178	ESE	0.7	F
9)	12	3	21	96	150(116)	24(133)	339(32)	NNW	2.6	F
10)	12	13	20	95	138(141)	17	213(288)	NNW	2.0	F
11)	12	17	20	94	163(99)	23(149)	219(265)	NNW	2.0	F
12)	12	14	9	91	170(83)	43(13)	253(149)	N	2.0	B
13)	1	6	8	91	247(21)	15	276(92)	NNE	0.5	D d
14)	12	13	23	90	225(29)	15	251(152)	N	1.9	F
15)	12	14	23	90	302(10)	47(9)	242(174)	N	2.4	F
16)	12	17	21	90	173(77)	25(121)	205	NNW	1.7	F
17)	12	3	22	89	194(57)	30(56)	445(3)	NNW	2.1	F
18)	12	15	17	88	135(153)	4	97	NNE	2.0	C
19)	12	15	19	88	214(37)	10	220(250)	N	1.6	F
20)	12	12	19	87	108(269)	20(211)	231(217)	NNW	2.5	F
21)	12	6	24	86	133(141)	28(78)	251(24)	NE	1.4	F
22)	12	15	21	86	201(49)	10	184	NNE	2.1	F
23)	12	13	19	85	125(184)	13	226(236)	NW	1.3	F
24)	12	14	19	85	109(262)	7	199	NNW	2.6	F
25)	12	2	21	84	132(150)	39(20)	190	N	2.0	F
26)	12	6	22	84	121(198)	30(56)	269(111)	NNW	1.1	F
27)	12	12	20	84	121(198)	19(240)	217(276)	NNW	2.5	F
28)	1	4	23	84	125(184)	16	275(96)	ESE	0.9	F
29)	11	18	12	83	115(224)	8	58	NNE	3.0	B
30)	12	2	20	81	106(288)	26(100)	157	NNW	2.3	F
31)	12	12	21	81	106(288)	27(93)	153	NNW	2.6	F
32)	12	15	20	81	162(100)	8	200	N	1.6	F
33)	1	2	21	81	120(204)	11	178	NNW	2.9	F
34)	12	2	19	80	102	12	167	NNW	2.7	F
35)	12	27	22	80	164(97)	35(36)	206	N	2.0	***
36)	9	12	16	79	89	10	172	N	1.3	D d
37)	12	3	19	79	161(101)	11	266(121)	N	1.0	F
38)	12	29	21	79	106(288)	26(100)	317(41)	NNW	2.7	F
39)	1	4	22	79	94	10	244(170)	NE	1.4	F
40)	12	12	22	78	96	22(167)	152	NNW	2.4	F
41)	12	22	19	78	108(269)	15	207	NNW	2.5	F
42)	12	29	20	78	112(240)	19(240)	253(125)	NNW	1.9	F
43)	10	29	23	77	223(35)	39(20)	278(90)	NNW	1.2	F
44)	12	3	23	77	240(36)	19(240)	230(68)	NNW	1.4	F
45)	12	14	24	76	310(7)	32(45)	220(259)	N	2.4	F
46)	1	4	21	76	89	8	217(276)	NNW	1.5	F
47)	1	5	16	76	128(169)	0	69	E	1.3	B
48)	12	3	24	75	257(16)	13	285(82)	N	1.4	F
49)	12	12	18	75	94	12	203	NNW	2.4	D d
50)	12	13	24	75	212(39)	9	245(105)	N	1.3	F

(MS5) H.& I.ESTATE

Rank	date		hour	NO_2 ppb	NO_x ppb	SO_2 ppb	SPM $\mu g/m^3$	WD	WS m/s	ST
1)	2	22	21	48	50(45)	14(112)	270(9)	NW	1.0	F
2)	1	20	22	43	46(62)	35(3)	184(52)	W	0.7	F
3)	2	22	20	43	43(84)	8	222(20)	NW	1.0	F
4)	2	22	22	42	58(24)	10(257)	281(7)	NNE	0.9	F
5)	10	1	23	41	53(37)	9	228(21)	C	0.4	CC-n
6)	2	20	23	40	41(102)	4	122(242)	NW	1.1	F
7)	2	20	21	40	41(102)	4	166(83)	N	0.6	F
8)	3	8	22	40	49(49)	6	136(181)	N	0.9	F
9)	10	1	24	39	56(30)	9	195(38)	C	0.4	CD
10)	10	1	22	38	42(90)	11(207)	242(18)	C	0.3	CD
11)	12	27	22	38	42(90)	9	197(34)	N	0.9	***
12)	1	19	19	38	50(45)	7	123(238)	NE	***	***
13)	12	27	21	37	38(123)	5	142(152)	NW	1.4	***
14)	10	2	4	36	127(1)	15(100)	199(33)	NNW	0.8	F
15)	1	20	23	36	44(76)	19(46)	202(30)	ESE	1.3	F
16)	10	2	1	35	58(25)	13(136)	235(6)	WNW	0.6	F
17)	10	2	5	35	178(2)	3	150(124)	NNW	0.9	F
18)	2	19	20	35	37(135)	2	128(172)	ENE	1.1	F
19)	2	21	21	35	39(118)	5	136(181)	N	1.5	F
20)	11	9	20	34	46(62)	8	***	NNE	0.9	F
21)	12	27	23	34	49(49)	7	191(41)	NNE	1.2	***
22)	12	27	19	33	35(162)	19(46)	127(217)	WNW	1.6	***
23)	12	29	23	33	46(62)	9	150(124)	NNW	0.6	F
24)	1	9	11	33	35(168)	6	147(137)	W	1.1	B
25)	2	22	19	33	33(200)	5	138(172)	NW	1.0	F
26)	3	9	20	33	38(123)	4	181(59)	ENE	1.3	F
27)	10	2	2	32	47(59)	15(100)	241(19)	W	0.7	F
28)	10	2	3	32	62(21)	25(15)	244(15)	NW	1.2	F
29)	2	21	19	32	33(200)	3	105	NNW	1.0	F
30)	3	7	20	32	40(108)	3	104	ESE	1.0	F
31)	9	9	24	31	91(7)	12(157)	117(280)	C	0.4	CD
32)	12	29	22	31	42(90)	9	142(152)	N	0.7	F
33)	12	29	24	31	41(102)	13(130)	137(178)	NNW	0.5	F
34)	2	21	20	31	31(240)	4	102	NNW	0.3	F
35)	9	9	22	30	86(9)	12(167)	110	N	0.5	F
36)	9	9	23	30	91(7)	12(167)	57	NNE	0.5	F
37)	9	10	1	30	81(14)	10(257)	124(232)	N	0.5	F
38)	12	28	19	30	32(214)	8	118(270)	NNW	0.7	F
39)	12	29	19	30	36(152)	7	163(91)	NNW	0.5	F
40)	1	5	5	30	44(75)	2	151(120)	E	0.6	F
41)	1	16	20	30	30(265)	3	59	NE	1.3	F
42)	1	19	20	30	46(62)	6	137(178)	NE	***	***
43)	2	18	20	30	43(84)	0	103	NNE	1.4	F
44)	2	19	19	30	30(265)	***	***	N	1.0	F
45)	2	20	19	30	30(265)	3	105	NNW	1.0	F
46)	2	20	22	30	39(118)	5	98	NNE	1.5	F
47)	3	8	21	30	37(135)	3	108	NNE	0.7	F
48)	9	5	21	29	84(11)	16(97)	128(172)	NNW	0.7	F
49)	9	22	7	29	63(19)	3	182(54)	C	0.3	CC-n
50)	10	1	20	29	29	6	148(134)	WSW	0.7	F

Table 1-25 (3) Highest 50 hours of NO_x Concentrations

(MS1) ONEB STATION

Rank	date		hour	NO_x ppb	NO_2 ppb	SO_2 ppb	SPM μg/m³	WD	WS m/s	ST
1)	9	2	6	497	31	22	205(120)	NW	1.8	F
2)	10	1	23	378	23	1	241(60)	SW	1.7	E
3)	9	2	5	367	25	22	185(186)	NW	1.4	F
4)	10	1	24	361	23	0	191(158)	WSW	2.0	F
5)	9	2	4	360	26	14	131	NW	1.2	F
6)	9	2	7	352	22	28(250)	185(186)	NW	1.9	E
7)	10	1	22	335	25	1	201(128)	SW	1.6	F
8)	10	2	8	316	16	1	117	NNW	1.8	D-d
9)	10	2	7	310	11	1	135	NNW	1.4	E
10)	9	9	23	292	46(229)	14	157	NNE	2.3	F
11)	10	1	21	288	29	1	173(223)	W	1.9	F
12)	9	2	2	282	22	15	120	SE	1.2	F
13)	9	21	7	277	41	49(52)	108	NW	2.3	E
14)	9	2	3	276	22	15	120	ESE	1.2	F
15)	10	2	1	267	23	1	134	W	2.2	F
16)	10	2	3	257	16	1	130	W	1.9	F
17)	12	25	5	266	23	17	238(14)	N	1.2	F
18)	9	9	20	265	55(101)	21	112	W	2.2	F
19)	10	2	6	264	11	0	100	NNW	1.8	F
20)	10	7	9	263	17	3	112	SW	3.8	C
21)	9	10	3	262	38	7	142	SSW	1.2	F
22)	10	7	10	262	20	3	133	SW	4.8	C
23)	9	2	8	261	48(197)	46(63)	170(243)	NW	1.5	C
24)	10	2	2	257	20	1	161(232)	WSW	1.9	F
25)	10	3	8	256	20	1	88	W	2.7	C
26)	10	29	1	254	71(24)	31(194)	***	NNW	2.1	F
27)	10	6	21	253	14	1	152	SW	3.0	D-n
28)	10	2	21	242	34	1	179(212)	WSW	2.5	F
29)	9	2	1	239	21	16	101	ENE	1.5	F
30)	8	2	8	238	30	10	126	NNW	1.4	D-d
31)	9	9	22	238	38	15	146	ENE	2.1	F
32)	10	2	22	238	30	1	83	WSW	2.4	F
33)	10	7	8	238	11	2	143	SW	2.9	D-d
34)	10	6	22	237	14	2	115	SW	3.4	E
35)	9	1	8	236	30	14	132	W	1.6	D-d
36)	10	2	5	236	14	1	113	NNW	2.0	F
37)	10	5	20	235	18	1	101	WSW	2.5	E
38)	9	9	21	234	43(174)	16	130	NW	2.0	F
39)	10	1	20	234	39	0	142	W	2.4	F
40)	9	10	5	233	32	9	126	NNE	1.8	F
41)	10	5	22	233	16	2	165(186)	SW	2.7	E
42)	9	9	24	232	42	9	135	ENE	1.7	F
43)	10	5	21	232	18	1	127	SW	2.8	E
44)	10	2	23	230	26	1	140	WSW	1.8	F
45)	10	2	4	229	16	1	97	NW	2.1	F
46)	8	8	8	229	25	6	187(176)	WSW	1.1	D-d
47)	10	2	9	228	22	0	75	NNW	1.9	C
48)	9	9	18	227	60(65)	23	182(200)	SW	1.9	D-d
49)	9	21	8	226	40(174)	34(137)	87	NW	3.2	D-d
50)	9	10	1	225	40	7	142	NE	1.6	F

(MS2) POWER PLANT

Rank	date		hour	NO_x ppb	NO_2 ppb	SO_2 ppb	SPM μg/m³	WD	WS m/s	ST
1)	10	20	23	132	28(159)	67(30)	366(15)	NE	0.7	E
2)	3	16	6	123	69(1)	3	***	S	2.0	F
3)	10	29	3	119	17	16	248(66)	C	0.3	D
4)	10	21	4	116	21	36	225(93)	N	1.3	F
5)	10	29	2	106	21	21	230(79)	N	0.5	F
6)	10	21	3	104	20	35	243(70)	N	0.8	F
7)	10	29	1	103	28(159)	41(247)	299(31)	NNW	1.0	F
8)	10	29	4	102	16	17	242(73)	C	0.4	D
9)	10	20	22	94	29(137)	27	223(96)	NNE	0.7	E
10)	12	15	2	94	24(258)	64(44)	152	NNW	1.6	F
11)	11	9	23	93	34(53)	66(39)	195(144)	N	1.4	F
12)	10	21	5	92	19	38	149	N	1.4	F
13)	12	14	24	92	30(117)	86(39)	159(281)	N	2.4	F
14)	12	15	3	91	22	74(22)	131	N	1.0	F
15)	12	15	4	91	21	67(33)	134	NNW	1.5	F
16)	4	15	21	90	29(137)	22	130	N	1.7	F
17)	9	9	24	90	22	20	134	NE	0.7	F
18)	10	21	2	89	21	33	254(61)	C	0.3	D
19)	10	20	24	88	25(243)	50(129)	253(62)	W	1.2	E
20)	8	25	8	86	19	41(247)	125	N	0.9	D-d
21)	12	15	1	86	29(137)	81(14)	137	NNW	1.7	F
22)	10	22	7	85	19	17	312(26)	WNW	1.0	E
23)	10	21	1	84	27(182)	82(13)	230(84)	NNW	0.7	E
24)	10	28	24	84	36(35)	41(247)	195(144)	NNW	1.3	F
25)	11	9	22	83	38(24)	65(41)	192(150)	NNW	1.7	F
26)	8	26	9	82	24(88)	46(166)	154	ENE	0.9	B
27)	10	22	8	82	25(211)	4	206(29)	NNW	1.3	C
28)	10	22	6	81	23	0	274(45)	WNW	0.8	F
29)	10	29	5	81	17	17	249(65)	C	0.4	D
30)	12	17	21	81	43(80)	53(106)	154	NNW	1.7	F
31)	12	15	5	78	22	75(19)	111	NNW	2.1	F
32)	12	14	23	77	32(81)	59(67)	154	N	2.4	F
33)	4	15	22	76	24(88)	23	106	NNW	1.5	F
34)	12	3	4	76	18	0	147	NW	1.0	F
35)	12	17	23	76	35(45)	33	135	NNW	2.2	F
36)	7	8	13	75	20	***	***	SSW	3.1	B
37)	12	9	23	75	23	54(100)	199(132)	N	1.2	E
38)	12	17	24	75	31(100)	41(247)	156(300)	NNW	1.8	F
39)	8	26	10	74	26(211)	38	123	SE	1.3	B
40)	9	9	23	74	22	26	156(200)	NNE	1.3	F
41)	9	10	1	74	20	15	132	NE	0.8	F
42)	11	8	20	74	46(5)	16	102	NNW	2.3	E
43)	8	25	7	73	13	36	129	NNW	1.1	E
44)	12	15	8	73	20	65(41)	204(122)	N	1.3	D-d
45)	4	15	20	72	30(117)	22	124	N	0.9	E
46)	10	21	6	72	17	34	109	NNW	1.0	F
47)	4	18	8	71	22	33	120	N	1.1	C
48)	10	22	5	71	26(211)	8	233(35)	NW	0.7	F
49)	11	9	24	71	20(137)	31	186(166)	N	1.2	F
50)	12	9	24	71	24(258)	58(71)	211(115)	N	1.6	E

(MS3) MIN.DEP.OFFICE

Rank	date		hour	NO_x ppb	NO_2 ppb	SO_2 ppb	SPM μg/m³	WD	WS m/s	ST
1)	12	25	8	251	41(181)	15	258(52)	NNE	0.8	D-d
2)	12	24	8	240	38(246)	55	192(172)	NNE	1.4	D-d
3)	12	9	24	206	36	25	159	N	1.6	E
4)	12	24	7	193	26	14	178(233)	N	1.6	F
5)	12	31	5	192	18	11	154	N	1.2	F
6)	10	20	22	174	22	3	272(40)	NNE	0.7	E
7)	12	31	6	173	20	10	176(240)	N	1.2	F
8)	12	31	7	173	23	11	152	N	1.5	F
9)	12	9	23	164	33	10	183(201)	N	1.2	E
10)	12	28	2	163	48(81)	24	116	NE	1.0	***
11)	2	23	8	161	54(42)	22	242(71)	NNE	1.2	D-d
12)	12	28	7	158	31	18	184(195)	N	2.0	***
13)	1	4	8	158	30	24	185(189)	NNE	1.3	D-d
14)	12	31	4	157	23	10	125	NNE	0.8	F
15)	12	23	24	155	38(245)	20	158	N	0.9	F
16)	3	11	8	155	47(90)	53	307(7)	ENE	0.9	D-d
17)	3	11	7	154	40(201)	34	318(22)	NE	0.8	F
18)	12	25	9	150	64(12)	27	159	NNE	1.6	C
19)	12	31	1	148	35	13	119	NNE	0.9	F
20)	12	25	3	147	25	25	224(104)	NNE	0.6	F
21)	12	28	3	147	38(240)	24	127	NE	0.7	***
22)	2	23	9	147	77(2)	31	217(119)	ENE	0.7	B
23)	12	9	21	145	43(142)	17	137	N	1.3	F
24)	12	25	2	145	27	31	243(70)	C	0.4	D
25)	1	10	9	145	52(49)	42	***	NE	1.7	C
26)	4	18	7	142	32	13	144	NE	0.7	E
27)	12	4	1	142	39(217)	11	136	N	1.0	F
28)	12	9	22	141	34	10	161	N	1.2	F
29)	12	25	4	140	25	18	183(201)	C	0.1	D
30)	12	9	20	139	50(62)	16	132	N	1.3	F
31)	12	23	23	138	39(217)	25	175(241)	N	1.9	F
32)	12	2	23	137	58(25)	29	119	N	1.6	F
33)	12	28	4	137	33	19	129	N	1.1	***
34)	12	18	22	136	52(49)	10	214(124)	NNE	0.9	E
35)	12	3	24	135	44(123)	11	149	N	1.4	F
36)	12	28	6	134	38(246)	20	150	N	2.3	***
37)	2	22	8	134	63(13)	24	125	NNE	1.7	D-d
38)	12	25	1	133	26	26	207(137)	N	0.6	F
39)	12	24	5	132	19	11	110	NNW	1.2	F
40)	12	4	5	131	26	9	124	NNW	2.7	F
41)	12	24	6	130	18	9	121	NNW	1.5	F
42)	1	3	8	130	30	16	152	N	1.2	D-d
43)	11	23	21	129	44(123)	25	344(15)	NNE	1.5	E
44)	1	5	8	128	39(217)	24	168(234)	N	1.7	D-d
45)	4	18	8	127	47(90)	18	122	N	1.1	C
46)	10	20	21	127	28	3	227(97)	N	0.9	F
47)	12	14	3	127	20	7	147	NNW	1.5	F
48)	1	21	8	127	40(201)	22	***	NE	1.1	D-d
49)	12	24	1	125	36	24	128	NE	1.1	F
50)	1	14	7	125	28	32	154	NNE	1.2	F

(MS4) S.P.PRO.OFFICE

Rank	date		hour	NO_x ppb	NO_2 ppb	SO_2 ppb	SPM μg/m³	WD	WS m/s	ST
1)	12	15	7	343	72(64)	21(182)	269(111)	NNE	1.4	F
2)	12	15	1	334	71(71)	18(280)	219(263)	NNW	1.7	F
3)	10	29	2	324	52(236)	18(280)	292(71)	N	0.5	F
4)	12	14	22	320	111(5)	51(5)	303(58)	NNW	2.5	F
5)	12	15	2	319	68(85)	18(280)	203	NNW	1.6	F
6)	10	29	4	312	35	7	228(223)	C	0.4	D
7)	10	29	3	310	38	9	285(82)	C	0.3	D
8)	12	14	24	310	76(45)	32(45)	220(258)	N	2.4	F
9)	10	29	6	306	37	9	262(129)	C	0.3	D
10)	12	14	23	302	90(14)	47(9)	242(174)	N	2.4	F
11)	10	29	5	297	35	9	222(209)	C	0.4	D
12)	10	29	1	285	55(176)	23(149)	287(80)	NNW	1.0	F
13)	12	25	7	281	31	5	343(28)	N	0.7	F
14)	12	3	7	259	50(263)	29(67)	297(64)	NNW	1.3	F
15)	12	15	6	259	60(142)	29(67)	208	N	2.1	F
16)	12	3	24	257	75(48)	13	285(82)	N	1.4	F
17)	12	13	21	254	124(3)	40(17)	327(38)	NNW	1.9	F
18)	1	5	7	254	74(54)	22(167)	388(11)	NNE	1.1	F
19)	12	14	7	253	62(123)	40(17)	227(234)	NNW	2.1	F
20)	12	15	22	253	72(64)	7	199	NNE	1.8	F
21)	12	15	3	247	61(132)	20(211)	157	N	1.0	F
22)	1	6	8	247	91(12)	15	276(92)	NNE	0.5	D-d
23)	12	22	7	245	42	15	251(131)	NNE	0.8	F
24)	12	24	7	244	30	14	234(203)	N	1.6	F
25)	12	14	8	241	65(100)	60(2)	269(111)	NNW	1.8	D-d
26)	12	3	21	240	77(43)	19(240)	293(68)	NNW	1.4	F
27)	12	30	24	239	64(114)	13	271(108)	N	0.8	F
28)	12	13	22	237	130(2)	29(67)	287(80)	N	1.7	F
29)	12	13	23	235	90(14)	15	251(152)	N	1.9	F
30)	12	25	6	235	32	6	383(12)	N	0.7	F
31)	12	7	7	226	42	10	218(271)	N	0.8	F
32)	1	5	8	226	64(114)	16	237(192)	N	1.7	D-d
33)	12	9	19	225	73(59)	10	272(163)	N	1.4	F
34)	12	15	8	224	65(100)	18(230)	252(123)	N	1.3	D-d
35)	10	28	21	223	77(43)	28(20)	278(90)	NNW	1.2	F
36)	12	9	20	221	68(85)	11	229(77)	N	1.3	F
37)	12	15	19	214	83(18)	10	220(259)	N	1.6	F
38)	12	30	23	214	65(100)	12	237(192)	N	1.0	F
39)	12	13	24	212	75(48)	9	246(165)	N	1.3	F
40)	12	25	8	211	36	4	263(111)	NNE	0.8	D-d
41)	12	7	6	208	44	9	256(143)	N	0.7	F
42)	12	15	23	208	69(80)	7	141	NNE	1.7	F
43)	12	27	23	208	72(64)	28(78)	200	N	2.0	***
44)	10	27	22	207	29	21(162)	182	***	***	***
45)	10	29	21	207	53(225)	9	269(111)	***	***	***
46)	12	14	21	206	116(4)	60(2)	308(53)	NNW	2.0	F
47)	12	21	7	205	41	19(240)	222(209)	NNE	0.9	F
48)	12	30	2	204	47	20(67)	190	N	1.0	F
49)	12	15	21	201	85(21)	10	184	NNE	2.1	F
50)	11	18	13	199	150(1)	7	46	NE	2.2	B

(MS5) B.& I.ESTATE

Rank	date		hour	NO_x ppb	NO_2 ppb	SO_2 ppb	SPM μg/m³	WD	WS m/s	ST
1)	10	2	4	127	36(14)	15(100)	199(33)	NNW	0.8	F
2)	10	2	5	118	35(15)	3	150(124)	NNW	0.9	F
3)	9	2	3	112	27(70)	4	141(157)	E	0.5	F
4)	9	2	2	111	15(182)	4	125(227)	C	0.2	D
5)	9	2	5	105	13	5	117(280)	NNE	0.7	F
6)	9	2	4	98	21(142)	4	131(202)	C	0.5	F
7)	9	9	22	94	30(35)	12(167)	97	NNE	0.6	F
8)	9	9	24	91	31(31)	12(167)	117(280)	NNE	0.5	F
9)	9	9	23	86	30(35)	12(167)	110	C	0.4	D
10)	9	2	1	86	22(124)	10(251)	115(233)	C	0.4	D-d
11)	9	9	21	84	29(48)	16(87)	138(172)	NNE	0.7	F
12)	9	10	2	84	27(70)	6	110	C	0.4	D
13)	9	10	5	82	24(104)	10(257)	106	C	0.4	F
14)	9	10	1	81	30(35)	10(257)	124(232)	NNE	0.5	D
15)	9	10	6	81	23(118)	11(237)	112	C	0.3	F
16)	9	10	3	71	28(59)	7	98	C	0.7	F
17)	9	10	8	67	27(70)	7	127(217)	NNE	1.0	F
18)	9	20	2	68	24(95)	9	150(44)	C	0.5	C
19)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
20)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
21)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
22)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
23)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
24)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
25)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
26)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
27)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
28)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
29)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
30)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
31)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
32)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
33)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
34)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
35)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
36)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
37)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
38)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
39)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
40)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
41)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
42)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
43)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
44)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
45)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
46)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
47)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
48)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
49)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
50)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Table 1-25 (4) Highest 50 hours of SPM Concentrations

(OS1) ONEB STATION

Rank	date		hour	SPM $\mu g/m^3$	NO_x ppb	NO_2 ppb	SO_2 ppb	WD	WS m/s	ST
1)	9	11	22	477	25	23	4	SSE	2.3	F
2)	2	23	21	392	108	69(30)	73(8)	SW	2.3	F
3)	12	7	20	320	115	44(257)	56(32)	SW	2.2	F
4)	2	22	23	313	173(112)	79(12)	28(250)	E	1.5	F
5)	12	24	22	312	140(215)	49(174)	85(4)	WSW	2.2	F
6)	10	22	7	310	222(56)	18	17	NW	1.6	E
7)	1	9	21	309	98	49(174)	34(137)	SSW	2.4	F
8)	1	13	20	307	139(219)	41	22	WSW	2.5	F
9)	2	23	20	303	107	75(18)	34(137)	WSW	1.7	F
10)	4	5	13	299	24	19	2	SSE	4.1	B
11)	3	10	23	299	87	55(101)	43(78)	S	1.4	F
12)	10	9	15	295	24	19	5	WSW	2.1	D-d
13)	2	22	22	294	185(97)	85(9)	42(85)	NW	1.3	F
14)	12	25	5	288	265(17)	23	17	N	1.2	F
15)	2	22	21	286	165(130)	83(10)	31(194)	NW	1.3	F
16)	12	23	19	285	107	48(197)	48(52)	SW	2.5	F
17)	2	22	24	285	151(167)	61(61)	19	ESE	2.8	F
18)	12	25	3	280	171(118)	25	24	E	1.9	F
19)	1	22	2	280	50	38	33(152)	WSW	1.2	F
20)	10	22	6	277	152(162)	20	21	NW	1.7	F
21)	1	5	4	276	151(167)	32	36(121)	NW	2.0	F
22)	12	24	21	275	126	50(160)	79(6)	WSW	2.0	F
23)	3	10	21	274	106	60(65)	46(63)	SW	1.5	F
24)	12	25	4	271	197(80)	24	18	NNE	1.5	F
25)	3	11	6	271	79	26	5	N	1.3	F
26)	2	23	22	270	105	66(43)	47(59)	SW	1.6	F
27)	12	21	20	269	99	45(245)	70(11)	W	2.2	F
28)	3	10	22	269	125	62(56)	59(28)	SW	1.3	F
29)	1	9	22	267	29	25	29(223)	S	2.6	F
30)	1	10	10	266	33	22	10	ENE	2.0	B
31)	1	30	20	265	65	28	32(174)	SW	1.4	F
32)	6	17	1	265	120(289)	18	30(206)	---	---	---
33)	1	22	1	263	61	41	55(34)	SSW	2.0	F
34)	12	24	20	261	106	42	51(41)	WSW	2.5	F
35)	12	25	2	261	190(91)	31	29(223)	NW	1.5	F
36)	12	25	7	261	185(97)	16	10	NNE	2.1	F
37)	3	11	7	261	72	25	6	NNE	1.6	F
38)	12	7	19	258	121	46(229)	56(32)	WSW	2.3	F
39)	12	24	19	258	99	45(245)	46(63)	SW	2.4	F
40)	3	11	5	258	75	29	6	N	0.8	F
41)	1	21	5	256	70	21	3	N	0.8	F
42)	10	22	17	256	68	48(197)	48(52)	SSW	2.6	D d
43)	1	10	9	255	57	25	8	ENE	2.3	C
44)	1	21	6	255	73	20	2	NNE	0.8	F
45)	12	25	6	253	179(106)	19	11	NNE	2.0	F
46)	10	21	19	250	113	37	72(9)	WSW	2.2	F
47)	10	23	1	246	80	24	43(78)	SW	2.0	F
48)	1	22	8	246	83	20	12	E	1.0	D d
49)	1	30	21	245	52	21	31(194)	SSW	1.7	F
50)	12	25	1	245	145(193)	20	38(108)	NW	2.2	F

(OS2) POWER PLANT

Rank	date		hour	SPM $\mu g/m^3$	NO_x ppb	NO_2 ppb	SO_2 ppb	WD	WS m/s	ST
1)	9	20	17	870	30	23	3	N	1.8	D-d
2)	2	29	24	728	11	6	3	S	3.2	E
3)	9	20	14	589	14	14	3	E	0.9	B
4)	12	25	7	573	---	---	11	N	0.7	F
5)	12	25	6	548	---	---	20	N	0.7	F
6)	3	13	5	540	21	8	3	SSE	3.3	D n
7)	9	20	15	514	16	15	2	N	2.2	C
8)	2	18	21	471	25	19	1	NNE	1.2	F
9)	12	6	22	430	47(245)	42(14)	103(2)	NNW	1.1	F
10)	2	29	23	429	13	6	3	S	2.8	F
11)	7	31	5	418	8	0	38	S	2.3	E
12)	9	20	12	404	25	25(243)	9	S	2.6	C
13)	12	7	2	375	42	24(288)	29	C	0.3	CD
14)	12	25	8	367	---	---	22	NNE	0.8	D d
15)	10	20	23	366	132(1)	28(159)	67(33)	NE	0.7	E
16)	1	22	1	365	15	11	29	S	2.4	F
17)	12	25	5	360	---	---	28	NNE	0.6	F
18)	2	23	8	358	57(123)	31(100)	72(23)	NNE	1.2	D d
19)	12	7	3	355	38	20	29	C	0.2	CD
20)	1	20	23	348	38	34(53)	54(100)	N	1.0	F
21)	2	22	7	333	23	19	22	NNE	1.1	F
22)	1	4	24	331	27	26(211)	33	SSE	0.8	E
23)	3	11	7	331	47(245)	19	27	NE	0.8	F
24)	12	7	1	316	48(225)	32(81)	36	NE	0.6	F
25)	10	26	19	314	65(66)	36(35)	85(9)	S	1.1	E
26)	10	22	7	312	65(22)	19	17	NNW	1.0	E
27)	12	6	24	311	55(146)	36(35)	57(79)	NE	1.4	F
28)	3	11	9	311	39	26(211)	43(213)	ENE	1.1	B
29)	2	22	24	310	65(69)	44(6)	33	E	1.1	F
30)	1	21	6	304	50(201)	24(298)	46(166)	N	1.0	F
31)	10	29	1	299	103(7)	28(159)	41(247)	NW	1.0	F
32)	12	6	23	299	36	33(65)	63(49)	N	0.5	F
33)	1	19	20	299	25	17	4	NNE	0.8	F
34)	3	11	8	296	38	20	27	ENE	0.9	D-d
35)	10	22	5	293	71(47)	26(211)	8	NW	0.7	F
36)	12	9	4	288	14	7	11	NNE	0.7	F
37)	3	13	6	288	21	7	11	SSE	3.1	E
38)	9	20	16	287	22	19	3	NNW	2.0	D d
39)	10	22	8	286	82(26)	26(211)	4	NNW	1.3	C
40)	10	26	18	282	44	31(100)	55(93)	NNW	0.6	D d
41)	1	22	24	280	17	12	24	SSW	1.5	F
42)	7	30	6	279	8	1	13	S	2.1	E
43)	1	21	8	279	59(106)	29(137)	63(48)	NE	1.1	D d
44)	1	21	7	275	60(98)	23	64(44)	N	1.5	F
45)	10	22	6	274	81(28)	23	0	NNW	0.8	F
46)	10	10	19	270	---	---	83(11)	NSW	0.6	E
47)	1	14	8	270	43	11	23	NE	1.4	D d
48)	10	14	24	260	10	9	45(182)	S	1.4	F
49)	1	21	5	259	46(270)	23	41(247)	NNE	1.2	F
50)	1	23	3	259	13	8	31	S	1.0	F

(OS3) MIN.DEP.OFFICE

Rank	date		hour	SPM $\mu g/m^3$	NO_x ppb	NO_2 ppb	SO_2 ppb	WD	WS m/s	ST
1)	1	10	3	702	20	16	1	SSE	2.0	F
2)	3	2	3	642	11	9	23	S	3.8	E
3)	1	6	8	536	75(284)	35	15	NNE	0.5	D d
4)	1	10	4	478	16	9	5	SSW	1.6	F
5)	3	12	7	461	28	10	48	SSE	2.9	E
6)	10	26	15	398	50	33	63	NNW	1.1	D-d
7)	3	11	8	397	155(15)	47(90)	53	ENE	0.9	D d
8)	1	22	7	385	92(154)	32	40	ENE	0.7	F
9)	1	22	6	378	62	31	28	NE	0.9	F
10)	1	19	20	371	35	27	5	NNE	0.8	F
11)	2	23	2	363	42	38(246)	49	ENE	1.4	F
12)	10	27	19	357	---	---	6	---	---	---
13)	1	19	21	355	65	29	6	NNE	1.5	F
14)	7	23	19	353	14	4	6	SSW	3.8	D n
15)	11	20	21	344	129(43)	44(123)	25	NNE	1.5	E
16)	1	10	2	342	11	10	0	S	2.3	F
17)	2	23	1	333	82(224)	65(11)	37	ENE	1.3	F
18)	9	26	8	326	---	---	24	NNE	1.9	C
19)	1	20	4	325	27	21	29	NNE	1.2	F
20)	6	22	20	324	12	12	9	S	2.7	F
21)	2	14	6	320	13	12	13	SSE	1.8	F
22)	3	11	7	318	154(17)	40(201)	34	NE	0.8	F
23)	2	22	24	312	100(117)	73(5)	48	E	1.1	F
24)	3	14	7	310	20	8	7	SSE	2.7	F
25)	12	7	4	307	113(70)	36	28	NNE	0.5	F
26)	12	22	5	300	58	12	7	N	1.0	F
27)	12	5	20	299	54	35	4	NNW	0.9	F
28)	10	3	21	295	---	---	5	SSE	0.8	E
29)	3	11	10	296	56	41(181)	42	ESE	1.3	B
30)	2	22	21	294	117(64)	61(1)	29	SSW	1.3	F
31)	3	11	9	293	99(123)	58(25)	36	ENE	1.1	B
32)	8	30	7	290	---	---	64	ENE	0.6	E
33)	2	24	7	290	21	21	10	SSE	2.7	F
34)	1	22	9	288	89(180)	40(201)	94(182)	ESE	1.3	C
35)	2	22	23	288	65(196)	60(20)	20	E	0.8	F
36)	3	23	22	284	16	5	17	SSE	3.8	E
37)	11	23	6	282	23	19	0	NNW	2.8	F
38)	2	24	6	280	20	20	10	SSE	2.6	F
39)	2	22	22	275	95(143)	69(8)	27	WSW	1.1	F
40)	10	20	22	272	174(6)	22	3	NNE	0.7	E
41)	12	6	24	272	106(95)	56(35)	34	NE	1.4	F
42)	3	11	6	266	71	25	5	NE	0.9	F
43)	10	29	1	265	---	---	17	NNW	1.0	F
44)	3	25	21	265	17	13	10	---	---	---
45)	12	16	19	264	33	30	23	NNE	1.8	F
46)	2	24	3	264	16	16	14	SE	1.8	F
47)	9	16	18	263	---	---	9	SE	2.8	D d
48)	9	10	21	262	---	---	5	NE	1.6	E
49)	10	25	16	261	61	39(217)	50	W	1.0	D d
50)	10	29	2	259	---	---	13	N	0.5	F

(OS4) S.P.PRO.OFFICE

Rank	date		hour	SPM $\mu g/m^3$	NO_x ppb	NO_2 ppb	SO_2 ppb	WD	WS m/s	ST
1)	6	21	2	805	---	---	1	SW	1.1	F
2)	11	24	2	505	100	22	14	N	1.7	E
3)	12	3	22	445	194(57)	89(17)	30(56)	NNW	2.1	F
4)	11	23	23	443	108(269)	28	13	N	1.9	E
5)	11	23	22	439	131(161)	32	10	N	2.1	E
6)	12	24	23	429	46	35	17	NW	0.5	F
7)	12	25	2	429	142(132)	40	19(240)	C	0.4	CD
8)	12	25	3	417	186(65)	29	14	NNE	0.6	F
9)	12	25	4	403	195(54)	33	9	C	0.1	CD
10)	2	22	23	392	---	---	51(5)	E	0.8	F
11)	1	5	7	388	254(17)	74(54)	22(167)	NNE	1.1	F
12)	12	25	6	383	235(29)	32	8	N	0.7	F
13)	12	25	5	375	168(88)	36	5	NNE	0.6	F
14)	10	30	18	373	113(235)	53(225)	2	---	---	---
15)	11	5	22	373	---	---	19(240)	N	2.1	F
16)	11	15	8	373	---	---	2	NNW	1.7	D-d
17)	8	11	20	369	40	13	3	N	1.1	F
18)	11	24	1	369	79	15	9	N	0.9	E
19)	11	5	20	364	---	---	15	N	2.0	F
20)	11	5	21	362	---	---	17	N	1.7	F
21)	11	17	21	362	---	---	2	NNW	2.4	F
22)	11	7	20	359	---	---	24(133)	N	2.4	F
23)	11	23	24	354	95	21	8	N	1.5	F
24)	12	6	24	351	138(141)	86(21)	28(78)	NE	1.4	F
25)	1	15	22	351	---	---	10	N	2.3	F
26)	2	22	22	351	---	---	50(7)	WSW	1.1	F
27)	11	6	19	349	---	---	12	N	1.8	F
28)	11	15	2	343	---	---	2	NNW	1.8	E
29)	12	25	7	343	231(13)	31	5	N	0.7	F
30)	11	5	23	342	---	---	15	NNW	1.6	F
31)	2	22	24	340	---	---	34(37)	E	1.1	F
32)	12	3	21	339	150(116)	96(9)	24(133)	NNW	2.6	F
33)	10	21	1	329	149(119)	31	33(40)	WNW	0.7	E
34)	11	7	19	329	---	---	26(100)	NNW	2.5	F
35)	12	7	3	329	99	56(176)	11	C	0.2	CD
36)	1	20	23	329	41	35	45(10)	N	1.0	F
37)	2	23	8	329	---	---	33(20)	NNE	1.2	D d
38)	12	13	21	327	254(17)	124(3)	40(17)	NNW	1.9	F
39)	2	22	21	325	---	---	27(93)	SSW	1.3	F
40)	12	5	20	324	120(204)	62(123)	7	NNW	0.9	F
41)	12	21	23	317	185(66)	56(176)	19(240)	N	1.6	F
42)	12	29	21	317	106(269)	79(36)	26(100)	NNW	2.7	F
43)	10	22	4	316	64	34	30(56)	WSW	0.6	F
44)	11	11	20	316	---	---	3	N	3.3	E
45)	12	5	21	314	112(240)	63(119)	5	NNW	1.3	F
46)	10	28	24	313	192(61)	70(77)	25(121)	NNW	1.3	F
47)	11	6	20	312	---	---	17	NNW	1.8	F
48)	3	11	7	312	75	20	11	NE	0.8	F
49)	10	20	24	311	179(71)	42	31(48)	W	1.2	E
50)	1	21	2	311	53	23	30(56)	NE	0.8	F

(OS5) R.& I.ESTATE

Rank	date		hour	SPM $\mu g/m^3$	NO_x ppb	NO_2 ppb	SO_2 ppb	WD	WS m/s	ST
1)	4	14	7	661	15	9	2	NNE	1.4	E
2)	1	5	19	384	14	13	2	SSE	2.0	F
3)	2	22	4	368	17	16(300)	5	ENE	1.4	F
4)	4	14	8	329	16	13	2	N	1.8	C
5)	12	15	20	317	---	---	0	NE	1.9	F
6)	10	2	1	295	58(25)	35(16)	13(138)	WNW	0.6	F
7)	2	22	22	281	59(24)	42(4)	10(257)	NNE	0.9	F
8)	10	9	7	276	29(285)	8	11(207)	NNW	0.5	E
9)	2	22	21	270	50(45)	48(1)	14(112)	NW	1.0	F
10)	1	14	17	267	0	0	1	W	3.4	C
11)	4	14	6	260	13	11	3	NE	0.9	F
12)	9	2	20	250	14	7	20(40)	SSE	1.2	F
13)	12	6	22	250	---	---	37(2)	N	0.7	F
14)	2	10	21	248	14	12	3	ENE	1.0	F
15)	9	28	15	244	0	0	10(257)	SSW	2.7	B
16)	10	2	3	244	62(21)	32(27)	25(15)	NW	1.2	F
17)	12	24	24	243	---	---	27(8)	C	0.2	CD
18)	10	1	22	242	42(90)	38(10)	11(207)	C	0.3	CD
19)	10	2	2	241	47(59)	22(27)	15(100)	W	0.7	F
20)	2	22	20	232	43(84)	43(2)	8	NW	1.0	F
21)	10	1	23	228	53(37)	41(5)	9	C	0.4	CD-n
22)	12	28	3	220	49(49)	23(118)	3	NNE	0.7	---
23)	2	23	8	214	54(34)	21(148)	5	N	0.9	D d
24)	12	5	24	213	---	---	7	C	0.4	CD
25)	12	21	20	211	---	---	7	WNW	0.7	F
26)	12	28	2	211	50(45)	25(95)	4	C	0.4	---
27)	1	9	18	205	4	4	3	SSW	2.0	D d
28)	12	6	1	205	---	---	7	NNE	1.0	F
29)	12	25	1	204	---	---	20(40)	E	1.0	F
30)	1	20	23	202	44(76)	36(14)	19(46)	ESE	1.3	F
31)	1	21	1	202	36(153)	26(81)	12(157)	ENE	0.7	F
32)	12	9	21	200	---	---	14(112)	NE	0.5	F
33)	10	2	4	199	127(1)	36(14)	15(100)	NNW	0.8	F
34)	12	21	21	197	---	---	22(28)	NNE	0.8	F
35)	12	27	22	197	42(90)	36(10)	5	N	0.9	---
36)	3	9	19	197	30(255)	23(59)	5	NE	1.5	F
37)	12	6	21	196	---	---	28(6)	NW	0.7	F
38)	10	1	24	196	56(30)	39(9)	9	C	0.4	CD
39)	2	17	14	195	2	1	0	SW	1.4	B
40)	10	1	21	193	29(285)	29(48)	7	C	0.4	CD
41)	12	27	23	191	40(45)	34(20)	7	NNE	1.2	---
42)	12	28	18	191	15	15	2	N	1.0	D d
43)	1	9	17	191	4	4	7	SW	1.7	D d
44)	12	6	23	190	---	---	17(68)	E	1.4	F
45)	12	23	23	190	---	---	9	NE	1.1	F
46)	12	30	2	190	67(18)	25(95)	9	C	0.4	CD
47)	1	20	20	190	12	10	21(31)	WNW	1.5	F
48)	4	12	6	189	7	6	15(100)	E	0.7	F
49)	10	9	6	189	23	10	8	NW	0.7	E
50)	9	1	21	188	46(62)	16(300)	16(59)	C	0.4	CD

Table 1-26 Frequency of Highest 50 Hours of Ambient Pollutant Concentrations for Each Hour

Hour	SO_2					NO_2					NOx					SPM				
	MS 1	MS 2	MS 3	MS 4	MS 5	MS 1	MS 2	MS 3	MS 4	MS 5	MS 1	MS 2	MS 3	MS 4	MS 5	MS 1	MS 2	MS 3	MS 4	MS 5
1	1	4	8	3	4	1	3	2		2	4	4	4	2	4	4	3	2	2	4
2		2	7	1	1		1			1	2	3	2	3	5	2	1	3	5	3
3		2	5	1	2		1			1	3	3	3	2	5	1	2	3	2	2
4		5	4	2	1					1	2	4	3	1	5	2	1	3	2	2
5	1	3	4	1	2					2	4	4	3	1	3	3	5	1	1	
6	1		1	3	1		1				2	3	2	4	2	4	5	5	1	3
7	1	3	3	4	2			1	1	1	3	2	6		6	3	5	6	3	2
8	1	6	2	3	3	1		2	1		8	4	11	5	6	1	6	3	2	2
9	1	2		2	4		1	6	1		2	1	3	9		1	1	2		
10				1	3	1	3	5			1	1				1		1		
11					3	1	1	2		1										
12				1	2	1	1		1								1			
13					2	4			1			1		1		1				
14	1				1	2											1			1
15						2										1	1	1		1
16	1					7			1								1	1		
17	2	1				6	1		1							1	1			2
18	2				1	3		1	2		1			1			1	1	1	2
19	5	2		2	1	6	3	1	7	8				1	2	4	2	3	2	2
20	10			2	3	7	5	8	7	10	3	2	1	1		6	1	3	6	5
21	10	5	3	7	5	3	10	7	10	6	5	2	3	4	3	6	1	6	7	7
22	7	6	4	7	4	2	9	6	7	8	5	3	3	4	2	6	1	3	5	4
23	3	5	1	7	3	2	5	5	6	6	3	6	3	7	4	2	4	1	6	5
24	3	4	8	3	2	1	5	4	4	3	2	7	3	4	3	1	6	2	5	3

Table 1-27 Frequency of Highest 50 Hours of Ambient Pollutant Concentrations for Each Wind Direction

Wind direction	SO_2					NO_2					NOx					SPM				
	MS 1	MS 2	MS 3	MS 4	MS 5	MS 1	MS 2	MS 3	MS 4	MS 5	MS 1	MS 2	MS 3	MS 4	MS 5	MS 1	MS 2	MS 3	MS 4	MS 5
Calm		1		1	2					5		4	2	4	17		2		3	9
N		14		11	3	9	16	13	14	8	1	16	22	23	3	4	8	2	17	5
NNE		4		2	1		3	8	4	5	2	2	13	9	8	5	8	9	4	6
NE		1		2		1	3	4	3	4	1	3	7	1	9		6	5	3	5
ENE	1	1	1	2		4	2	3		2	3	1	2		3	2	2	6		3
E		2		2	2	1	3	5	1	1					1	3	2	2	2	3
ESE		1		1	2				2	2	1				1	1		2		1
SE				1	1	1		1			1	1						2		
SSE			12		2											2	3	8		1
S	2	1	36	2	6		2					1				2	9	3		
SSW	3	3	1	1	3	3	1	1			1	1				4	1	3	1	3
SW	9			3	6	15					10					9			1	2
WSW	7	3		2	3	5	1	1		1	7					9	1	1	2	
W	2	2		2	8	2				3	7	1			1	1		1	1	2
WNW	3	3		2	6	7	2	2	1	2	1	3			2		3		1	3
NW	15	2		1	4		1		1	6	9	2			2	6	1		1	5
NNW	7	11		12	1	2	16	12	24	11	6	15	4	11	3	1	4	4	13	2

At MS4, high SO_2 concentrations are found in all wind directions but somewhat pronounced in N and NNW wind. High concentrations of NO_2 and NO_x are mostly found in NNW~N~NE wind. This may be due to the combined effect of ships in Chao Phraya river and the traffic on SuKumvit roadway. SPM concentration appeared high in all wind directions but somewhat pronounced in N and NNW wind.

At MS5, SO_2 concentration appears in all wind directions whereas both NO_2 and NO_x appear in W~N~ESE. As for SPM, the relationship between high concentration and wind direction is not clearly seen.

Table 1-28 shows the appearance frequency of high concentrations by atmospheric stability. It is seen from the table that all pollutants appears high in the atmospheric stability of F (stable period) and secondly high in that of B whereas

As for wind velocity related with high concentration, it is found that high concentration of each pollutant appears in breeze of 1~3 m/sec wind velocity. Concerning to the collelation among pollutants at high concentration, however, this trend is not found. For example, when concentration of SO_2 is high, concentrations of other pollutants do not appear in high level. Those trend appeared at all monitoring stations, especially in case of SPM.

Table 1-28 Frequency of Highest 50 hours of Ambient Pollutant Concentration for Each Atmospheric Stability

Atmospheric stability		SO_2					NO_2					NOx					SPM				
		MS 1	MS 2	MS 3	MS 4	MS 5	MS 1	MS 2	MS 3	MS 4	MS 5	MS 1	MS 2	MS 3	MS 4	MS 5	MS 1	MS 2	MS 3	MS 4	MS 5
CALM	CA																				
	CB																				
	CC-day															1					
	CC-night			4							2					4					1
	CD		1	2	1	2					3		4	2	4	11		2		3	7
WINDY	A																				
	B	1	2		3	15	5	5	10	4	1		3	1	1	1	2	2	2		2
	C	3			1	2	11	1	3	1		5	2	3		1	1	3	2		2
	D-day	4	7		3	1	12	1	3	3		7	2	9	5	3	3	8	5	2	4
	D-night				1		1					1						1	1		
	E	15	7	28	7	4	3	10		1		8	10	6		2	1	9	8	8	3
	F	26	30	16	27	26	18	33	34	40	38	29	29	24	37	23	42	25	30	36	27

(2) Analytical study on high daily average concentrations

Table 1-29 lists top 20 high concentrations with respect to all pollutants together with recorded times. Such extracted time (20 days observation period) corresponds to 5 pct of yearly monitoring. Interesting is that peaking days of all pollutants seem coinciding.

When monthly appearance as seen in Table 1-30 of high concentrations is reviewed, high values of SO_2 are observed at MS1~MS4 in the northerly dry season and at MS5 in the southerly dry season. As for NO_2 and NO_x, high values are observed at MS1 in the southerly dry season, at MS3 and MS4 in the northerly dry season, at MS2 and MS5 in both southerly and northerly dry seasons. As for SPM, all stations observed high concentrations in the northerly dry season.

Table 1-31 shows the hourly pollutants concentrations and meteorological conditions of the highest two days of daily averages. The findings particular to each station are as follows:

① MS1

Top two high concentrations of SO_2 appear in the southerly dry season and mostly in the NNW~W~WSW wind coming from SuKhumvit roadway while its velocity is maintained in 2.5~4.0 m/sec comparatively high at Samut Prakarn province. The atmospheric stability of the same period is C~B in the daytime and F in the night. As for NO_2 and NO_x, high concentrations are observed at all stations in the southerly wet season and in the same wind direction and atmospheric stability range as those of SO_2. But the wind velocity at which high concentrations appear maintains between 2.0~3.0 m/sec. In case of SPM, there is no

Table 1-29 (1) Top 20 High Concentrations of SO_2 Daily Average Correlated to Other Pollutant Levels

(MS1) ONEB STATION

Rank	date	SO_2 ppb	NO_x ppb	NO_2 ppb	SPM $\mu g/m^3$
1)	12/24	23.5	64.3 (38)	22.3	122.4 (11)
2)	11/17	21.6	43.6	19.8	60.7
3)	7/29	20.2	69.0 (27)	24.0 (34)	89.0 (38)
4)	1/22	19.8	37.0	21.6	144.8 (4)
5)	12/22	19.8	50.8	20.9	81.4
6)	9/ 1	19.7	112.0 (9)	32.6 (9)	78.8
7)	9/ 2	19.0	149.3 (4)	30.0 (15)	78.8
8)	10/22	18.9	64.3 (37)	21.1	147.3 (2)
9)	12/21	18.7	51.5	20.8	95.0 (30)
10)	1/ 9	18.7	58.2	27.9 (18)	155.8 (1)
11)	1/ 8	18.6	37.2	12.5	83.8
12)	10/21	18.3	68.2 (29)	16.8	117.2 (12)
13)	12/14	17.8	68.3 (28)	23.9 (35)	98.3 (25)
14)	8/ 5	17.6	58.1	20.1	56.2
15)	8/13	17.5	90.9 (14)	22.3	92.0 (37)
16)	1/ 5	17.4	60.3 (44)	18.9	116.7 (13)
17)	12/23	17.4	54.9	22.5	103.3 (20)
18)	1/ 4	17.3	62.8 (39)	21.8	74.9
19)	2/12	17.2	41.3	27.0 (20)	126.5 (10)
20)	12/20	17.2	54.9	22.2	71.5

(MS2) POWER PLANT

Rank	date	SO_2 ppb	NO_x ppb	NO_2 ppb	SPM $\mu g/m^3$
1)	10/26	33.8	33.0 (16)	16.0 (29)	105.1 (20)
2)	10/28	33.3	35.7 (12)	17.5 (16)	97.2 (31)
3)	12/14	32.7	41.0 (6)	19.9 (6)	101.5 (24)
4)	11/14	31.6	36.6 (8)	21.1 (4)	101.2 (25)
5)	12/13	31.5	24.6	18.0 (13)	110.8 (14)
6)	12/24	31.0	***	***	102.3 (22)
7)	11/10	29.6	34.1 (14)	20.5 (5)	91.6 (37)
8)	12/20	29.5	32.8 (17)	14.8 (36)	83.1
9)	12/23	29.2	***	***	98.3 (30)
10)	12/15	29.1	39.8 (7)	13.8	86.7 (43)
11)	12/21	28.6	29.5 (27)	13.6	109.4 (16)
12)	11/22	27.1	27.6 (32)	14.6 (37)	85.1
13)	5/21	25.7	11.4	1.6	40.8
14)	12/30	25.5	***	***	96.4 (32)
15)	10/19	24.1	19.4	14.5 (42)	76.2
16)	11/ 1	24.0	***	***	68.5
17)	12/ 1	24.0	30.5 (22)	18.1 (12)	87.1 (41)
18)	12/ 6	24.0	16.1	12.5	116.8 (11)
19)	11/ 7	23.8	***	***	69.5
20)	10/ 1	23.7	24.6	17.0 (20)	49.5

(MS3) MIN.DEP.OFFICE

Rank	date	SO_2 ppb	NO_x ppb	NO_2 ppb	SPM $\mu g/m^3$
1)	7/15	70.7	14.7	2.3	44.0
2)	1/31	65.6	22.3	13.2	63.8
3)	3/17	65.0	23.5	6.4	52.3
4)	3/ 1	64.0	18.6	11.4	51.2
5)	3/22	62.1	22.2	7.8	71.1
6)	3/18	61.8	24.0	7.6	70.9
7)	3/21	60.2	20.8	5.9	56.5
8)	7/14	59.7	13.3	2.0	44.9
9)	3/15	59.5	24.0	7.7	61.6
10)	2/ 1	56.8	20.7	13.5	54.6
11)	2/ 3	56.5	19.9	11.6	55.0
12)	9/ 8	56.1	***	***	57.9
13)	2/ 4	54.6	25.3	14.9	63.4
14)	1/ 6	54.3	31.3	18.1	93.3 (40)
15)	3/ 3	53.8	17.9	11.4	67.5
16)	2/ 6	53.6	33.0	13.2	85.6
17)	2/ 2	51.8	17.8	11.5	59.0
18)	1/12	51.8	21.5	9.3	51.4
19)	2/ 5	51.5	22.8	12.7	52.7
20)	1/29	51.5	12.6	6.8	44.8

(MS4) S.P.PRO.OFFICE

Rank	date	SO_2 ppb	NO_x ppb	NO_2 ppb	SPM $\mu g/m^3$
1)	12/14	20.2	154.1 (3)	69.3 (1)	179.9 (4)
2)	10/26	17.6	41.5	22.3	126.5 (40)
3)	10/28	16.2	90.5 (13)	33.9 (32)	132.2 (30)
4)	2/22	14.7	***	***	153.2 (11)
5)	12/23	14.5	66.2 (33)	32.4 (36)	112.5
6)	1/20	14.3	32.5	19.2	100.1
7)	1/21	13.8	39.0	20.3	133.2 (29)
8)	10/20	13.7	69.5 (27)	23.8 (48)	129.0 (37)
9)	10/11	13.1	45.5	23.0	111.3
10)	11/ 8	13.0	***	***	137.4 (26)
11)	3/25	12.7	***	***	63.3
12)	10/22	12.7	47.7	23.6	138.1 (25)
13)	10/25	12.7	49.7	20.0	116.3
14)	1/22	12.6	33.0	19.5	122.1 (44)
15)	11/22	12.2	62.4 (41)	36.5 (27)	105.0
16)	11/ 2	12.1	***	***	151.2 (13)
17)	10/21	11.9	67.9 (30)	20.4	131.8 (31)
18)	12/ 3	11.9	113.6 (5)	50.4 (5)	172.8 (6)
19)	12/22	11.9	84.7 (16)	39.6 (19)	130.7 (33)
20)	12/30	11.8	105.0 (7)	34.0 (31)	127.0 (38)

(MS5) H.& I.ESTATE

Rank	date	SO_2 ppb	NO_x ppb	NO_2 ppb	SPM $\mu g/m^3$
1)	7/ 7	20.6	8.6	7.3	34.0
2)	7/ 8	16.3	8.3	6.3	30.3
3)	7/25	10.2	7.3	4.0	32.6
4)	7/24	9.3	6.1	3.0	30.9
5)	7/18	9.3	13.6	5.7	35.9
6)	7/23	8.8	10.9	5.6	31.1
7)	7/19	8.5	6.8	3.7	35.5
8)	1/20	8.3	15.0 (50)	12.1 (14)	82.7 (20)
9)	7/22	8.3	8.0	4.8	32.6
10)	7/15	8.1	4.2	1.8	17.4
11)	7/17	8.1	9.8	4.8	23.2
12)	7/20	8.1	6.3	3.0	26.3
13)	7/21	8.1	9.0	4.1	26.1
14)	10/26	8.1	25.7 (6)	7.2	67.6
15)	7/14	7.9	4.0	2.1	21.2
16)	7/16	7.9	6.0	3.0	20.7
17)	6/ 2	7.7	7.5	2.3	26.4
18)	12/13	7.5	***	***	83.8 (19)
19)	9/22	7.3	18.4 (25)	10.8 (24)	96.7 (11)
20)	5/23	7.2	8.8	7.6	34.1

Table 1-29 (2) Top 20 High Concentrations of NO_2 Daily Average Correlated to Other Pollutant Levels

(MS1) ONEB STATION

Rank	date	NO_2 ppb	NO_x ppb	SO_2 ppb	SPM $\mu g/m^3$
1)	9/12	48.9	79.3 (17)	15.7 (30)	78.7
2)	9/10	48.3	126.3 (6)	15.2 (33)	112.3 (15)
3)	9/26	41.4	91.9 (13)	2.3	92.4 (36)
4)	10/ 3	38.9	121.5 (7)	8.8	80.7
5)	9/ 3	38.7	93.5 (12)	14.3 (38)	60.6
6)	9/25	36.9	71.6 (23)	9.1	68.4
7)	9/21	36.1	94.3 (11)	14.8 (35)	70.0
8)	9/20	32.9	77.5 (20)	9.2	49.5
9)	9/ 1	32.6	112.0 (9)	19.7 (6)	78.8
10)	2/22	32.5	58.7 (50)	10.3	128.6 (9)
11)	2/23	31.9	52.7	16.7 (23)	146.1 (3)
12)	10/ 1	31.2	143.9 (5)	0.7	98.7 (24)
13)	11/14	31.0	49.3	11.3	78.4
14)	9/13	30.3	67.3 (31)	13.0 (49)	54.6
15)	9/ 2	30.0	149.3 (4)	19.0 (7)	78.8
16)	9/30	28.5	96.1 (10)	0.8	65.0
17)	8/25	28.0	49.6	6.7	68.0
18)	1/ 9	27.9	58.2	18.7 (10)	155.8 (1)
19)	9/23	27.6	53.2	9.5	73.1
20)	2/12	27.0	41.3	17.2 (19)	126.5 (10)

(MS2) POWER PLANT

Rank	date	NO_2 ppb	NO_x ppb	SO_2 ppb	SPM $\mu g/m^3$
1)	11/ 8	31.8	56.0 (1)	17.7	85.6 (50)
2)	11/ 9	28.0	51.7 (2)	15.0	105.3 (19)
3)	9/25	21.8	31.0 (21)	11.3	75.3
4)	11/14	21.1	36.6 (8)	31.6 (4)	101.2 (25)
5)	11/10	20.5	34.1 (14)	29.6 (7)	91.6 (37)
6)	12/14	19.9	41.0 (6)	32.7 (3)	101.5 (24)
7)	1/ 9	19.8	25.7 (46)	22.0 (28)	127.4 (6)
8)	9/10	19.6	36.5 (9)	17.5	111.6 (13)
9)	10/22	19.1	41.8 (5)	5.5	140.7 (4)
10)	2/22	18.7	21.8	17.8	125.5 (8)
11)	10/21	18.4	49.6 (3)	19.3 (45)	124.4 (9)
12)	12/ 1	18.1	30.5 (22)	24.0 (17)	87.1 (41)
13)	12/13	18.0	24.6	31.5 (5)	110.8 (14)
14)	9/20	17.9	25.8 (44)	10.4	168.9 (1)
15)	9/22	17.6	23.9	15.4	106.7 (18)
16)	10/28	17.5	35.7 (12)	33.3 (2)	97.2 (31)
17)	9/21	17.4	26.4 (40)	10.5	65.6
18)	9/24	17.2	29.9 (26)	***	73.6
19)	9/23	17.2	27.5 (33)	7.7	72.8
20)	10/ 1	17.0	24.6	23.7 (20)	49.5

(MS3) MIN.DEP.OFFICE

Rank	date	NO_2 ppb	NO_x ppb	SO_2 ppb	SPM $\mu g/m^3$
1)	2/22	40.7	55.0 (13)	22.3	141.0 (5)
2)	12/ 3	32.7	59.9 (8)	12.2	107.5 (15)
3)	2/23	32.0	47.2 (20)	31.6	156.9 (1)
4)	12/13	30.1	43.5 (24)	13.8	89.0 (48)
5)	12/14	30.1	64.8 (4)	11.3	98.4 (31)
6)	11/22	30.0	36.9 (42)	14.8	73.3
7)	12/ 2	29.7	42.6 (27)	12.2	42.3
8)	12/29	29.3	51.3 (14)	19.9	88.3
9)	12/ 1	29.2	37.5 (40)	14.5	63.4
10)	1/ 9	28.9	38.2 (38)	26.5	118.9 (11)
11)	12/ 7	28.8	50.6 (16)	39.0 (47)	137.8 (6)
12)	12/28	27.6	68.9 (3)	15.6	108.3 (14)
13)	12/ 6	27.3	42.6 (26)	19.0	103.2 (23)
14)	11/30	27.2	30.6	9.2	31.7
15)	12/ 4	27.1	62.5 (5)	8.7	58.6
16)	11/21	26.7	29.8	13.3	61.3
17)	12/30	26.5	58.0 (10)	13.3	63.8
18)	4/15	26.4	45.1 (22)	16.8	86.3
19)	2/21	26.2	30.7	10.7	101.8 (26)
20)	12/18	26.2	41.0 (33)	8.0	59.6

(MS4) S.P.PRO.OFFICE

Rank	date	NO_2 ppb	NO_x ppb	SO_2 ppb	SPM $\mu g/m^3$
1)	12/14	69.3	154.1 (3)	20.2 (1)	179.9 (4)
2)	12/13	65.5	119.3 (4)	11.5 (23)	150.7 (14)
3)	12/15	64.3	180.2 (1)	10.7 (34)	148.2 (15)
4)	1/ 5	51.7	101.5 (8)	6.1	145.5 (17)
5)	12/ 3	50.4	113.6 (5)	11.9 (18)	172.8 (6)
6)	12/16	45.9	81.8 (18)	5.0	86.1
7)	12/ 6	45.7	80.5 (19)	8.3	144.0 (19)
8)	12/ 4	43.2	90.1 (14)	7.5	139.4 (23)
9)	12/21	43.0	91.1 (12)	11.5 (26)	129.2 (36)
10)	11/18	41.9	75.1 (22)	7.4	76.1
11)	12/ 9	41.8	97.3 (10)	4.1	115.4
12)	12/17	41.7	67.8 (31)	7.3	93.8
13)	12/28	41.6	89.3 (15)	10.5 (38)	138.3 (24)
14)	1/ 4	41.4	76.0 (21)	6.6	110.3
15)	12/ 2	41.2	71.7 (25)	7.4	104.8
16)	12/29	40.8	76.3 (20)	11.5 (24)	123.3 (43)
17)	12/ 7	40.6	82.8 (17)	8.0	157.8 (9)
18)	12/20	40.5	73.3 (24)	11.3 (27)	101.0
19)	12/22	39.6	84.7 (16)	11.9 (19)	130.7 (33)
20)	12/18	39.4	63.6 (38)	5.0	97.8

(MS5) H.& I.ESTATE

Rank	date	NO_2 ppb	NO_x ppb	SO_2 ppb	SPM $\mu g/m^3$
1)	12/27	15.9	17.3 (30)	2.7	95.5 (13)
2)	10/ 3	15.3	17.0 (34)	2.1	62.6
3)	12/28	15.3	18.5 (24)	2.0	111.8 (4)
4)	10/ 2	15.2	28.6 (3)	3.8	113.7 (2)
5)	12/29	15.0	17.3 (32)	3.3	94.4 (15)
6)	2/22	14.9	16.5 (38)	3.3	108.8 (6)
7)	9/10	14.2	35.5 (2)	4.6 (45)	63.9
8)	3/ 9	13.3	17.7 (27)	1.8	68.6
9)	11/14	13.3	21.4 (15)	2.5	55.1
10)	10/ 1	13.1	16.2 (42)	2.0	86.2 (18)
11)	1/16	12.6	14.0	2.2	62.3
12)	3/ 8	12.2	17.7 (28)	2.3	56.0
13)	2/21	12.1	12.7	3.0	60.3
14)	1/20	12.1	15.0 (50)	8.3 (8)	82.7 (20)
15)	1/17	11.9	16.9 (36)	1.8	70.9 (43)
16)	9/ 2	11.8	36.2 (1)	3.4	95.3 (14)
17)	3/ 7	11.6	17.3 (31)	1.4	63.6
18)	1/ 5	11.6	16.7 (37)	1.8	102.6 (8)
19)	11/11	11.3	15.7 (46)	2.7	80.3 (25)
20)	2/20	11.1	11.9	1.6	66.9

Table 1-29 (3) Top 20 High Concentrations of NO_x Daily Average Correlated to Other Pollutant Levels

(MS1) ONEB STATION

Rank	date	NO_x ppb	NO_2 ppb	SO_2 ppb	SPM $\mu g/m^3$
1)	10/ 2	175.6	26.3 (22)	0.8	103.3 (19)
2)	10/ 6	158.7	16.4	1.7	94.3 (33)
3)	10/ 5	155.7	22.8 (49)	1.3	110.8 (16)
4)	9/ 2	149.3	30.0 (15)	19.0 (7)	78.8
5)	10/ 1	143.9	31.2 (12)	0.7	98.7 (24)
6)	9/10	126.3	48.3 (2)	15.2 (33)	112.3 (15)
7)	10/ 3	121.5	38.9 (4)	8.8	80.7
8)	10/ 7	112.5	10.6	13.5 (46)	96.0 (27)
9)	9/ 1	112.0	32.6 (9)	19.7 (6)	78.8
10)	9/30	96.1	28.5 (16)	0.8	65.0
11)	9/21	94.3	36.1 (7)	14.8 (35)	70.0
12)	9/ 3	93.5	38.7 (5)	14.3 (38)	60.6
13)	9/26	91.9	41.4 (3)	2.3	92.4 (36)
14)	8/13	90.9	22.3	17.5 (15)	92.0 (37)
15)	10/ 4	85.9	23.8 (38)	5.5	68.5
16)	5/31	85.8	12.9	1.5	25.4
17)	9/12	79.3	48.9 (1)	15.7 (30)	78.7
18)	8/14	78.5	18.4	13.5 (44)	72.5
19)	10/29	78.5	22.1	10.5	***
20)	9/20	77.5	32.9 (8)	9.2	49.5

(MS2) POWER PLANT

Rank	date	NO_x ppb	NO_2 ppb	SO_2 ppb	SPM $\mu g/m^3$
1)	11/ 8	56.0	31.8 (1)	17.7	85.6 (50)
2)	11/ 9	51.7	28.0 (2)	15.0	105.3 (19)
3)	10/21	49.6	18.4 (11)	19.3 (45)	124.4 (9)
4)	8/25	49.1	13.9 (50)	18.3	61.4
5)	10/22	41.8	19.1 (9)	5.5	140.7 (4)
6)	12/14	41.0	19.9 (6)	32.7 (3)	101.5 (24)
7)	12/15	39.8	13.8	29.1 (10)	86.7 (43)
8)	11/14	36.6	21.1 (4)	31.6 (4)	101.2 (25)
9)	9/10	36.5	19.6 (8)	17.5	111.6 (13)
10)	4/18	36.3	12.1	10.8	93.3 (36)
11)	8/26	36.1	11.0	12.1	33.4
12)	10/28	35.7	17.5 (16)	33.3 (2)	97.2 (31)
13)	10/20	34.3	16.4 (26)	21.4 (31)	111.9 (12)
14)	11/10	34.1	20.5 (5)	29.6 (7)	91.6 (37)
15)	4/16	33.1	10.3	9.8	67.4
16)	10/26	33.0	16.0 (29)	33.8 (1)	105.1 (20)
17)	12/20	32.8	14.8 (36)	29.5 (8)	83.1
18)	10/27	32.2	16.8 (21)	16.3	67.3
19)	4/30	31.6	12.3	13.1	45.8
20)	4/19	31.3	10.4	13.7	72.5

(MS3) MIN.DEP.OFFICE

Rank	date	NO_x ppb	NO_2 ppb	SO_2 ppb	SPM $\mu g/m^3$
1)	12/25	75.3	24.2 (29)	12.9	144.1 (4)
2)	12/31	71.6	22.1 (39)	12.1	68.5
3)	12/28	68.9	27.6 (12)	15.6	108.3 (14)
4)	12/14	64.8	30.1 (5)	11.3	98.4 (31)
5)	12/ 4	62.5	27.1 (15)	8.7	88.6
6)	12/24	62.1	21.5 (43)	21.7	96.5 (34)
7)	12/ 9	60.4	22.5 (37)	12.8	84.8
8)	12/ 3	59.9	32.7 (2)	12.2	107.5 (15)
9)	11/26	58.1	24.0 (30)	13.7	105.8 (16)
10)	12/30	58.0	26.5 (17)	13.3	88.0
11)	12/23	57.4	18.7	14.4	98.3 (32)
12)	8/25	57.1	17.4	29.3	79.2
13)	2/22	55.0	40.7 (1)	22.3	141.0 (5)
14)	12/29	51.3	29.3 (8)	19.9	88.3
15)	4/18	50.6	25.3 (22)	13.3	88.9 (49)
16)	12/ 7	50.6	28.8 (11)	39.0 (47)	137.8 (6)
17)	10/20	49.3	17.0	1.5	99.3 (29)
18)	1/ 4	48.6	24.8 (26)	15.6	84.3
19)	12/15	48.1	25.3 (23)	14.4	83.7
20)	2/23	47.2	32.0 (3)	31.6	156.9 (1)

(MS4) S.P.PRO.OFFICE

Rank	date	NO_x ppb	NO_2 ppb	SO_2 ppb	SPM $\mu g/m^3$
1)	12/15	180.2	64.3 (3)	10.7 (34)	148.2 (15)
2)	10/29	159.2	34.7 (30)	5.4	147.6 (16)
3)	12/14	154.1	69.3 (1)	20.2 (1)	179.9 (4)
4)	12/13	119.3	65.5 (2)	11.5 (23)	150.7 (14)
5)	12/ 3	113.6	50.4 (5)	11.9 (18)	172.8 (6)
6)	12/25	111.1	38.7 (21)	9.5 (49)	193.5 (2)
7)	12/30	105.0	34.0 (31)	11.8 (20)	127.0 (38)
8)	1/ 5	101.5	51.7 (4)	6.1	145.5 (17)
9)	10/30	99.4	35.3 (29)	2.7	131.5 (32)
10)	12/ 9	97.3	41.8 (11)	4.1	115.4
11)	2/18	93.2	30.0 (40)	9.1	113.3
12)	12/21	91.1	43.0 (9)	11.5 (26)	129.2 (36)
13)	10/28	90.5	33.9 (32)	16.2 (3)	132.2 (30)
14)	12/ 4	90.1	43.2 (8)	7.5	139.4 (23)
15)	12/28	89.3	41.6 (13)	10.5 (38)	138.3 (24)
16)	12/22	84.7	39.6 (19)	11.9 (19)	130.7 (33)
17)	12/ 7	82.8	40.6 (17)	8.0	157.8 (9)
18)	12/16	81.8	45.9 (6)	5.0	86.1
19)	12/ 6	80.5	45.7 (7)	8.3	144.0 (19)
20)	12/29	76.3	40.8 (16)	11.5 (24)	123.3 (43)

(MS5) H.& I.ESTATE

Rank	date	NO_x ppb	NO_2 ppb	SO_2 ppb	SPM $\mu g/m^3$
1)	9/ 2	36.2	11.8 (16)	3.4	95.3 (14)
2)	9/10	35.5	14.2 (7)	4.6 (45)	63.9
3)	10/ 2	28.6	15.2 (4)	3.8	113.7 (2)
4)	6/ 6	26.5	7.6	***	25.3
5)	10/22	26.4	7.2	5.3 (33)	74.0 (35)
6)	10/26	25.7	7.2	8.1 (14)	67.6
7)	10/21	24.6	7.5	4.8 (42)	54.5
8)	8/28	24.1	7.7	2.9	29.8
9)	9/ 1	24.0	8.4 (45)	3.9	44.3
10)	10/20	23.5	6.4	4.0	45.9
11)	6/ 5	23.4	4.4	***	22.3
12)	10/25	23.1	6.5	5.4 (29)	43.0
13)	6/ 4	23.1	3.8	***	20.6
14)	8/29	21.7	8.3 (48)	1.8	24.6
15)	11/14	21.4	13.3 (9)	2.5	55.1
16)	10/27	20.9	4.8	2.7	27.4
17)	7/12	20.5	5.0	***	29.1
18)	10/24	20.1	4.1	4.7 (44)	46.3
19)	11/15	20.1	10.4 (27)	1.7	61.1
20)	10/23	19.5	3.8	3.5	51.9

Table 1-29 (4) Top 20 High Concentrations of SPM Daily Average Correlated to Other Pollutant Levels

(MS1) ONER STATION

Rank	date	SPM $\mu g/m^3$	NO_x ppb	NO_2 ppb	SO_2 ppb
1)	1/ 9	155.8	58.2	27.9 (18)	18.7 (10)
2)	10/22	147.3	64.3 (37)	21.1	18.9 (8)
3)	2/23	146.1	52.7	31.9 (11)	16.7 (23)
4)	1/22	144.8	37.0	21.6	19.8 (4)
5)	1/21	142.7	47.5	22.5	16.2 (27)
6)	3/11	131.3	38.0	18.5	5.7
7)	12/ 7	130.2	46.5	18.8	13.9 (40)
8)	1/10	129.7	36.0	18.3	16.8 (22)
9)	2/22	128.6	58.7 (50)	32.5 (10)	10.3
10)	2/12	126.5	41.3	27.0 (20)	17.2 (19)
11)	12/24	122.4	64.3 (38)	22.3	23.5 (1)
12)	10/21	117.2	68.2 (29)	16.8	18.3 (12)
13)	1/ 5	116.7	60.3 (44)	18.9	17.4 (16)
14)	1/23	113.6	28.8	15.3	11.3
15)	9/10	112.3	126.3 (6)	48.3 (2)	15.2 (33)
16)	10/ 5	110.8	155.7 (3)	22.8 (49)	1.3
17)	11/ 9	108.7	60.5 (43)	24.9 (31)	15.4 (31)
18)	10/23	106.3	33.0	13.0	15.0 (34)
19)	10/ 2	103.3	175.6 (1)	26.3 (22)	0.8
20)	12/23	103.3	54.9	22.5	17.4 (17)

(MS2) POWER PLANT

Rank	date	SPM $\mu g/m^3$	NO_x ppb	NO_2 ppb	SO_2 ppb
1)	9/20	168.9	25.8 (44)	17.9 (14)	10.4
2)	12/25	167.4	***	***	20.5 (38)
3)	12/ 7	141.6	18.4	9.7	19.5 (44)
4)	10/22	140.7	41.8 (5)	19.1 (9)	5.5
5)	1/21	133.5	24.1	14.5 (40)	20.5 (35)
6)	1/ 9	127.4	25.7 (46)	19.8 (7)	22.0 (28)
7)	1/22	127.0	20.2	12.0	18.9 (46)
8)	2/22	125.5	21.8	18.7 (10)	17.8
9)	10/21	124.4	49.6 (3)	18.4 (11)	19.3 (45)
10)	12/ 3	118.8	25.9 (43)	14.5 (39)	2.5
11)	12/ 6	116.8	16.1	12.5	24.0 (18)
12)	10/20	111.9	34.3 (13)	16.4 (26)	21.4 (31)
13)	9/10	111.6	36.5 (9)	19.6 (8)	17.5
14)	12/13	110.8	24.6	18.0 (13)	31.5 (5)
15)	4/14	109.6	30.5 (23)	11.0	2.8
16)	12/21	109.4	29.5 (27)	13.6	28.6 (11)
17)	1/ 5	107.0	20.4	16.8 (21)	13.1
18)	9/22	106.7	23.9	17.6 (15)	15.4
19)	11/ 9	105.3	51.7 (2)	28.0 (2)	15.0
20)	10/26	105.1	33.0 (16)	16.0 (29)	33.8 (1)

(MS3) MIN.DEP.OFFICE

Rank	date	SPM $\mu g/m^3$	NO_x ppb	NO_2 ppb	SO_2 ppb
1)	2/23	156.9	47.2 (20)	32.0 (3)	31.6
2)	9/10	152.6	***	***	25.7
3)	1/22	144.5	29.5	19.3	44.2 (36)
4)	12/25	144.1	75.3 (1)	24.2 (29)	12.9
5)	2/22	141.0	55.0 (13)	40.7 (1)	22.3
6)	12/ 7	137.8	50.6 (16)	28.8 (11)	39.0 (47)
7)	3/11	136.8	41.9 (30)	19.1	26.4
8)	10/22	132.0	***	***	26.1
9)	11/ 9	123.6	***	***	***
10)	10/29	123.3	***	***	19.0
11)	1/ 9	118.9	38.2 (38)	28.9 (10)	26.5
12)	1/19	113.0	22.4	16.0	14.3
13)	11/23	111.0	46.1 (21)	24.5 (28)	14.8
14)	12/28	108.3	68.9 (3)	27.6 (12)	15.6
15)	12/ 3	107.5	59.9 (8)	32.7 (2)	12.2
16)	11/26	105.8	58.1 (9)	24.0 (30)	13.7
17)	10/28	105.7	41.6 (32)	18.3	19.4
18)	2/20	105.6	27.6	24.8 (25)	11.0
19)	10/26	105.5	36.1 (45)	19.2	21.0
20)	3/10	105.1	24.2	17.5	14.3

(MS4) S.P.PRO.OFFICE

Rank	date	SPM $\mu g/m^3$	NO_x ppb	NO_2 ppb	SO_2 ppb
1)	11/ 6	200.7	***	***	10.0 (41)
2)	12/25	193.5	111.1 (6)	38.7 (21)	9.5 (49)
3)	11/ 5	180.5	***	***	9.5 (50)
4)	12/14	179.9	154.1 (3)	69.3 (1)	20.2 (1)
5)	11/ 7	177.4	***	***	11.6 (21)
6)	12/ 3	172.8	113.6 (5)	50.4 (5)	11.9 (18)
7)	2/23	168.7	***	***	11.2 (31)
8)	11/ 4	162.4	***	***	9.5 (48)
9)	12/ 7	157.8	82.8 (17)	40.6 (17)	8.0
10)	10/ 2	156.8	36.2	21.8	8.8
11)	2/22	153.2	***	***	14.7 (4)
12)	11/11	152.2	***	***	4.6
13)	11/ 2	151.2	***	***	12.1 (16)
14)	12/13	150.7	119.3 (4)	65.5 (2)	11.5 (23)
15)	12/15	148.2	180.2 (1)	64.3 (3)	10.7 (34)
16)	10/29	147.6	159.2 (2)	34.7 (30)	5.4
17)	1/ 5	145.5	101.5 (8)	51.7 (4)	6.1
18)	11/ 9	145.2	***	***	11.0 (32)
19)	12/ 6	144.0	80.5 (19)	45.7 (7)	8.3
20)	11/ 1	143.9	***	***	10.8 (33)

(MS5) H.& I.ESTATE

Rank	date	SPM $\mu g/m^3$	NO_x ppb	NO_2 ppb	SO_2 ppb
1)	2/23	119.3	13.9	10.2 (30)	3.2
2)	10/ 2	113.7	28.6 (3)	15.2 (4)	3.8
3)	12/25	112.5	***	***	3.2
4)	12/28	111.8	18.5 (24)	15.3 (3)	2.0
5)	4/14	109.1	7.6	6.8	2.6
6)	2/22	108.8	16.5 (38)	14.9 (6)	3.3
7)	12/24	108.5	***	***	4.1
8)	1/ 5	102.6	16.7 (37)	11.6 (18)	1.8
9)	12/15	102.6	***	***	0.4
10)	1/ 9	100.6	9.8	9.2 (38)	3.2
11)	9/22	96.7	18.4 (25)	10.8 (24)	7.3 (19)
12)	12/ 6	96.5	***	***	6.2 (25)
13)	12/27	95.5	17.3 (30)	15.9 (1)	2.7
14)	9/ 2	95.3	36.2 (1)	11.8 (16)	3.4
15)	12/29	94.4	17.3 (32)	15.0 (5)	3.3
16)	12/ 7	91.4	***	***	5.0 (38)
17)	1/21	88.6	15.6 (47)	10.3 (29)	3.2
18)	10/ 1	86.2	16.2 (42)	13.1 (10)	2.0
19)	12/13	83.8	***	***	7.5 (18)
20)	1/20	82.7	15.0 (50)	12.1 (14)	8.3 (8)

particular seasonal preference for high concentration appearances except somewhat higher values in January and in October. The wind direction is also found indefinable and shows all directions. The atmospheric stability drops mostly in B in the daytime and in F in the night.

Table 1-30 Monthly Appearance of Top 20 Days in which Daily High Concentrations of Each Pollutant

Month	SO_2					NO_2					NOx					SPM				
	MS 1	MS 2	MS 3	MS 4	MS 5	MS 1	MS 2	MS 3	MS 4	MS 5	MS 1	MS 2	MS 3	MS 4	MS 5	MS 1	MS 2	MS 3	MS 4	MS 5
JAN.	5		4	3	1	1	1	1	2	4			1	1		6	4	3	1	4
FEB.	1		6	1		3	1	3		3			2	1		3	1	3	2	2
MAR.			7	1						3						1		2		
APR.								1				4	1				1			1
MAY.		1			1						1									
JUN.					1										3					
JUL.	1		2		14										1					
AUG.	2					1					2	2	1		2					
SEP.	2		1		1	12	7			2	9	1			3	1	3	1		2
OCT.	2	4		7	1	2	4			3	8	6	1	3	9	5	4	4	2	2
NOV.	1	5		3		1	4	3	1	2		4	1		2	1	1	3	8	
DEC.	6	10		5	1		3	12	17	3		3	13	15		3	6	4	7	9

② MS2

The top two high concentrations of SO_2 appeared on 26th and 28th of October. The wind direction varied all day long on both days and the velocity maintained at about 1.0 m/sec whereas the atmospheric stability varied from B, C, D (unstable through neutral range) in the daytime to E, F (stable) in the high. High concentrations of both NO_2 and NO_x appeared during November 8th through 9th when the wind direction was NNE~N~NNW all day long at its velocity of about 2.0 m/sec. The atmospheric stability showed mostly B and C in the daytime and E and F in the night. As for SPM, both September 20th and December 25th marked high concentrations and the wind direction maintained NNE~N~NNW on both days though September 20th had the wind direction of E and S as well. The wind velocity remains comparatively low at about 2.0 m/sec and atmospheric stability maintains B-C in the daytime and mostly E-F in the night.

③ MS3

The top two high concentrations of SO_2 appeared in July and in January when the wind direction maintained all day long in SE~S~SSW and its velocity comparatively low at 3–4 m/sec. The atmospheric stability kept mostly C and D type all day long on July 15th whereas that of January 31st kept B and C in the daytime and E, F in the night. The top two high concentrations of NO_2 appeared on February 22nd and December 3rd while those of NO_x did on December 25th and December 31st. The wind direction maintained all day long on both days in ENE~N~NNW and its velocity low at about 1.5 m/sec. The atmospheric stability remained at B in the daytime and at F in the night. Top two high concentrations of SPM appeared on February 23rd and September 10th. The wind direction maintained

NE~E~SSW on both days and the wind blew from the other side of Chao Phraya river. The atmospheric stability remained at B and D in the daytime and at E, F in the night.

④ MS4

The top two high concentrations of each pollutant, SO_2, NO_2, NO_x, SPM appeared on the different days, but the wind direction maintained NNE~N~NNW on both days. (In October 26th, the top high concentration of SO_2 had the wind direction of S as well.) The wind velocity remained at about 1.5~2.0 m/sec all day long. The atmospheric stability showed mostly D in the daytime and F in the night.

⑤ MS5

The wind directions of the days when the top two high concentrations of each pollutant, SO_2, NO_2, NO_x, SPM appeared unsteady all day long. The wind velocity remained low about 1~2 m/sec (sometime Calm) and the atmospheric stability showed mostly B in the daytime and F in the nighttime.

Table 1-31 (1) Highest 2 Days of Ambinet Pollutant Concentrations at MS1

SO_2

(MS1) ONEB STATION

① 12 / 24 SO₂ AVE = 23.46 ppb

H.	SO₂	NO₂	NOx	SPM	WD	WS	SUN	NET	ST
1	16	23	64	119	E	27	0	-61	F
2	9	17	27	70	ESE	27	0	-58	F
3	5	14	28	54	NNE	22	0	-57	F
4	8	17	84	100	NNW	25	0	-57	F
5	13	17	107	116	N	20	0	-57	F
6	14	15	119	117	N	22	0	-55	F
7	17	16	114	134	NNE	24	0	-55	F
8	34	20	94	153	NE	22	95	7	D
9	15	13	22	65	ENE	35	290	146	C
10	6	6	9	31	E	41	488	288	C
11	3	3	5	26	E	38	628	390	B
12	4	3	4	26	ENE	30	710	452	B
13	3	6	8	30	NE	26	715	454	B
14	4	8	9	29	NE	29	660	406	B
15	7	17	22	54	N	38	430	245	C
16	4	13	15	43	NNE	32	300	181	C
17	9	26	34	65	NNW	28	210	69	C
18	32	45	66	183	SW	24	32	-51	D
19	46	45	99	258	SW	24	0	-73	F
20	51	42	106	261	WSW	25	0	-68	F
21	79	50	126	275	WSW	20	0	-60	F
22	85	49	140	312	WSW	22	0	-57	F
23	52	37	111	199	WNW	22	0	-59	F
24	47	33	129	217	WNW	21	0	-58	F

② 11 / 17 SO₂ AVE = 21.65 ppb

H.	SO₂	NO₂	NOx	SPM	WD	WS	SUN	NET	ST
1	8	14	29	29	NNW	51	0	-32	D
2	5	12	23	33	NNW	51	0	-34	D
3	3	11	22	22	NNW	45	0	-41	E
4	19	13	27	21	NNW	45	0	48	E
5	****	***	****	***	NW	50	0	***	**
6	****	***	****	***	****	***	0	***	**
7	12	21	47	70	NNW	44	31	12	D
8	14	17	55	60	NNW	44	191	102	C
9	11	18	50	50	NNW	50	364	240	D
10	14	18	43	60	NNW	46	496	340	C
11	26	27	48	70	NNW	40	431	306	C
12	****	***	****	***	NNW	39	592	415	B
13	****	***	****	***	N	31	311	196	C
14	8	22	32	46	N	33	449	312	C
15	23	26	42	89	NW	41	199	125	C
16	48	27	47	80	NW	53	189	116	D
17	27	25	45	70	NNW	52	107	35	D
18	45	27	55	91	NW	48	9	27	D
19	40	24	63	99	NW	45	0	-35	E
20	43	23	61	100	NW	47	0	-30	D
21	40	20	52	72	NW	48	0	-37	E
22	29	19	47	53	NNW	49	0	-43	E
23	12	16	46	48	NNW	38	0	-32	D
24	6	17	38	51	NNW	40	0	-35	E

NO_x

(MS1) ONEB STATION

① 10 / 2 NOx AVE = 175.62 ppb

H.	NOx	SO₂	NO₂	SPM	WD	WS	SUN	NET	ST
1	267	1	23	134	W	22	0	-48	F
2	257	1	20	161	WSW	19	0	-50	F
3	267	1	16	130	W	19	0	-50	F
4	229	1	16	97	NW	21	0	-48	F
5	236	1	14	113	NNW	20	0	-47	F
6	254	0	11	100	WNW	18	0	-48	F
7	310	1	11	135	NNW	14	29	-20	E
8	316	1	16	117	NNW	18	144	90	D
9	228	0	22	75	NNW	19	283	200	C
10	129	0	27	45	NE	20	483	352	B
11	71	1	28	61	ENE	21	496	305	B
12	51	1	29	65	NE	23	486	354	B
13	47	1	27	53	E	29	619	462	B
14	44	1	25	77	SE	26	385	269	D
15	47	0	26	65	NE	22	413	285	B
16	53	0	23	56	ENE	20	244	153	C
17	81	1	41	83	SW	27	105	50	D
18	112	0	55	115	WSW	24	25	-13	D
19	133	1	44	113	SSW	15	0	-43	F
20	180	1	34	201	SW	19	0	-47	F
21	242	1	34	179	WSW	25	0	-39	F
22	238	1	30	83	WSW	24	0	-47	F
23	230	1	26	140	WSW	18	0	-43	F
24	183	1	34	82	WSW	25	0	-47	F

② 10 / 6 NOx AVE = 158.71 ppb

H.	NOx	SO₂	NO₂	SPM	WD	WS	SUN	NET	ST
1	140	3	12	63	SW	36	0	-31	D
2	127	3	13	140	SW	32	0	-28	D
3	137	2	9	101	WSW	25	0	-28	E
4	133	1	8	44	SW	29	0	-35	F
5	132	1	8	36	WSW	29	0	25	E
6	136	1	7	54	WSW	23	0	-30	E
7	191	1	9	72	SW	23	15	-15	E
8	224	1	10	109	WSW	27	83	0	D
9	214	2	12	76	WSW	29	266	178	C
10	167	2	16	48	SW	32	430	315	C
11	153	2	27	65	SW	32	355	255	C
12	125	2	41	75	SW	40	645	485	B
13	198	1	24	42	SW	48	758	562	B
14	188	1	25	63	SSW	39	584	418	B
15	119	2	27	69	SSW	43	481	338	C
16	104	1	24	65	SSW	43	403	277	C
17	142	2	25	106	SSW	40	163	90	C
18	136	2	19	105	SW	44	37	-2	D
19	119	1	14	122	SW	20	0	-28	E
20	196	1	13	184	SW	28	0	-29	E
21	253	1	14	152	SW	30	0	-30	D
22	237	2	14	115	SW	34	0	-36	E
23	225	2	12	215	SW	29	0	36	F
24	213	3	11	141	WSW	29	0	41	F

NO_2

(MS1) ONEB STATION

① 9 / 12 NO₂ AVE = 40.92 ppb

H.	NO₂	SO₂	NOx	SPM	WD	WS	SUN	NET	ST
1	18	8	19	30	SSE	19	0	-46	F
2	13	5	14	31	SSE	16	0	-40	F
3	14	6	14	25	SSE	19	0	-42	F
4	23	7	71	51	W	26	0	-24	E
5	26	7	51	27	W	20	0	-32	E
6	29	4	181	37	WNW	18	0	-31	E
7	25	5	178	87	NNW	14	36	-5	E
8	47	11	222	112	NE	15	245	165	C
9	63	13	105	82	NNE	19	437	317	B
10	62	10	73	68	NNE	19	365	268	B
11	68	11	73	69	NE	19	462	351	B
12	46	18	48	93	ESE	20	335	242	B
13	29	16	31	95	ESE	27	672	509	B
14	18	13	20	119	SSE	35	502	373	C
15	18	11	20	101	ENE	21	326	227	B
16	71	11	81	86	N	32	191	116	C
17	129	71	164	133	NW	27	256	163	C
18	131	63	152	150	ENE	12	68	3	D
19	138	21	158	142	ENE	16	0	-41	F
20	109	12	120	150	SE	23	0	-42	F
21	33	14	39	74	SSE	32	0	-38	E
22	25	15	27	51	SSE	33	0	-40	E
23	22	13	24	42	S	26	0	-43	F
24	17	12	18	34	SSE	26	0	-42	F

② 9 / 10 NO₂ AVE = 48.33 ppb

H.	NO₂	SO₂	NOx	SPM	WD	WS	SUN	NET	ST
1	40	7	225	142	NE	16	0	-50	F
2	41	6	203	113	N	18	0	-50	F
3	38	7	202	142	SSW	12	0	-52	F
4	40	7	221	128	NW	17	0	-32	E
5	32	9	233	126	NNE	18	0	-45	F
6	29	7	171	112	NE	10	0	-48	F
7	33	5	220	136	ESE	11	25	-21	E
8	53	5	124	148	NE	17	170	102	C
9	61	13	93	138	NE	20	393	279	B
10	43	19	52	96	E	17	466	335	B
11	36	17	37	140	ESE	20	404	341	B
12	34	20	35	145	SE	23	555	419	B
13	56	35	60	139	S	20	603	462	B
14	57	33	61	123	S	15	350	251	B
15	42	19	46	99	S	33	68	30	D
16	69	20	101	60	WNW	39	90	35	D
17	94	65	222	101	NW	27	87	36	D
18	76	37	176	102	ENE	23	19	-18	D
19	59	10	99	76	ENE	24	0	-27	E
20	68	6	135	105	ENE	24	0	-29	E
21	59	5	85	111	E	22	0	-33	E
22	39	4	66	92	ESE	25	0	-31	E
23	32	5	42	65	E	27	0	-30	E
24	29	4	62	57	ENE	24	0	-36	F

SPM

(MS1) ONEB STATION

① 1 / 9 SPM AVE = 155.83 μg/m³

H.	SPM	SO₂	NO₂	NOx	WD	WS	SUN	NET	ST
1	162	15	13	74	SSW	21	0	-55	F
2	135	12	13	67	SSW	24	0	-53	F
3	111	15	13	54	SW	21	0	-52	F
4	115	14	11	51	WSW	22	0	-54	F
5	98	11	11	51	W	22	0	-47	F
6	108	9	11	61	WSW	20	0	-50	F
7	139	11	13	94	SW	12	0	-54	F
8	165	16	19	121	WNW	22	67	-7	D
9	130	29	44	101	NNW	27	236	118	C
10	146	25	50	67	N	26	408	242	B
11	170	43	59	68	NNW	20	521	312	B
12	162	16	33	30	N	20	634	386	B
13	97	8	12	12	NE	22	564	394	B
14	133	7	10	10	NE	21	580	327	B
15	106	6	9	9	NE	20	467	250	B
16	120	17	30	30	N	22	297	134	B
17	119	12	34	35	N	29	140	35	D
18	141	33	60	71	NW	33	33	-38	D
19	165	35	65	95	WNW	30	0	-61	E
20	243	26	60	136	W	23	0	-47	F
21	309	34	49	98	SSW	24	0	-46	F
22	267	29	25	29	S	26	0	-46	F
23	205	14	14	16	S	21	0	-45	F
24	194	11	11	11	S	27	0	-51	F

② 10 / 22 SPM AVE = 147.33 μg/m³

H.	SPM	SO₂	NO₂	NOx	WD	WS	SUN	NET	ST
1	100	14	16	61	ENE	19	0	-54	F
2	109	14	17	113	N	13	0	-56	F
3	123	12	17	110	W	19	0	58	F
4	141	12	20	114	WSW	19	0	58	F
5	234	19	20	102	W	21	0	-53	F
6	277	21	20	152	NW	17	0	-57	F
7	310	17	18	222	NW	16	54	-14	E
8	162	17	20	102	NNW	19	236	126	C
9	71	16	21	37	NNW	20	380	240	B
10	58	12	12	16	NNE	23	628	441	B
11	43	7	7	7	NE	23	667	470	B
12	48	5	11	12	NNE	23	637	417	B
13	57	4	7	7	NNE	25	659	466	B
14	68	5	13	16	SE	25	366	236	B
15	72	5	11	12	SE	33	171	97	C
16	140	23	38	53	SSW	34	233	138	C
17	255	48	48	68	SSW	26	112	38	D
18	217	43	37	48	SSW	19	33	-21	D
19	152	25	23	26	SSE	22	0	-50	F
20	183	21	25	28	SSE	20	0	-45	F
21	162	22	26	34	S	19	0	48	F
22	182	28	27	47	S	18	0	36	F
23	194	26	27	80	S	17	0	-38	F
24	170	37	26	75	SSW	18	0	40	F

Table 1-31 (2) Highest 2 Days of Ambinet Pollutant Concentrations at MS2

SO_2

(MS2) POWER PLANT

① 10 / 26 SO_2 AVE = 33.79 ppb

H.	SO_2	NO_2	NO_x	SPM	WD	WS	SUN	NET	ST
1	41	14	34	101	NNW	6	0	-30	F
2	60	16	37	106	SSW	8	0	-34	E
3	53	14	31	81	ENE	7	0	-32	E
4	59	13	34	77	SSW	14	0	-30	F
5	32	12	28	61	SSW	14	0	-48	F
6	25	9	25	59	SW	15	0	-53	F
7	31	10	31	58	WSW	14	38	-25	E
8	38	10	31	78	N	13	214	113	C
9	46	16	39	108	SSW	11	373	239	B
10	39	23	40	127	S	13	608	428	B
11	25	20	34	105	ENE	12	603	470	B
12	12	12	23	77	E	14	357	236	B
13	12	13	27	58	SW	40	35	4	D
14	7	10	24	65	N	16	33	13	D
15	14	14	28	171	NNW	11	127	75	D
16	35	21	39	129	W	10	109	45	D
17	88	36	58	265	NNE	7	54	-6	D
18	55	31	44	282	NNW	6	14	-27	D
19	85	36	65	314	S	11	0	-29	E
20	21	11	25	57	SSW	37	0	-22	D
21	8	11	25	29	SSW	22	0	-30	E
22	7	8	21	34	NW	10	0	-17	E
23	8	11	25	41	N	7	0	-15	E
24	10	12	24	40	SSE	13	0	-15	E

② 10 / 28 SO_2 AVE = 33.32 ppb

H.	SO_2	NO_2	NO_x	SPM	WD	WS	SUN	NET	ST
1	17	13	23	52	****	***	0	-28	**
2	14	13	26	59	****	***	0	-40	**
3	57	16	57	151	****	***	0	-40	**
4	62	15	51	154	****	***	0	-44	**
5	40	19	44	113	****	***	0	-48	**
6	51	16	41	152	****	***	0	-47	**
7	63	17	46	157	****	***	19	-14	**
8	41	17	43	133	****	***	71	32	**
9	23	18	39	103	****	***	300	195	**
10	19	21	39	79	****	***	545	379	**
11	23	19	33	63	****	***	696	504	**
12	21	21	35	93	****	***	218	139	**
13	25	19	32	71	****	***	295	200	**
14	****	****	****	29	****	***	619	428	**
15	****	****	****	****	E	13	206	184	C
16	2	2	7	24	E	12	207	157	C
17	2	1	5	24	ENE	15	134	57	D
18	4	6	10	32	E	11	23	-31	D
19	43	13	19	56	SSW	8	0	-57	F
20	25	16	20	79	NW	5	0	-55	F
21	64	27	37	109	SSW	9	0	-55	F
22	50	28	38	133	NW	5	0	-51	F
23	46	32	57	174	NNW	12	0	-49	F
24	41	36	84	195	NNW	13	0	-58	F

NO_x

(MS2) POWER PLANT

① 11 / 8   NOx AVE = 55.96 ppb

H.	NO_x	SO_2	NO_2	SPM	WD	WS	SUN	NET	ST
1	58	61	34	75	N	14	0	-35	F
2	62	38	39	103	NNE	6	0	-39	F
3	60	36	36	85	N	12	0	-30	E
4	52	27	30	105	NNW	19	0	-29	E
5	59	37	34	184	NNW	19	0	-25	E
6	50	33	30	101	NNW	20	0	-23	E
7	57	35	33	77	NNW	24	5	-14	E
8	59	26	32	77	N	28	69	31	D
9	59	24	32	63	NNW	28	172	100	C
10	51	**	26	57	N	33	250	151	C
11	47	11	22	52	N	34	360	218	C
12	46	11	23	48	N	35	340	199	C
13	42	8	19	47	NNW	36	549	333	C
14	43	6	20	49	N	35	370	213	C
15	44	8	22	58	N	32	212	110	C
16	46	8	24	57	N	27	124	54	D
17	53	6	32	65	NNW	30	54	10	D
18	54	3	32	96	NNW	27	7	-20	D
19	64	6	40	87	NNW	27	0	-32	E
20	74	16	46	102	NNW	23	0	-31	E
21	66	2	41	87	N	24	0	-33	E
22	63	3	40	132	N	17	0	-27	E
23	68	6	40	126	N	12	0	-25	E
24	66	6	37	121	NNE	6	0	-25	E

② 11 / 9   NOx AVE = 51.70 ppb

H.	NO_x	SO_2	NO_2	SPM	WD	WS	SUN	NET	ST
1	58	2	35	86	NNW	13	0	-25	E
2	50	2	28	102	NE	11	0	-27	E
3	45	0	23	77	E	8	0	-28	E
4	42	3	19	72	NNW	14	0	-20	E
5	56	28	32	109	NW	18	0	-20	E
6	56	1	34	94	NNW	26	0	-27	E
7	59	2	34	96	NNW	24	1	-21	E
8	57	3	31	125	NNW	17	80	35	D
9	58	3	32	140	NNW	17	120	62	D
10	63	1	37	109	N	19	204	130	C
11	49	0	25	67	NNE	22	376	255	B
12	46	4	23	61	N	21	481	314	B
13	48	1	24	66	N	23	473	304	B
14	****	****	**	***	N	26	519	326	B
15	21	4	9	47	NNE	25	355	215	B
16	17	4	8	47	N	29	274	152	C
17	26	11	17	57	NNW	25	141	62	D
18	32	20	22	86	NNW	24	14	-25	D
19	44	39	35	85	NNW	25	0	-55	F
20	48	25	37	133	N	12	0	-61	F
21	67	30	38	191	N	13	0	-50	F
22	83	65	38	192	NNW	17	0	-55	F
23	93	66	34	195	N	14	0	-58	F
24	71	31	29	186	N	12	0	-59	F

NO_2

(MS2) POWER PLANT

① 11 / 8 NO_2 AVE = 31.83 ppb

H.	NO_2	SO_2	NO_x	SPM	WD	WS	SUN	NET	ST
1	34	61	58	75	N	14	0	-35	F
2	39	38	62	103	NNE	6	0	-39	F
3	36	36	60	85	N	12	0	-30	E
4	30	27	52	105	NNW	19	0	-29	E
5	34	37	59	184	NNW	19	0	-25	E
6	30	33	50	101	NNW	20	0	-23	E
7	33	35	57	77	NNW	24	5	-14	E
8	32	26	59	77	N	28	69	31	D
9	32	24	59	63	NNW	28	172	100	C
10	26	***	51	57	N	33	250	151	C
11	22	11	47	52	N	34	360	218	C
12	23	11	46	48	N	35	340	199	C
13	19	8	42	47	NNW	36	549	333	C
14	20	6	43	49	N	35	370	213	C
15	22	8	44	58	N	32	212	110	C
16	24	8	46	57	N	27	124	54	D
17	32	6	53	65	NNW	30	54	10	D
18	32	3	54	96	NNW	27	7	-20	D
19	40	6	64	87	NNW	27	0	-32	E
20	46	16	74	102	NNW	23	0	-31	E
21	41	2	66	87	N	24	0	-33	E
22	40	3	63	132	N	17	0	-27	E
23	40	6	68	126	N	12	0	-25	E
24	37	6	66	121	NNE	6	0	-25	E

② 11 / 9 NO_2 AVE = 28.00 ppb

H.	NO_2	SO_2	NO_x	SPM	WD	WS	SUN	NET	ST
1	35	2	58	86	NNW	13	0	-25	E
2	28	2	50	102	NE	11	0	-27	E
3	23	0	45	77	E	8	0	-28	E
4	19	3	42	72	NNW	14	0	-20	E
5	32	28	56	109	NW	18	0	-20	E
6	34	1	56	94	NNW	26	0	-27	E
7	34	2	59	96	NNW	24	1	-21	E
8	31	3	57	125	NNW	17	80	35	D
9	32	3	58	*0	NNW	17	120	62	D
10	37	1	63	109	N	19	204	130	C
11	25	0	49	67	NNE	22	376	255	B
12	23	4	46	61	N	21	481	314	B
13	24	1	48	66	N	23	473	304	B
14	***	****	****	**	N	26	519	326	B
15	9	4	21	47	NNE	25	355	215	B
16	8	4	17	47	N	29	274	152	C
17	17	11	26	57	NNW	25	141	62	D
18	22	20	32	86	NNW	24	14	-25	D
19	35	39	44	85	NNW	25	0	-55	F
20	37	25	48	133	N	12	0	-61	F
21	38	30	67	191	N	13	0	-50	F
22	38	65	83	192	NNW	17	0	-55	F
23	34	66	93	195	N	14	0	-58	F
24	29	31	71	186	N	12	0	-59	F

SPM

(MS2) POWER PLANT

① 9 / 20   SPM AVE = 168.92 μg/m³

H.	SPM	SO_2	NO_2	NO_x	WD	WS	SUN	NET	ST
1	32	14	14	20	WSW	24	0	-13	E
2	28	12	16	21	SW	15	0	-12	E
3	33	11	14	18	E	11	0	-19	E
4	14	9	10	15	SSW	13	0	-21	E
5	7	8	11	15	NNW	13	0	-24	E
6	107	19	20	40	N	18	0	-25	E
7	148	21	18	36	N	17	22	-15	E
8	142	37	19	42	N	18	99	52	D
9	89	27	21	44	N	25	267	212	C
10	78	18	22	31	N	20	454	372	B
11	185	12	22	24	W	16	473	382	B
12	404	9	25	26	S	26	153	101	C
13	232	4	17	17	NNW	24	262	196	C
14	588	3	14	14	E	8	360	277	B
15	514	2	15	16	N	22	158	100	C
16	287	3	19	22	NNW	20	135	85	D
17	870	3	23	30	N	18	90	47	D
18	213	2	23	34	NE	11	49	0	D
19	43	2	21	27	ENE	13	0	-35	F
20	2	3	18	25	ENE	15	0	-31	E
21	0	4	17	27	ESE	15	0	-24	E
22	7	9	17	29	S	23	0	-24	E
23	9	6	15	22	SW	13	0	-30	E
24	22	12	18	23	NNW	13	0	-39	F

② 12 / 25   SPM AVE = 167.42 μg/m³

H.	SPM	SO_2	NO_2	NO_x	WD	WS	SUN	NET	ST
1	226	97	****	****	N	6	0	-60	F
2	205	55	****	****	C	4	0	57	CD
3	226	37	****	****	NNE	6	0	-60	F
4	202	41	****	****	C	1	0	60	CD
5	360	28	****	****	NNE	6	0	-59	F
6	548	20	****	****	N	7	0	-61	F
7	573	11	****	****	N	7	0	57	F
8	367	22	****	****	NNE	8	80	2	D
9	189	37	****	****	NNE	16	200	130	C
10	114	15	****	****	E	13	400	225	B
11	59	5	****	****	ENE	23	606	374	B
12	31	1	****	****	NE	24	704	454	B
13	19	0	****	****	NE	25	684	437	B
14	17	0	****	****	NE	26	606	300	B
15	25	0	****	****	NNE	21	501	294	B
16	20	1	****	****	NE	19	320	143	B
17	35	2	****	****	NE	14	120	4	D
18	60	4	****	****	WSW	6	6	-68	D
19	103	10	****	****	WNW	7	0	-62	F
20	138	26	****	****	NNW	11	0	-44	F
21	152	31	****	****	N	25	0	-53	F
22	168	28	****	****	N	15	0	-67	F
23	73	12	****	****	NNE	18	0	69	F
24	48	8	****	****	NNE	13	0	-62	F

Table 1-31 (3) Highest 2 Days of Ambinet Pollutant Concentrations at MS3

SO_2

(MS3) MIN.DEP.OFFICE

① 7 / 15 SO_2 AVE = 70.70 ppb

H.	SO_2	NO_2	NO_x	SPM	WD	WS	SUN	NET	ST
1	154	5	26	46	SSE	46	0	-27	D
2	116	4	23	44	SSE	42	0	-27	D
3	179	7	30	58	SSE	43	0	-21	D
4	110	3	19	53	SSE	44	0	-36	E
5	137	5	23	53	SSE	46	0	-28	D
6	62	4	15	49	SSE	26	0	-21	E
7	72	2	15	72	SSE	42	18	-3	D
8	21	1	9	72	SE	33	90	47	D
9	18	3	17	29	SE	35	188	132	C
10	12	0	10	29	SE	35	384	282	C
11	19	2	16	43	SE	23	248	178	C
12	****	****	****	****	S	36	164	108	C
13	72	1	13	22	S	45	226	156	C
14	41	0	10	24	S	56	301	215	D
15	86	3	17	32	S	53	286	202	D
16	94	2	15	33	SSE	47	245	170	C
17	59	1	13	39	SSE	43	184	123	C
18	43	1	9	45	SSE	41	108	57	D
19	99	3	17	59	SSE	37	14	-17	D
20	50	2	10	57	SSE	38	0	-29	D
21	71	2	13	46	S	50	0	-28	D
22	42	1	7	39	S	46	0	-27	D
23	46	1	7	24	S	33	0	-25	D
24	23	0	5	43	S	27	0	-26	E

② 1 / 31 SO_2 AVE = 65.63 ppb

H.	SO_2	NO_2	NO_x	SPM	WD	WS	SUN	NET	ST
1	162	29	51	100	S	29	0	-60	F
2	122	21	36	80	S	29	0	-56	F
3	127	23	42	83	SSE	26	0	-59	F
4	157	22	47	86	S	34	0	-60	E
5	98	20	31	81	S	33	0	-60	E
6	128	23	43	95	S	34	0	-56	E
7	180	26	63	86	S	35	0	-55	E
8	149	22	43	74	S	32	83	3	D
9	48	8	13	47	S	40	267	139	C
10	40	8	14	38	S	38	437	262	C
11	17	5	6	31	SSW	35	629	404	B
12	10	3	3	30	SSW	39	568	356	C
13	13	4	4	20	S	35	720	454	B
14	13	2	3	24	SSW	31	770	478	B
15	11	4	5	43	SSW	32	658	394	B
16	13	5	5	74	SSW	33	488	269	C
17	13	4	5	33	S	36	298	130	C
18	11	3	3	28	S	44	84	-13	D
19	12	5	5	35	S	35	0	-71	E
20	41	11	15	38	S	35	0	-66	F
21	96	22	39	60	S	34	0	-65	E
22	47	19	23	130	SSE	28	0	-61	F
23	31	13	16	122	SSE	29	0	-57	F
24	36	15	19	94	SSE	28	0	-55	F

NO_x

(MS3) MIN.DEP.OFFICE

① 12 / 25 NOx AVE = 75.25 ppb

H.	NO_x	SO_2	NO_2	SPM	WD	WS	SUN	NET	ST
1	133	26	26	207	N	6	0	-60	F
2	145	31	27	243	C	4	0	-57	CD
3	147	25	25	224	NNE	6	0	-60	F
4	140	18	25	183	C	1	0	-60	CD
5	121	13	21	155	NNE	6	0	-59	F
6	91	10	18	147	N	7	0	-61	F
7	101	9	17	164	N	7	0	-57	F
8	251	15	41	258	NNE	8	80	2	D
9	150	27	64	159	NNE	16	260	136	C
10	107	45	67	130	E	13	400	225	B
11	37	22	28	87	ENE	23	606	374	B
12	12	9	6	25	NE	24	704	454	B
13	11	7	7	24	NE	25	604	437	B
14	11	7	6	16	NE	26	606	360	B
15	9	1	7	48	NNE	21	501	294	B
16	17	1	11	86	NE	19	320	143	B
17	14	2	10	160	NE	14	120	4	D
18	7	2	5	244	WSW	6	6	-68	D
19	18	5	13	131	WNW	7	0	-62	F
20	32	3	22	180	NNW	11	0	-44	F
21	92	1	44	230	N	25	0	-53	F
22	97	11	45	160	N	15	0	-67	F
23	28	10	21	107	NNE	18	0	-69	F
24	35	10	25	90	NNE	13	0	-62	F

② 12 / 31 NOx AVE = 71.63 ppb

H.	NO_x	SO_2	NO_2	SPM	WD	WS	SUN	NET	ST
1	148	13	35	119	NNE	9	0	-53	F
2	123	17	38	102	NNE	10	0	-44	F
3	110	15	31	90	NNE	12	0	-36	F
4	157	10	23	135	NNE	8	0	-53	F
5	192	11	16	154	N	12	0	-51	F
6	173	10	20	176	N	12	0	-55	F
7	173	11	23	152	N	15	0	-51	F
8	123	12	32	159	N	12	110	13	D
9	47	21	27	65	NE	21	305	153	B
10	22	19	14	43	NNE	27	490	301	B
11	23	8	16	21	NNE	30	640	409	B
12	18	7	12	22	NE	26	730	472	B
13	12	5	6	14	NE	29	760	478	B
14	9	3	4	18	NE	27	712	430	B
15	9	3	5	11	NE	28	620	363	B
16	27	4	18	4	NE	29	460	247	B
17	14	6	6	16	NNE	26	255	96	C
18	47	10	29	37	NNE	17	50	-37	D
19	101	18	50	63	N	17	0	-60	F
20	60	12	35	94	NNE	17	0	-57	F
21	35	12	25	47	NNE	16	0	-60	F
22	27	26	19	36	NNE	18	0	-60	F
23	25	24	18	39	NNE	20	0	-60	F
24	44	13	26	28	N	22	0	-58	F

NO_2

(MS3) MIN.DEP.OFFICE

① 2 / 22 NO_2 AVE = 40.71 ppb

H.	NO_2	SO_2	NO_x	SPM	WD	WS	SUN	NET	ST
1	39	12	53	169	ENE	10	0	-57	F
2	31	37	32	135	NE	6	0	-57	F
3	32	19	35	119	NNE	8	0	-56	F
4	39	17	42	95	N	11	0	-57	F
5	37	15	40	70	NNE	12	0	-58	F
6	45	20	55	117	NNE	12	0	-56	F
7	55	19	106	170	NNE	15	0	-59	F
8	63	24	134	125	NNE	17	90	2	D
9	55	49	83	175	NNE	19	286	148	C
10	22	21	27	70	NE	18	496	308	B
11	21	24	24	60	ENE	21	657	424	B
12	17	19	19	50	ENE	24	767	505	B
13	18	13	21	55	ENE	25	816	533	B
14	13	12	14	51	ENE	22	768	504	B
15	13	14	16	73	ENE	22	653	417	B
16	16	14	20	94	ENE	20	487	288	B
17	19	17	22	93	E	20	292	148	B
18	32	26	38	91	ENE	11	73	-16	D
19	52	19	56	152	NNE	8	0	-58	F
20	75	20	85	250	NNW	8	0	-56	F
21	81	29	117	234	SSW	13	0	-65	F
22	69	27	95	275	WSW	11	0	-61	F
23	60	20	85	208	E	8	0	-59	F
24	73	48	100	312	E	11	0	-62	F

② 12 / 3 NO_2 AVE = 32.67 ppb

H.	NO_2	SO_2	NO_x	SPM	WD	WS	SUN	NET	ST
1	39	11	83	79	N	10	0	-65	F
2	28	7	84	84	N	11	0	-60	F
3	28	11	121	123	NW	10	0	-60	F
4	26	16	110	138	NW	10	0	-62	F
5	26	14	74	114	NNW	16	0	-62	F
6	27	8	44	92	NNW	15	0	-60	F
7	30	12	61	110	NNW	13	13	-45	F
8	37	21	74	146	N	11	158	55	C
9	40	29	60	97	NE	17	355	210	B
10	19	16	26	87	NNE	21	543	343	B
11	14	16	17	59	NE	22	675	442	B
12	15	11	16	62	NE	21	670	454	B
13	23	9	24	71	N	23	701	447	B
14	22	15	28	92	NNE	21	652	396	B
15	17	6	18	59	NNE	16	518	291	B
16	20	5	22	68	NE	12	295	130	B
17	25	9	26	100	ENE	10	103	-2	D
18	32	11	33	100	C	4	8	-67	CC
19	53	10	55	135	N	10	0	-68	F
20	54	10	61	140	NNW	17	0	-67	F
21	57	10	71	164	NNW	20	0	-68	F
22	59	12	87	152	NNW	21	0	-67	F
23	49	12	107	168	NNW	14	0	-67	F
24	44	11	135	149	N	14	0	-64	F

SPM

(MS3) MIN.DEP.OFFICE

① 2 / 23 SPM AVE = 156.92 μg/m³

H.	SPM	SO_2	NO_2	NO_x	WD	WS	SUN	NET	ST
1	333	37	65	82	ENE	13	0	-62	F
2	363	49	38	42	ENE	14	0	-63	F
3	218	79	38	42	NE	6	0	-58	F
4	125	150	44	63	ENE	7	0	-57	F
5	120	30	28	34	ENE	7	0	-56	F
6	145	15	24	33	NNE	5	0	-57	F
7	235	25	39	114	NNE	11	0	-52	F
8	242	28	54	161	NNE	12	91	19	D
9	217	31	77	147	ENE	7	279	157	B
10	249	62	75	106	SE	10	476	308	B
11	91	25	22	25	E	22	645	434	B
12	48	14	9	13	E	24	777	527	B
13	65	13	14	15	E	25	801	540	B
14	58	12	13	14	ESE	18	730	516	B
15	59	9	13	15	SE	15	683	434	B
16	59	8	14	16	S	14	525	311	B
17	80	18	19	21	SSW	21	313	159	B
18	100	12	14	15	SSW	19	67	-24	D
19	105	9	22	23	SW	14	0	-66	F
20	185	13	32	33	SW	15	0	-65	F
21	204	17	31	32	S	20	0	-63	F
22	157	26	27	28	SSW	18	0	-64	F
23	151	25	26	28	S	16	0	-59	F
24	157	52	31	31	SSE	10	0	-57	F

② 9 / 10 SPM AVE = 152.58 μg/m³

H.	SPM	SO_2	NO_2	NO_x	WD	WS	SUN	NET	ST
1	127	41	****	****	NE	8	0	-50	F
2	125	39	****	****	N	8	0	-50	F
3	123	23	****	****	NE	5	0	-52	F
4	154	20	****	****	N	10	0	-32	E
5	173	19	****	****	N	8	0	-45	F
6	189	20	****	****	NNE	5	0	48	F
7	229	25	****	****	N	5	25	-21	E
8	230	33	****	****	***	***	170	102	**
9	231	41	****	****	***	***	393	279	**
10	253	58	****	****	***	***	466	335	**
11	123	49	****	****	ESE	11	464	341	B
12	52	27	****	****	SSW	21	555	419	B
13	62	24	****	****	S	23	603	462	B
14	105	26	****	****	S	26	350	251	B
15	132	27	****	****	SSE	32	68	30	D
16	28	11	****	****	WNW	30	90	-35	D
17	51	5	****	****	NNW	25	87	36	D
18	119	58	****	****	NE	15	19	-18	D
19	224	25	****	****	NNE	15	0	27	E
20	180	13	****	****	NNE	15	0	-29	E
21	262	5	****	****	NE	16	0	-33	E
22	96	0	****	****	NNE	16	0	-31	E
23	147	8	****	****	N	19	0	-30	E
24	241	19	****	****	NNE	16	0	36	F

Table 1-31 (4) Highest 2 Days of Ambinet Pollutant Concentrations at MS4

SO_2

(MS4) S.P.PRO.OFFICE

① 12 / 14 SO₂ AVE = 20.22 ppb

H.	SO₂	NO₂	NOx	SPM	WD	WS	SUN	NET	ST
1	8	66	165	247	NNE	11	0	-70	F
2	9	62	115	163	NNW	16	0	-70	F
3	8	53	101	152	NNW	15	0	-70	F
4	9	49	112	154	NNW	16	0	-68	F
5	14	50	108	150	NNW	26	0	-67	F
6	31	55	170	203	NNW	26	0	-65	F
7	40	62	253	227	NNW	21	13	-51	F
8	60	66	241	269	NNW	18	135	37	D
9	43	91	170	253	N	20	336	184	B
10	12	73	113	164	N	16	512	303	B
11	5	61	85	105	NNE	20	647	398	B
12	3	46	79	92	NE	27	713	443	B
13	3	45	65	80	NE	27	737	449	B
14	****	***	***	80	NNE	21	678	399	B
15	0	43	86	70	NE	25	508	274	B
16	2	54	99	84	NNE	20	355	165	B
17	3	64	98	110	NNE	17	137	15	D
18	4	69	92	175	NW	18	5	-69	D
19	7	85	109	199	NNW	26	0	-78	F
20	14	106	146	208	NNW	32	0	-76	E
21	60	116	206	308	NNW	29	0	-72	F
22	51	111	320	303	NNW	25	0	-70	F
23	47	90	302	242	N	24	0	-65	F
24	32	76	310	220	N	24	0	-65	F

② 10 / 26 SO₂ AVE = 17.58 ppb

H.	SO₂	NO₂	NOx	SPM	WD	WS	SUN	NET	ST
1	18	14	46	137	NNW	6	0	-38	F
2	22	16	50	150	SSW	8	0	-34	E
3	26	8	19	145	ENE	7	0	-32	E
4	20	15	33	109	SSW	14	0	-38	F
5	18	8	24	125	SSW	14	0	-48	F
6	16	6	24	181	SW	15	0	-53	F
7	11	6	16	74	WSW	14	38	-25	E
8	15	7	30	90	N	13	214	113	C
9	20	14	45	101	SSW	11	373	239	B
10	20	27	48	140	S	13	608	428	B
11	18	31	47	170	ENE	12	663	470	B
12	14	31	37	128	E	14	357	230	B
13	7	15	17	***	SW	40	35	4	D
14	7	20	22	82	N	16	33	13	D
15	13	36	54	110	NNW	11	127	75	D
16	15	20	27	126	W	10	109	45	D
17	24	54	94	178	NNE	7	54	-6	D
18	26	62	80	256	NNW	6	14	-27	D
19	39	68	96	241	S	11	0	-29	E
20	26	36	106	128	SSW	37	0	-22	D
21	13	11	33	63	SSW	22	0	-30	E
22	10	11	21	55	NW	10	0	-17	E
23	10	11	15	59	N	7	0	-15	E
24	14	9	12	53	SSE	13	0	-15	E

NO_x

(MS4) S.P.PRO.OFFICE

① 12 / 15 NOx AVE = 180.21 ppb

H.	NOx	SO₂	NO₂	SPM	WD	WS	SUN	NET	ST
1	334	18	71	219	NNW	17	0	-68	F
2	319	18	68	203	NNW	16	0	-69	F
3	247	20	61	157	N	10	0	-65	F
4	193	13	55	143	NNW	15	0	-69	F
5	160	21	54	131	NNW	21	0	-65	F
6	259	29	60	208	N	21	0	-62	F
7	343	21	72	269	NNE	14	7	-54	F
8	424	18	66	262	N	13	149	39	D
9	127	14	69	158	N	17	331	178	B
10	84	7	49	92	NE	23	534	324	B
11	82	4	44	56	NNE	29	673	420	B
12	88	4	54	69	NNE	33	752	476	B
13	79	3	43	67	NNE	31	761	474	B
14	89	1	52	81	NNE	32	697	425	B
15	114	4	54	65	NE	27	576	325	B
16	101	3	55	82	NE	26	384	180	B
17	135	4	88	97	NNE	20	174	39	C
18	139	5	75	128	NE	13	9	-73	D
19	214	10	88	220	N	16	0	-73	F
20	162	8	81	208	N	16	0	-76	F
21	201	10	86	184	NNE	21	0	-81	F
22	253	7	72	199	NNE	18	0	-74	F
23	208	7	69	141	NNE	17	0	-78	F
24	170	7	56	118	N	27	0	-77	F

② 10 / 20 NOx AVE = 159.21 ppb

H.	NOx	SO₂	NO₂	SPM	WD	WS	SUN	NET	ST
1	285	23	56	287	NNW	10	0	-58	F
2	324	16	52	292	N	5	0	-60	F
3	310	9	38	285	C	3	0	-59	(D
4	312	7	36	228	C	4	0	56	(D
5	297	9	35	232	C	4	0	54	(D
6	306	9	37	262	C	3	0	51	(D
7	198	8	31	187	NE	11	22	24	E
8	91	3	27	77	NE	30	188	82	C
9	77	1	21	63	NE	33	392	253	C
10	70	1	17	46	NE	33	592	400	B
11	70	0	18	65	ENE	36	729	508	B
12	73	0	21	30	NE	28	805	563	B
13	73	0	23	31	ENE	29	810	550	B
14	73	0	22	130	ENE	23	744	500	B
15	79	0	25	55	NE	25	611	395	B
16	77	0	25	77	NE	22	415	249	B
17	87	1	36	90	****	***	169	65	**
18	111	3	44	101	****	***	20	47	**
19	165	6	54	160	****	***	0	-47	**
20	106	7	51	201	****	***	0	-62	**
21	207	9	53	269	****	***	0	60	**
22	157	7	41	151	****	***	0	-58	**
23	111	4	36	103	****	***	0	58	**
24	102	4	34	121	****	***	0	59	**

NO_2

(MS4) S.P.PRO.OFFICE

① 12 / 14 NO₂ AVE = 69.26 ppb

H.	NO₂	SO₂	NOx	SPM	WD	WS	SUN	NET	ST
1	66	8	165	247	NNE	11	0	-70	F
2	62	9	115	163	NNW	16	0	-70	F
3	53	8	101	152	NNW	15	0	-70	F
4	49	9	112	154	NNW	16	0	-68	F
5	50	14	108	150	NNW	26	0	-67	F
6	55	31	170	203	NNW	26	0	-65	F
7	62	40	253	227	NNW	21	13	-51	F
8	66	60	241	269	NNW	18	135	37	D
9	91	43	170	253	N	20	336	184	B
10	73	12	113	164	N	16	512	303	B
11	61	5	85	105	NNE	20	647	398	B
12	46	3	79	92	NE	27	713	443	B
13	45	3	65	80	NE	27	737	449	B
14	****	***	***	80	NNE	21	678	399	B
15	43	0	86	70	NE	25	508	274	B
16	54	2	99	84	NNE	20	355	165	B
17	64	3	98	110	NNE	17	137	15	D
18	69	4	92	175	NW	18	5	-69	D
19	85	7	109	199	NNW	26	0	-78	F
20	106	14	146	208	NNW	32	0	-76	E
21	116	60	206	308	NNW	29	0	-72	F
22	111	51	320	303	NNW	25	0	-70	F
23	90	47	302	242	N	24	0	-65	F
24	76	32	310	220	N	24	0	-65	F

② 12 / 13 NO₂ AVE = 65.52 ppb

H.	NO₂	SO₂	NOx	SPM	WD	WS	SUN	NET	ST
1	51	8	69	117	N	17	0	-64	F
2	58	19	87	132	NNW	19	0	-73	F
3	62	21	112	131	NNW	18	0	-76	F
4	59	18	78	116	NNW	23	0	-79	F
5	55	15	72	110	N	33	0	-74	F
6	56	8	104	115	N	33	0	-75	F
7	61	13	181	181	N	21	7	-65	F
8	54	10	149	201	N	18	147	32	D
9	50	7	73	154	NE	17	339	173	B
10	46	5	71	104	NE	19	510	308	B
11	44	3	72	76	NE	15	656	398	B
12	40	2	66	84	NNE	20	708	430	B
13	***	****	***	44	ENE	23	729	437	B
14	41	2	64	73	NNE	21	652	370	B
15	47	1	73	77	NNE	23	506	266	B
16	53	4	91	77	NNE	20	352	157	B
17	68	2	94	106	N	16	157	23	C
18	63	4	86	170	NNW	12	14	-71	D
19	85	13	125	226	NW	13	0	-74	F
20	95	17	138	213	NNW	20	0	-77	F
21	124	40	254	327	NNW	19	0	-77	F
22	130	29	237	287	N	17	0	-71	F
23	90	15	235	251	N	19	0	-71	F
24	75	9	212	246	N	13	0	-71	F

SPM

(MS4) S.P.PRO.OFFICE

① 11 / 6 SPM AVE = 200.67 μg/m³

H.	SPM	SO₂	NO₂	NO₂	WD	WS	SUN	NET	ST
1	224	18	****	****	NNW	15	0	-66	F
2	216	10	****	****	NNW	15	0	-65	F
3	164	9	****	****	N	17	0	-67	F
4	195	13	****	****	N	18	0	-68	F
5	144	9	****	****	N	19	0	-66	F
6	143	6	****	****	N	17	0	-65	F
7	117	6	****	****	N	19	47	-38	F
8	125	6	****	****	N	28	216	77	C
9	73	5	****	****	NNE	21	431	226	B
10	68	5	****	****	NNE	21	610	341	B
11	84	6	****	****	N	23	711	415	B
12	133	8	****	****	N	27	766	442	B
13	157	8	****	****	N	26	771	431	B
14	180	6	****	****	NNW	29	682	365	B
15	244	9	****	****	NNW	30	522	256	C
16	284	10	****	****	NNW	29	312	125	B
17	223	10	****	****	NNW	30	113	-10	D
18	302	12	****	****	NNW	22	12	-85	D
19	349	12	****	****	N	18	0	-78	F
20	312	17	****	****	NNW	18	0	-72	F
21	263	14	****	****	NNW	22	0	-73	F
22	298	13	****	****	N	23	0	-70	F
23	250	12	****	****	NNW	17	0	-71	F
24	268	16	****	****	NNW	16	0	-67	F

② 12 / 25 SPM AVE = 193.50 μg/m³

H.	SPM	SO₂	NO₂	NOx	WD	WS	SUN	NET	ST
1	283	16	40	86	N	6	0	-60	F
2	429	19	40	142	C	4	0	-57	(D
3	417	14	29	186	NNE	6	0	-60	F
4	403	9	33	195	C	1	0	-60	(D
5	375	5	36	168	NNE	6	0	-59	F
6	383	6	32	235	N	7	0	-61	F
7	343	5	31	281	N	7	0	57	F
8	269	4	36	211	NNE	8	80	2	D
9	232	6	41	92	NNE	16	200	136	C
10	97	7	36	55	E	13	400	225	B
11	57	14	42	60	ENE	23	606	374	B
12	34	15	41	58	NE	24	704	454	B
13	41	9	26	39	NE	25	684	437	B
14	37	5	23	34	NE	26	606	360	B
15	31	5	23	35	NNE	21	501	294	B
16	45	5	29	42	NE	19	320	143	B
17	60	6	36	53	NE	14	120	4	D
18	91	7	57	85	WSW	6	6	-68	D
19	195	11	59	138	WNW	7	0	-62	F
20	207	12	67	128	NNW	11	0	-44	F
21	213	16	52	113	N	25	0	-53	F
22	180	16	56	117	N	15	0	-67	F
23	126	10	34	64	NNE	18	0	-69	F
24	96	6	29	50	NNE	13	0	-62	F

Table 1-31 (5) Highest 2 Days of Ambinet Pollutant Concentrations at MS5

SO_2

(MS5) H.& I.ESTATE

① 7 / 7 SO_2 AVE = 20.63 ppb

H.	SO_2	NO_2	NO_x	SPM	WD	WS	SUN	NET	ST
1	20	2	2	13	WSW	8	0	-50	F
2	21	3	3	14	W	6	0	-52	F
3	23	7	7	19	WNW	12	0	-51	F
4	28	15	25	76	NW	8	0	-56	F
5	27	11	24	73	W	12	0	-57	F
6	22	12	14	58	SE	11	0	-52	F
7	19	10	12	32	E	8	84	-2	C
8	23	10	11	60	N	6	293	190	B
9	27	13	15	38	W	13	481	348	B
10	24	15	15	46	WNW	10	654	483	B
11	23	11	11	66	SW	12	770	575	B
12	20	9	9	59	SW	16	836	621	B
13	21	4	4	32	SW	25	811	595	B
14	21	3	3	33	SW	27	839	606	B
15	17	2	2	27	SSW	36	734	518	B
16	17	3	3	11	SSW	36	625	425	B
17	17	5	5	11	SSW	34	423	261	C
18	17	4	4	11	S	25	219	99	C
19	16	5	5	12	S	18	31	-32	E
20	15	5	5	23	S	20	0	-50	F
21	18	6	6	19	S	13	0	-56	F
22	19	7	7	17	S	10	0	-57	F
23	19	7	7	42	S	12	0	-52	F
24	21	7	7	23	S	14	0	-52	F

② 7 / 8 SO_2 AVE = 16.33 ppb

H.	SO_2	NO_2	NO_x	SPM	WD	WS	SUN	NET	ST
1	19	3	3	20	S	18	0	44	F
2	19	3	3	16	SSW	17	0	-17	F
3	19	2	2	13	SSW	9	0	-36	F
4	17	5	5	8	W	16	0	-37	F
5	17	11	11	26	W	14	0	-52	F
6	18	9	9	52	WNW	10	0	-52	F
7	21	9	9	88	W	13	51	-20	E
8	24	9	9	66	W	17	255	153	C
9	24	11	17	52	W	25	460	333	B
10	26	14	22	34	WSW	22	558	406	B
11	23	11	12	42	WSW	19	598	434	B
12	20	9	9	48	SW	20	891	660	B
13	18	6	6	35	SW	23	915	671	B
14	16	4	4	36	SW	20	804	641	B
15	17	4	4	26	SW	20	781	544	B
16	***	2	7	26	SSW	31	621	421	B
17	***	2	15	29	S	28	434	270	B
18	6	4	7	26	SE	20	113	30	D
19	10	9	11	22	SSE	14	35	-24	E
20	8	8	10	21	SSE	12	0	-52	F
21	4	4	6	11	SE	11	0	-52	F
22	10	6	8	16	SE	15	0	-44	F
23	7	3	5	13	S	19	0	-29	E
24	***	3	4	1	W	40	0	28	B

NO_x

(MS5) H.& I.ESTATE

① 9 / 2 NOx AVE = 36.17 ppb

H.	NO_x	SO_2	NO_2	SPM	WD	WS	SUN	NET	ST
1	63	4	13	122	WNW	5	0	-46	F
2	111	4	19	125	C	2	0	-44	CD
3	112	4	17	141	E	5	0	-45	F
4	98	4	11	131	NE	5	0	-40	F
5	105	5	13	117	NNE	7	0	-41	F
6	42	6	12	62	NNE	7	0	-39	F
7	34	3	12	85	NNE	10	43	-8	E
8	32	1	12	114	NNW	12	209	124	C
9	34	0	15	136	NW	9	373	265	B
10	32	6	18	70	NNW	8	554	412	B
11	***	**	**	***	N	10	766	586	B
12	34	3	26	93	N	10	890	680	B
13	21	0	17	118	SE	10	810	618	B
14	12	2	9	105	S	14	612	462	B
15	11	5	7	84	SW	22	533	399	B
16	9	4	6	91	SSW	22	481	342	B
17	9	5	4	77	SSW	20	338	214	B
18	6	1	3	80	SSW	20	95	15	D
19	7	0	4	82	SSE	14	5	-54	F
20	14	20	7	250	SSE	12	0	-55	F
21	16	1	9	40	S	17	0	-54	F
22	14	0	9	29	S	16	0	-53	F
23	7	0	3	27	S	15	0	-63	F
24	9	0	5	14	S	12	0	-58	F

② 9 / 10 NOx AVE = 35.48 ppb

H.	NO_x	SO_2	NO_2	SPM	WD	WS	SUN	NET	ST
1	81	10	30	124	N	5	0	-50	F
2	84	8	27	110	NE	7	0	-50	F
3	71	7	28	98	ESE	7	0	-52	F
4	58	9	24	82	C	4	0	-32	CC
5	82	10	24	106	C	4	0	-45	CD
6	81	11	23	112	C	3	0	-48	CD
7	85	10	22	115	C	4	25	-21	CC
8	69	7	27	127	NNE	10	170	102	C
9	20	5	13	75	NNE	15	393	279	B
10	**	3	***	23	ENE	9	466	335	B
11	9	4	6	28	NW	7	464	341	B
12	7	3	2	29	W	10	555	419	B
13	8	1	3	22	WSW	14	603	402	B
14	10	1	5	53	SSW	21	350	251	B
15	10	2	5	58	S	22	68	30	D
16	11	1	5	28	S	19	90	35	D
17	8	0	4	31	SSE	17	87	36	D
18	12	0	8	40	ESE	13	19	18	D
19	14	1	9	39	ESE	14	0	-27	E
20	17	7	12	47	E	11	0	-29	E
21	20	3	19	70	E	13	0	-33	E
22	20	2	12	46	E	19	0	-31	E
23	15	3	8	33	E	11	0	-30	E
24	16	3	10	38	E	11	0	-36	F

NO_2

(MS5) H.& I.ESTATE

① 12 / 27 NO_2 AVE = 15.06 ppb

H.	NO_2	SO_2	NO_x	SPM	WD	WS	SUN	NET	ST
1	19	1	21	111	NE	11	0	-73	F
2	****	****	***	***	NNE	12	0	-72	F
3	15	0	15	76	NE	11	0	-72	F
4	11	0	11	58	ENE	15	0	-70	F
5	9	0	9	69	ENE	15	0	-72	F
6	11	1	11	67	ENE	12	0	-74	F
7	19	1	19	94	ENE	11	14	-57	F
8	13	1	13	74	ENE	21	172	49	C
9	9	1	9	70	ENE	27	178	195	B
10	7	0	7	69	ENE	28	550	317	B
11	5	0	5	58	NE	35	670	398	B
12	****	****	***	***	NNE	33	735	439	B
13	3	0	4	56	NNE	31	720	424	B
14	5	0	6	62	NNE	25	655	365	B
15	5	0	7	63	N	24	503	262	B
16	4	0	4	68	N	15	245	81	C
17	5	0	5	68	NNW	13	115	-4	D
18	13	1	13	81	NW	14	5	-74	D
19	33	19	35	127	WNW	16	0	***	**
20	28	9	29	138	NW	18	0	***	**
21	37	5	38	142	NW	14	0	***	**
22	38	9	42	197	N	9	0	***	**
23	34	7	49	191	NNE	12	0	***	**
24	26	4	29	161	NNE	10	0	***	**

② 10 / 3 NO_2 AVE = 15.35 ppb

H.	NO_2	SO_2	NO_x	SPM	WD	WS	SUN	NET	ST
1	12	1	12	111	W	10	0	-45	F
2	7	1	7	100	W	8	0	-44	F
3	9	2	9	60	WSW	5	0	-44	F
4	11	2	11	75	WNW	13	0	-44	F
5	10	5	10	45	WNW	14	0	-45	F
6	19	7	12	37	W	10	0	-43	F
7	16	1	22	38	WNW	14	33	-9	E
8	16	2	30	47	W	8	158	89	B
9	21	6	33	67	W	9	356	261	B
10	20	7	24	82	NW	12	570	422	B
11	**	9	**	85	N	11	712	533	B
12	28	4	28	105	NE	9	725	545	A
13	23	1	23	91	ESE	12	767	579	B
14	21	1	21	105	ESE	8	525	370	B
15	13	1	13	67	SW	13	559	398	B
16	9	0	9	37	SSW	29	450	311	B
17	9	0	9	48	SSW	25	101	82	C
18	10	0	10	38	S	15	55	3	D
19	13	0	13	44	SSE	8	0	-44	F
20	23	0	23	44	ESE	6	0	-36	F
21	17	0	17	39	NE	9	0	34	E
22	21	0	21	41	SE	5	0	-21	E
23	18	0	18	50	SW	20	0	-25	E
24	7	0	7	46	SSW	22	0	-29	E

SPM

(MS5) H.& I.ESTATE

① 2 / 23 SPM AVE = 119.30 μg/m³

H.	SPM	SO_2	NO_2	NO_x	WD	WS	SUN	NET	ST
1	78	2	10	10	NNE	19	0	-62	F
2	95	3	16	16	NE	12	0	-63	F
3	135	5	28	36	ENE	11	0	-58	F
4	131	6	28	34	E	12	0	-57	F
5	153	12	28	38	E	8	0	-56	F
6	156	3	16	17	ESE	12	0	-57	F
7	169	3	17	38	ENE	8	0	-52	F
8	214	5	21	54	N	9	91	19	D
9	182	4	18	27	NNE	12	279	157	C
10	153	3	10	11	NNE	16	476	308	B
11	****	**	6	6	ENE	25	645	434	B
12	48	2	4	4	NE	31	777	527	B
13	56	2	3	3	ENE	34	801	540	B
14	52	1	3	3	NE	24	780	516	B
15	41	1	2	2	NE	24	683	434	B
16	49	1	2	2	N	17	525	311	B
17	94	3	3	3	W	16	313	159	B
18	170	6	6	6	SW	14	67	-24	D
19	179	6	7	7	SSW	22	0	-66	F
20	110	2	5	5	SSW	14	0	-65	F
21	100	1	3	3	SSW	16	0	-63	F
22	102	1	3	3	SSW	14	0	-64	F
23	130	0	3	3	SSW	11	0	-59	F
24	147	1	2	2	SSE	8	0	-57	F

② 10 / 2 SPM AVE = 113.71 μg/m³

H.	SPM	SO_2	NO_2	NO_x	WD	WS	SUN	NET	ST
1	295	13	35	58	WNW	6	0	-48	F
2	241	15	32	47	W	7	0	-50	F
3	244	25	32	62	NW	12	0	-50	F
4	199	15	36	127	NNW	8	0	-48	F
5	150	3	35	118	NNW	9	0	-47	F
6	89	1	29	40	C	2	0	-48	CD
7	101	1	25	44	N	6	29	-20	E
8	****	****	****	***	N	11	144	90	D
9	70	2	16	17	NNE	12	283	200	C
10	69	0	3	3	NE	16	483	352	B
11	63	0	1	1	NE	16	496	365	B
12	70	0	1	1	NNE	14	486	354	B
13	68	0	0	0	N	13	619	462	B
14	65	0	0	0	N	17	385	269	B
15	62	0	0	0	NNE	20	413	285	B
16	****	****	****	***	N	13	244	153	C
17	70	0	0	0	N	17	105	50	D
18	****	****	****	***	ENE	11	25	-13	D
19	68	0	12	12	E	10	0	-43	F
20	82	2	17	22	C	4	0	-47	CD
21	94	1	16	19	W	5	0	-39	F
22	100	0	7	7	WSW	8	0	-47	F
23	85	1	12	12	W	8	0	-43	F
24	103	0	10	10	W	7	0	-47	F

2. Data Analysis of the Short Term Field Surveys

The short term field surveys were carried out in January, March and July 1988. In these terms, the size distribution of TPM were measured by Andersen sampler at five monitoring stations. Using these data, analysis of TSP concentration for the varying ranks of particles size was conducted. At the same time, data measured by continuous and automatic monitoring instruments during each short term field survey were subject to analytical study.

2.1 Analysis of Ambient Pollutant Concentration

2.1.1 TSP Concentration by Ranks of Particle Size

The size distribution of TSP measured by Andersen samplers are shown in Table 2-1. The concentration of TPM divided into coarse particles (over 2.1 μm) and fine particles (under 2.1 μm) are shown in Fig. 2-1. From those results, the appearance of relatively high concentration is commonly seen at every station in the 1st survey period. This trend is seen especially at MS1, MS3 and MS4.

Table 2-1 Particulate Size Distribution Measured by Andersen Sampler

(unit μg/m³)

Particulate size			1st survey					2nd survey					3rd survey				
Classify	Stage	Rank(μm)	MS 1	MS 2	MS 3	MS 4	MS 5	MS 1	MS 2	MS 3	MS 4	MS 5	MS 1	MS 2	MS 3	MS 4	MS 5
Coarse	0	> 11 μm	7.0	6.2	8.0	15.1	9.5	6.4	3.1	5.5	9.9	3.9	5.3	2.9	3.8	9.8	7.5
	1	11.0 - 7.0	5.9	5.0	3.3	7.9	7.4	3.8	3.7	3.6	4.9	2.3	4.3	2.1	3.2	5.0	3.4
	2	7.0 - 4.7	10.6	8.2	6.9	8.6	11.9	6.0	5.6	6.5	6.6	4.2	7.1	3.9	5.5	7.4	5.7
	3	4.7 - 3.3	10.0	8.2	12.6	9.5	10.5	5.1	5.0	6.2	5.3	3.5	7.4	4.6	5.7	6.7	5.4
	4	3.3 - 2.1	7.4	6.6	8.8	6.8	5.8	3.2	3.3	1.8	2.7	2.3	7.0	4.7	5.8	5.4	4.0
	Sub total		40.9	34.4	39.6	47.9	45.1	24.5	20.6	23.6	29.4	16.0	31.1	18.2	24.0	34.3	26.0
Fine	5	2.1 - 1.1	7.0	6.5	9.2	6.0	3.8	1.5	2.2	4.4	1.3	0.9	4.8	3.1	4.5	3.6	1.9
	6	1.1 - 0.65	7.7	8.1	13.5	7.2	6.1	1.8	3.4	5.4	2.4	1.4	3.0	2.3	4.6	3.1	0.9
	7	0.65 - 0.43	7.5	6.0	17.8	4.9	5.1	3.7	6.1	5.2	3.1	3.4	2.6	2.7	3.8	2.3	1.2
	8	< 0.43 μm	16.6	15.6	17.8	16.6	12.5	6.6	9.0	11.9	7.8	6.5	12.7	6.4	10.8	10.5	4.0
	Sub total		38.8	36.2	58.4	34.7	27.4	13.6	20.7	26.9	14.6	12.2	23.0	14.5	23.7	19.5	7.9
Total			79.7	70.6	98.0	82.6	72.5	38.1	41.3	50.5	44.0	28.2	54.1	32.7	47.7	53.8	33.9

The particulate matter in the ambient air has its origin in various sources as shown Table 2-2. The sources of particulate matter are numerous such as the natural background sources (soil, sea salt, etc.), the man-made sources (factories, automobiles, etc.) and the secondary particulates which are produced from the gaseous substances in the ambient air by physicochemical reactions. The size of the particulate matter suspended in the ambient air broadly distributed as shown in Fig. 2-2 having different originating sources.

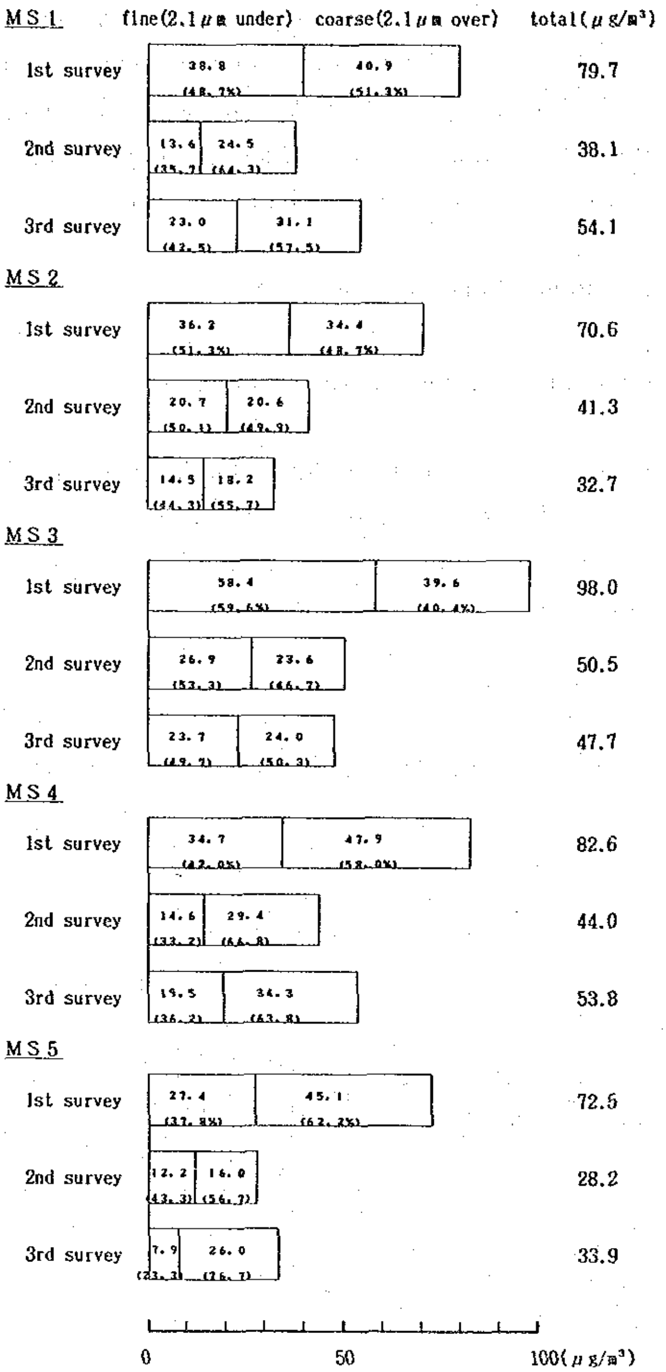

Fig. 2-1 Seasonal Variations of the Concentration of Total Suspended Particulate by Particulate Size

Table 2-2 Classification of Particulate Matter by Emission Sources

Direct source source ↓ aerosol	Natural source	Sea (sea salt particle) Ground surface (wind dust) Universe (meteoric dust) Forest fire (burnt substances) Volcanic eruption (volcanic ash)
	Man-made source	Farming (wind dust, slash & burn agriculture) Combustion (ash, smoke) Urban & industrial activities (particulate matter, smoke) Transportation (emission gas, soil stirred up)
Indirect source source ↓ gas ↓ aerosol	Natural source	Botanic activities (terpane) Sulpher cycle (botanic life, H_2S, etc.) Nitrogen cycle (botanic life, NH_3, etc.) Volcanic gas (SO_2, H_2S, etc.)
	Man-made source	Sulpher compounds (SO_x) Nitrogen compounds (NO_x) Hydrocarbon (emission gas, solvents)

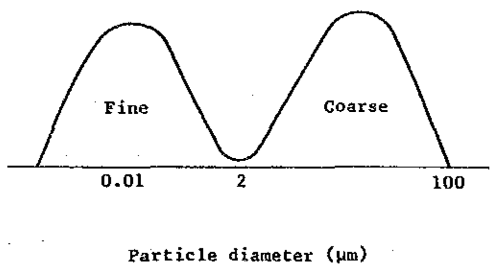

Fig. 2-2 Size Distribution of Particulate Matter in the Ambient Air

In the figure, there are two peaks. The trend is generally seen in the ambient air. The coarse particles of over 2 microns are originated from the primary particles of natural background (sea salt, soil, volcanic ash, etc.) and man-made sources (airborne soil dust by car and dust originating from material pulverizing). The fine particles smaller than 2 microns are generally composed of primary particles from man-made sources (dust produced by combustion, fumes from metal smelting processes and emitted gas from automobiles, etc.) and secondary particles physicochemically reacted in the ambient air (SO_4^{2-}, NO_3^-, etc.).

The weight percentage of coarse particles in MS5 was found to be always high. We understood from the above mentioned that this is probably due to the reason that this monitoring station is surrounded by non-paved roads and the area MS5 is located in a savanna. We will describe later in this report the relationship between emission sources of particulate matter and their contribution rates on concentrations of particulate matter by knowing chemical components data of particulate matter.

2.1.2 Particle Size Distribution of Total Suspended Particulate

The cumulative concentration curve and size distribution curve were developed from the measurement data (shown in Table 2-1) that was collected by Andersen samplers. To develop the former, observed cumulative concentrations were plotted with respect to the uppermost particle size of each stage and then the concentration profile between neighboring two plots were divided into five parts, the values for which were approximated by interpolation using a best fit line, the cubic polynominal equation to cover four measured points. As for size range at both sides, less than 0.43 microns and larger than 11 microns, one of the neighboring four points is missing and thus prior to develop the regressional best fit line (of the third power), one point was added in such way that its gradient is zero. The gradient of the third order equation was approximated by taking the first derivative at every plotted point, as shown in Fig. 2-3 (left).

The cumulative concentration distribution curve and size distribution curve developed are shown in Fig. 2-3. The curves shows two peaks around 0.4 and 4 microns and a dimple around 1 micron size. The distribution profile was found identical and complies with measurement results by Whithy[10] or other researchers in Japan.

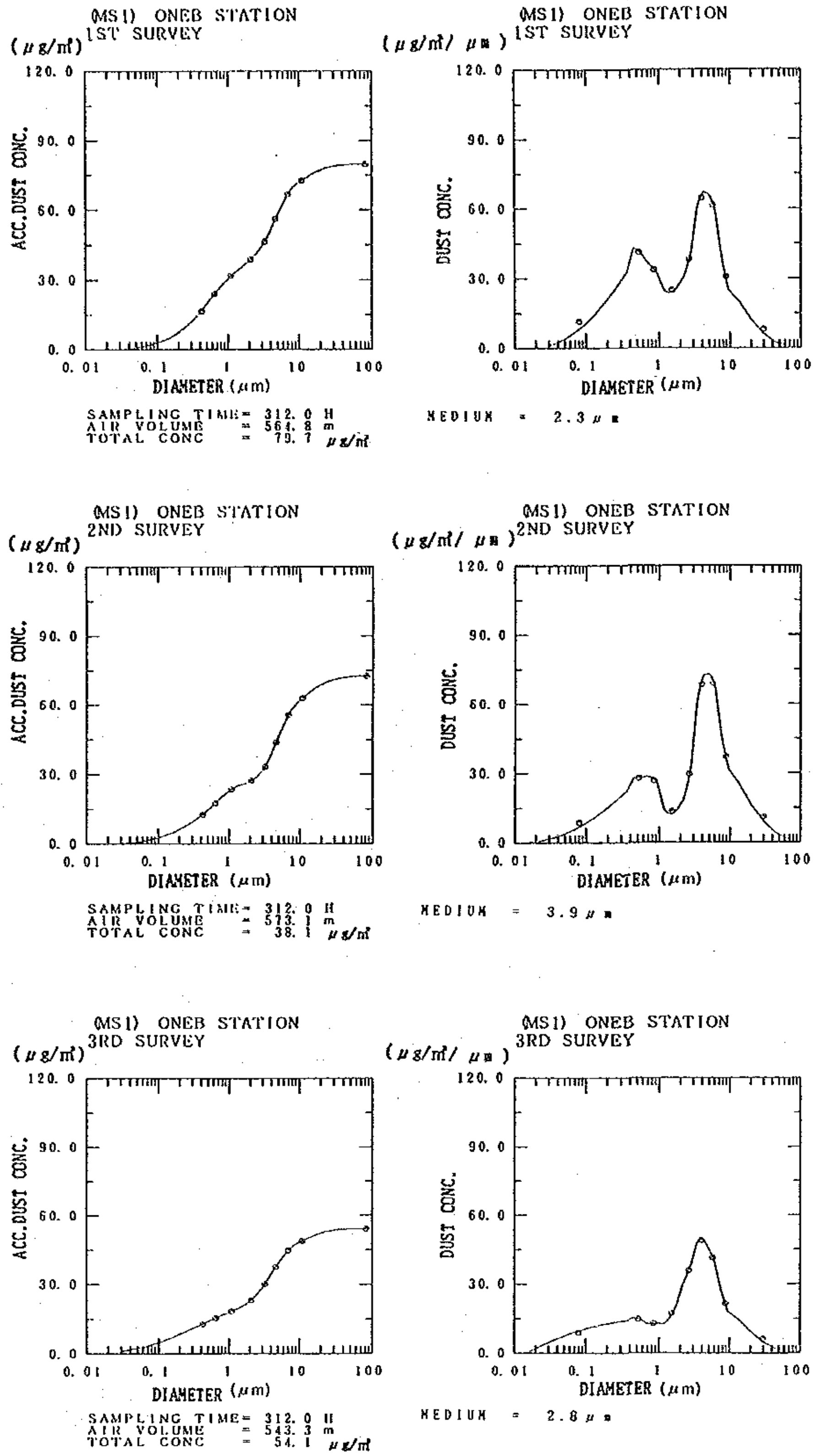

Fig. 2-3(1) Cumulative Concentration and Size Distribution of TSP Measured by Andersen Sampler (MS1)

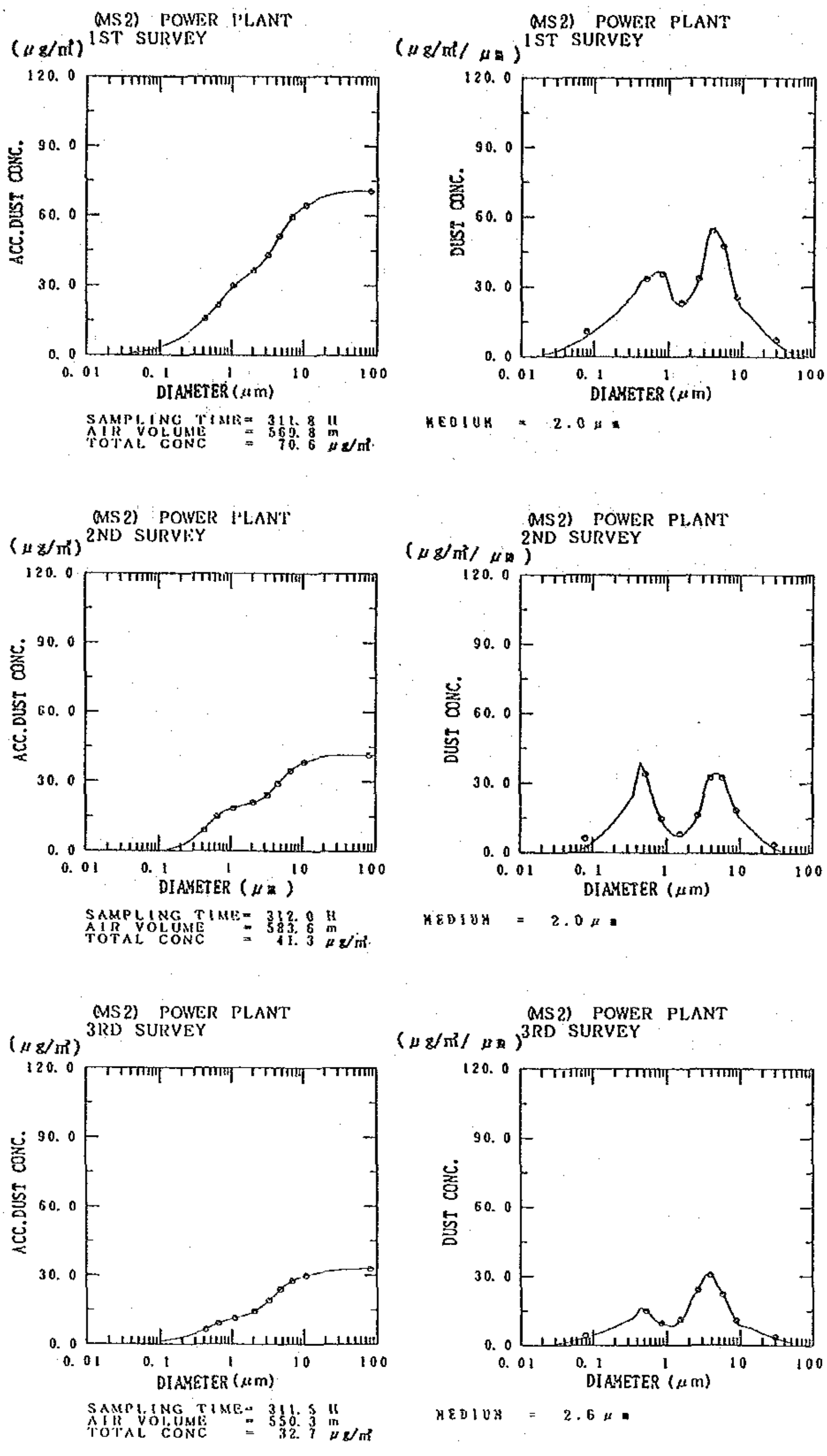

Fig. 2-3(2) Cumulative Concentration and Size Distribution of TSP Measured by Andersen Sampler (MS2)

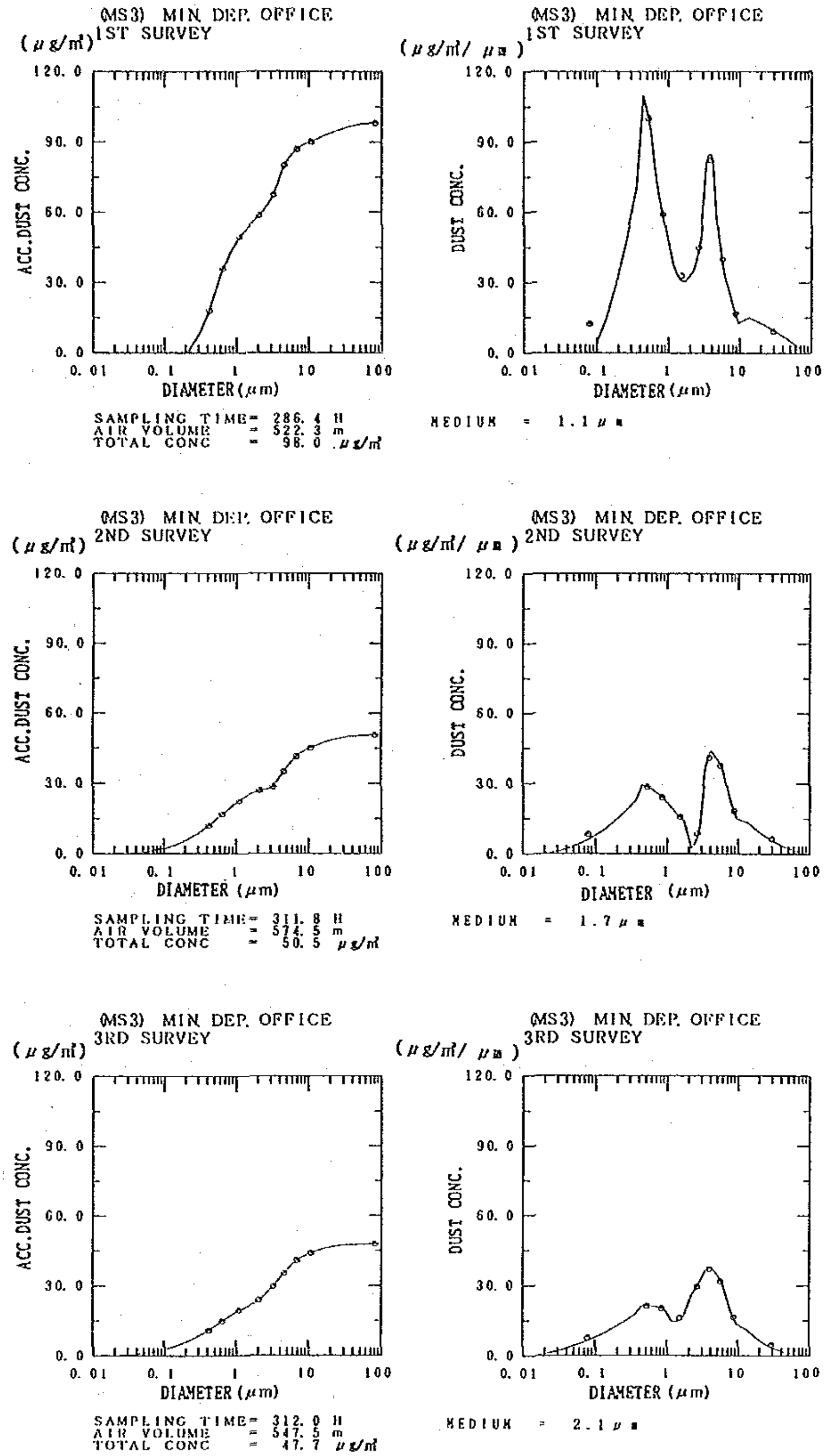

Fig. 2-3(3) Cumulative Concentration and Size Distribution of TSP Measured by Andersen Sampler (MS3)

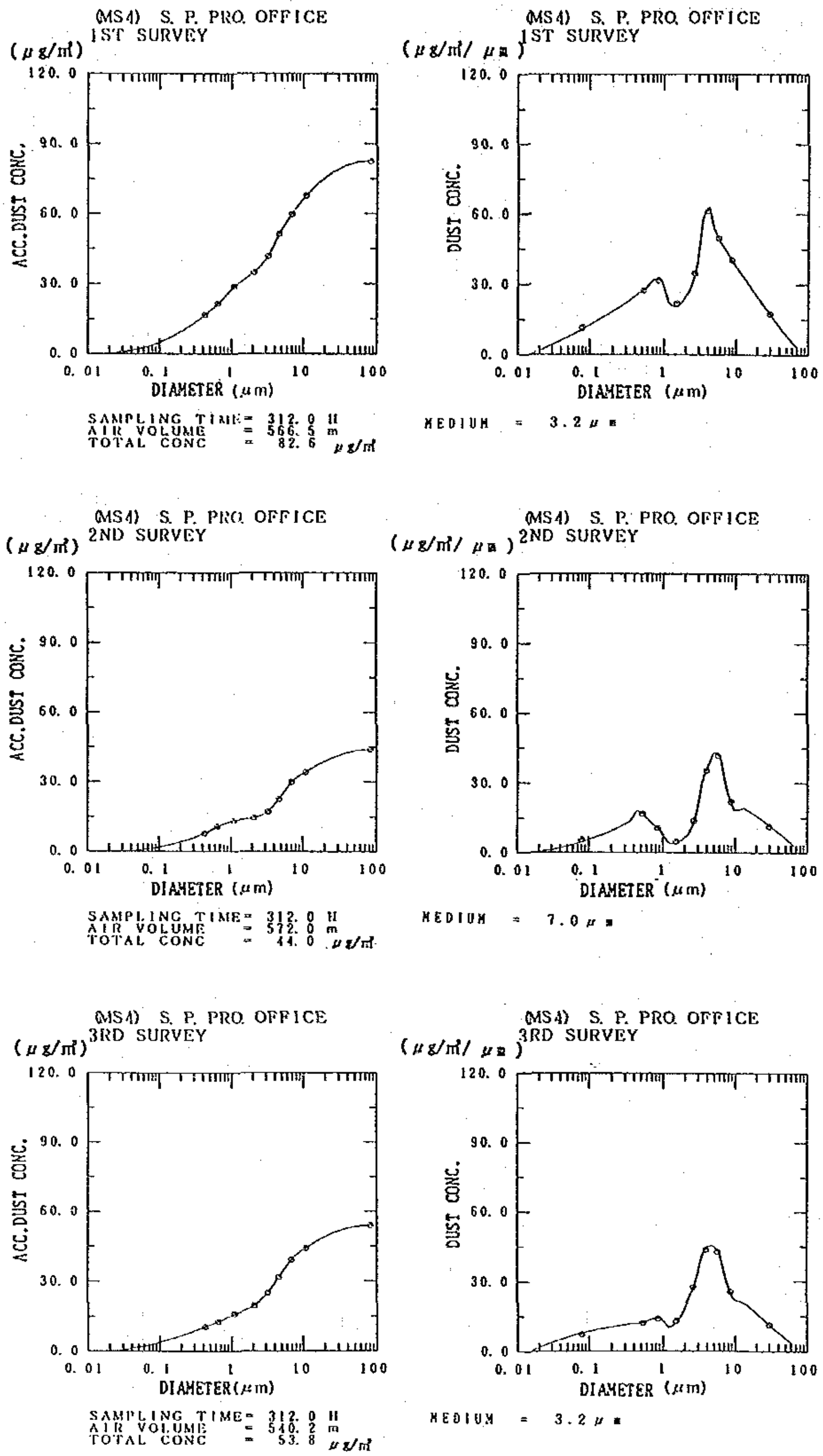

Fig. 2-3(4) Cumulative Concentration and Size Distribution of TSP Measured by Andersen Sampler (MS4)

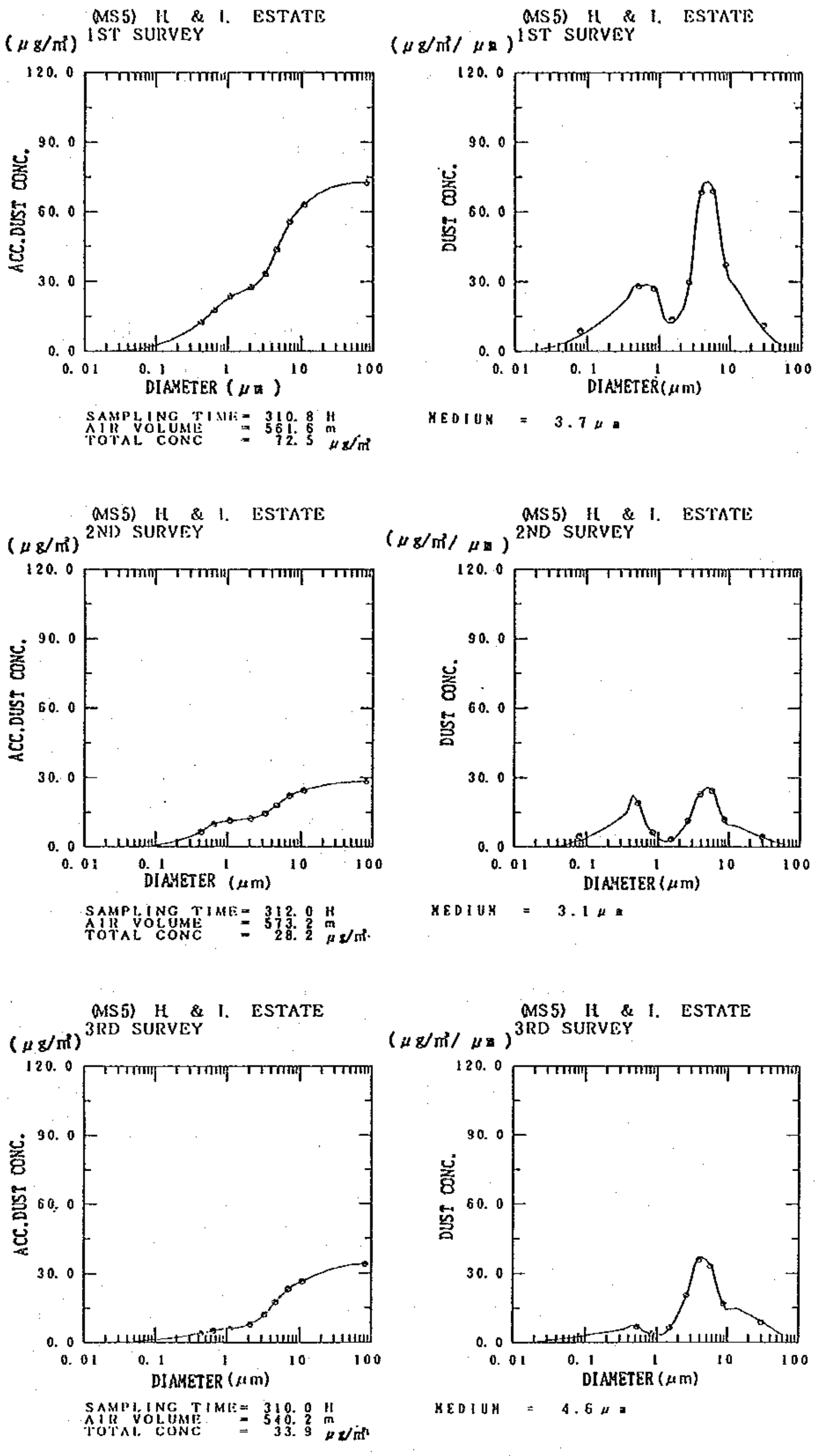

Fig. 2-3(5) Cumulative Concentration and Size Distribution of TSP Measured by Andersen Sampler (MS5)

2.1.3 Comparison of Particulate Matter Concentrations Measured by Different Instruments

Table 2-3 and Fig. 2-4 show the concentration of particulate matter measured by low-volume sampler, Andersen sampler and Beta ray dust analyzer. The data measured by low-volume and Andersen samplers are 13 days average value, and the data measured by Beta ray dust analyzer are hourly values. So in order to adjust the measurement duration, the comparative study was done on measurements by low-volume and Andersen samplers were performed. The concentration measured by Beta ray dust analyzers is averaged using 24 hours data starting from 11 A.M.

The concentration measured by Andersen sampler was slightly higher than the value measured by other instruments. But, when comparison was made between the concentration below the 11 μm diameter measured by Andersen sampler and the concentration measured by other instruments, there were not significant differences.

Table 2-3 Comparison of Particulate matter Concentrations among Different Instruments

【 First Survey 】 (unit; μg/m³)

Measuring instruments		Monitoring station				
		MS 1	MS 2	MS 3	MS 4	MS 5
β- ray dust analyser		75.8	65.0	75.3	69.1	51.1
Low-volume sampler	Quartz-fiber filter	62.8	59.4	86.9	73.6	55.5
	Polyflone filter	66.1	58.2	84.3	66.9	62.1
Andersen sampler	0~11μm	72.7	64.3	90.0	67.5	62.9
	TOTAL	79.7	70.6	98.0	82.6	72.5

【 Second Survey】 (unit; μg/m³)

Measuring instruments		Monitoring station				
		MS 1	MS 2	MS 3	MS 4	MS 5
β- ray dust analyser		38.5	60.2	65.0	38.0	31.8
Low-volume sampler	Quartz-fiber filter	34.4	38.1	48.8	38.2	28.0
	Polyflone filter	36.8	40.1	59.6	38.9	29.6
Andersen sampler	0~11μm	31.7	38.2	45.0	34.1	24.4
	TOTAL	38.1	41.3	50.5	44.0	28.2

【 Third Survey 】 (unit; μg/m³)

Measuring instruments		Monitoring station				
		MS 1	MS 2	MS 3	MS 4	MS 5
β- ray dust analyser		42.1	30.1	44.6	41.4	27.6
Low-volume sampler	Quartz-fiber filter	40.0	31.2	38.4	43.3	27.0
	Polyflone filter	42.7	29.6	41.6	40.7	26.7
Andersen sampler	0~11μm	48.8	29.7	43.9	44.0	26.4
	TOTAL	54.1	32.7	47.7	53.8	33.9

Note : The value of TPM concentration measured by Low-volume sampler is calculated by FlowⅡ.

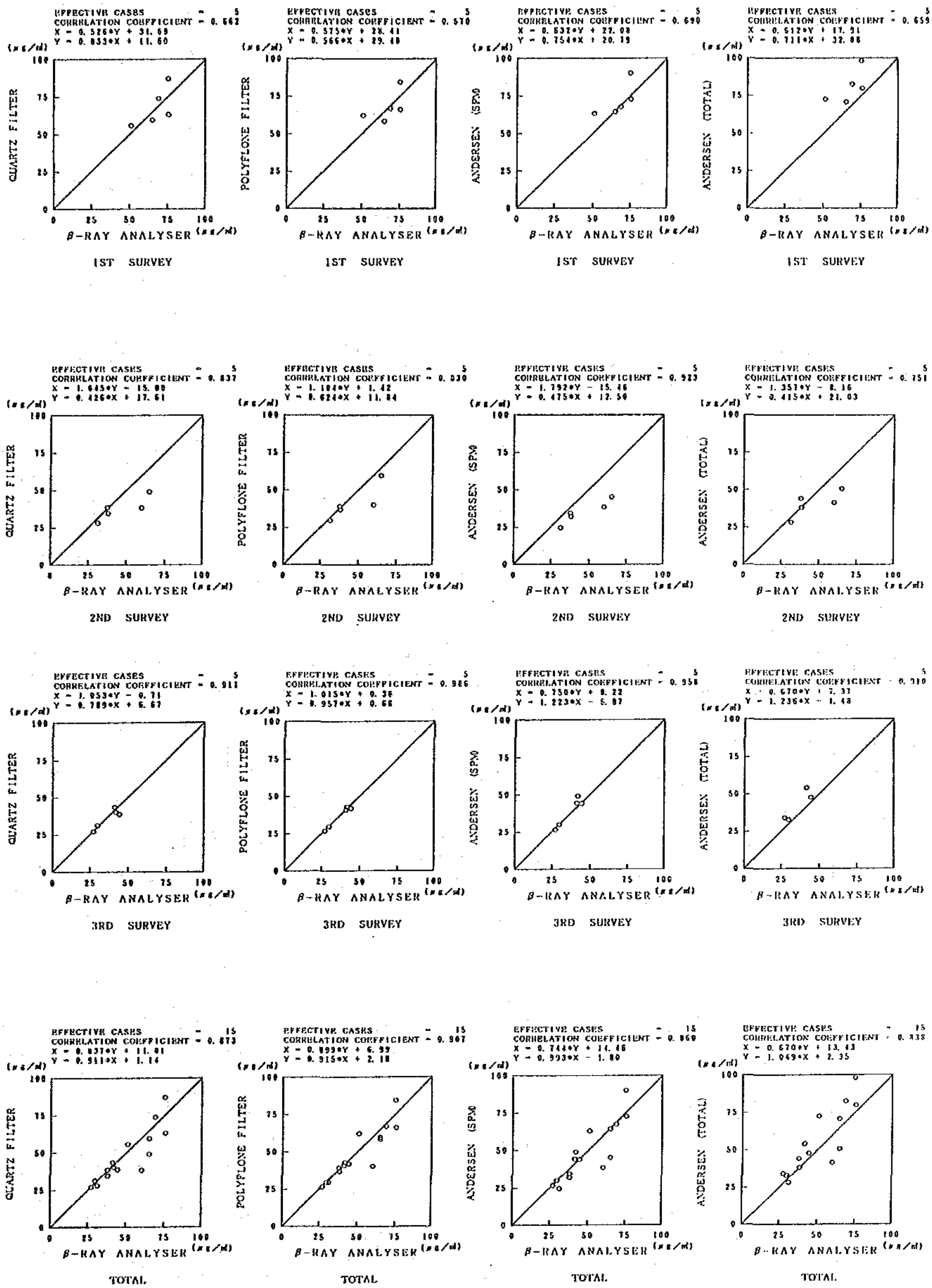

Fig. 2-4 Comparison of Particulate matter Concentrations among Different Instruments

2.2 Relationship between the Meteorological Factors and the Ambient Pollutant Concentrations

The following is the relationship studied between the meteorological factors and the air pollutant concentrations (SO_2, NO_2, NO_x, SPM) during each short term field survey.

2.2.1 Dependence of Air Pollutant Concentration during the Short Term Field Surveys by Wind Directions

Table 2-4 and Fig. 2-5 show average concentrations of air pollutant during the short term field surveys by wind directions. Fig. 2-6 shows wind rose during the short term field surveys. From Fig. 2-6, the dominant wind direction in each field survey is found as follows:

1st survey; the directions are South and North-East

2nd and 3rd survey; the direction is South

Table 2-4(1) Dependence of Air Pollutant Concentration during the Short Term Field Survey on Wind Directions

Upper: Average concentration
Lower: Data counts

【first survey】

Item	Station	Wind directions												Upper ; Average concentration		Lower ; Number of data			
		Calm	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Ave
SO_2 (ppb)	MS 1		2.7 (3)	4.5 (15)	3.6 (39)	2.2 (46)	3.8 (20)	2.6 (8)	8.4 (11)	3.9 (39)	7.7 (81)	18.7 (37)	11.8 (4)	18.0 (2)	4.0 (2)	8.7 (3)			6.7 (310)
	MS 2		45.0 (4)	10.0 (26)	8.1 (45)	10.7 (21)	7.7 (10)	10.8 (4)	9.9 (16)	16.6 (37)	9.8 (96)	8.3 (38)	23.0 (1)	36.0 (1)	30.0 (1)		20.0 (1)		10.9 (301)
	MS 3		20.8 (4)	19.9 (24)	26.2 (28)	21.9 (21)	37.9 (10)	44.3 (4)	22.4 (16)	54.2 (37)	45.6 (95)	22.3 (38)	16.0 (1)	20.0 (1)	37.0 (1)				35.5 (280)
	MS 4		31.0 (4)	9.8 (29)	7.9 (46)	10.8 (26)	9.1 (10)	9.3 (4)	6.3 (16)	4.7 (37)	4.1 (93)	5.5 (39)	28.0 (1)	24.0 (1)	38.0 (1)		12.0 (1)		7.0 (308)
	MS 5	0.8 (4)	0.3 (3)	1.6 (7)	2.1 (20)	3.6 (23)	2.6 (13)	6.0 (8)	1.7 (7)	0.8 (14)	0.8 (27)	0.8 (49)	1.4 (48)	0.5 (2)	10.5 (6)	7.0 (3)	26.0 (1)		2.1 (235)
NO_2 (ppb)	MS 1		17.3 (3)	18.1 (15)	13.6 (39)	8.3 (46)	9.4 (20)	10.5 (8)	5.5 (11)	4.1 (39)	8.0 (81)	22.5 (37)	24.8 (4)	43.5 (2)	40.0 (2)	34.0 (3)			11.5 (310)
	MS 2		22.0 (4)	14.6 (21)	9.7 (36)	9.7 (19)	6.5 (10)	9.8 (4)	5.3 (16)	6.3 (37)	5.0 (96)	5.2 (38)	15.0 (1)	23.0 (1)	19.0 (1)		20.0 (1)		7.4 (285)
	MS 3		25.8 (4)	25.7 (29)	17.1 (38)	16.9 (25)	17.0 (9)	23.5 (4)	10.9 (16)	10.3 (37)	8.4 (95)	7.1 (39)	20.0 (1)	22.0 (1)	29.0 (1)		33.0 (1)		13.0 (300)
	MS 4		28.0 (4)	23.8 (29)	17.5 (46)	18.3 (26)	15.5 (10)	16.5 (4)	8.5 (16)	7.9 (37)	6.5 (93)	8.9 (39)	19.0 (1)	22.0 (1)	31.0 (1)		24.0 (1)		12.3 (308)
	MS 5	2.3 (4)	3.0 (3)	6.6 (7)	10.4 (20)	13.7 (23)	9.5 (13)	12.3 (8)	3.4 (7)	2.6 (14)	1.7 (27)	2.0 (50)	2.4 (48)	2.0 (2)	13.0 (6)	5.7 (3)	24.0 (1)		5.3 (236)
NOx (ppb)	MS 1		59.3 (3)	40.2 (15)	24.4 (39)	15.4 (46)	17.1 (20)	18.3 (8)	7.4 (11)	5.4 (39)	10.4 (81)	40.1 (37)	43.5 (4)	80.0 (2)	83.0 (2)	64.3 (3)			30.1 (310)
	MS 2		39.8 (4)	21.0 (21)	17.0 (36)	15.8 (19)	14.3 (10)	17.8 (4)	12.0 (16)	15.5 (37)	12.2 (96)	10.8 (38)	20.0 (1)	27.0 (1)	23.0 (1)		22.0 (1)		14.6 (285)
	MS 3		65.8 (4)	43.9 (28)	29.0 (38)	27.3 (24)	35.3 (9)	40.5 (4)	15.9 (16)	14.9 (37)	11.8 (95)	8.8 (39)	20.0 (1)	23.0 (1)	29.0 (1)		35.0 (1)		20.5 (298)
	MS 4		52.3 (4)	44.0 (29)	36.0 (46)	36.2 (26)	33.3 (10)	33.5 (4)	15.4 (16)	11.8 (37)	11.6 (93)	14.8 (39)	27.0 (1)	28.0 (1)	48.0 (1)		47.0 (1)		22.8 (308)
	MS 5	3.8 (4)	5.7 (3)	10.1 (7)	18.4 (20)	24.7 (23)	14.1 (13)	16.5 (8)	5.3 (7)	4.0 (14)	3.0 (27)	3.3 (50)	4.0 (48)	3.0 (2)	15.5 (6)	7.7 (3)	26.0 (1)		8.6 (236)
SPM (μg/m³)	MS 1		168.7 (3)	129.9 (15)	87.7 (39)	64.1 (46)	86.1 (20)	104.9 (8)	57.1 (11)	46.9 (39)	53.9 (81)	98.1 (37)	80.3 (4)	236.0 (2)	193.0 (2)	165.0 (3)			75.8 (310)
	MS 2		259.0 (4)	113.9 (29)	70.8 (47)	71.0 (26)	80.0 (10)	81.8 (4)	45.9 (16)	46.6 (37)	46.5 (96)	58.3 (38)	77.0 (1)	105.0 (1)	125.0 (1)		121.0 (1)		65.0 (311)
	MS 3		93.0 (1)	145.2 (26)	99.1 (38)	71.8 (21)	132.9 (8)	176.3 (3)	107.9 (16)	68.5 (37)	47.3 (95)	45.8 (38)					158.0 (1)		75.3 (284)
	MS 4		234.5 (4)	127.2 (29)	91.1 (46)	99.0 (26)	109.5 (10)	116.5 (4)	57.6 (16)	37.9 (37)	40.3 (93)	43.7 (39)	113.0 (1)	121.0 (1)	160.0 (1)		136.0 (1)		69.1 (308)
	MS 5	35.8 (4)	32.3 (3)	62.6 (7)	81.2 (20)	103.0 (24)	74.2 (13)	83.9 (8)	32.4 (7)	27.9 (14)	27.0 (27)	29.3 (50)	34.0 (47)	31.5 (2)	95.0 (6)	91.3 (3)	181.0 (1)		50.5 (236)

Table 2-4(2) Dependence of Air Pollutant Concentration during the Short Term Field Survey on Wind Directions

Upper: Average concentration
Lower: Data counts

[second survey]

Item	Station	Calm	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Ave
		Wind directions									Upper ; Average concentration			Lower ; Number of data					
SO₂ (ppb)	MS 1							2.0 (1)	5.3 (9)	1.7 (208)	2.2 (92)	6.5 (2)							2.0 (312)
	MS 2							8.0 (1)		16.4 (92)	13.4 (194)	4.7 (25)							13.6 (312)
	MS 3							17.0 (1)		33.8 (92)	54.9 (194)	32.8 (25)							46.8 (312)
	MS 4							9.0 (1)		2.6 (91)	1.9 (193)	1.0 (24)							2.1 (309)
	MS 5					1.3 (3)	0.5 (2)	1.0 (1)	0.5 (15)	0.4 (30)	0.4 (104)	0.3 (146)	0.5 (10)						0.4 (311)
NO₂ (ppb)	MS 1							6.0 (1)	8.1 (9)	4.6 (208)	7.4 (91)	19.0 (2)							5.6 (311)
	MS 2							5.0 (1)		6.9 (91)	6.1 (194)	3.1 (25)							6.1 (311)
	MS 3							16.0 (1)		7.3 (92)	7.4 (194)	7.9 (25)							7.4 (312)
	MS 4							6.0 (1)		1.5 (92)	0.5 (193)	0.8 (24)							0.8 (310)
	MS 5					7.0 (3)	5.0 (2)	7.0 (1)	3.8 (15)	1.8 (30)	1.2 (104)	1.1 (145)	2.4 (10)						1.5 (310)
NOx (ppb)	MS 1							16.0 (1)	20.3 (9)	14.6 (208)	19.2 (91)	43.0 (2)							16.3 (311)
	MS 2							10.0 (1)		23.1 (91)	19.2 (194)	10.3 (25)							19.6 (311)
	MS 3							28.0 (1)		21.1 (92)	22.1 (194)	20.4 (25)							21.7 (312)
	MS 4							11.0 (1)		4.6 (92)	3.1 (193)	2.8 (24)							3.5 (310)
	MS 5					30.0 (3)	17.5 (2)	12.0 (1)	6.9 (15)	3.7 (30)	4.0 (104)	3.2 (145)	6.0 (10)						4.2 (310)
SPM (μg/m³)	MS 1							50.0 (1)	60.0 (9)	35.2 (208)	42.7 (92)	84.5 (2)							39.5 (312)
	MS 2							91.0 (1)		71.4 (86)	55.3 (181)	55.2 (24)							60.2 (292)
	MS 3							140.0 (1)		83.0 (92)	56.5 (194)	60.9 (25)							65.0 (312)
	MS 4							88.0 (1)		42.3 (92)	34.7 (194)	45.3 (25)							38.0 (312)
	MS 5					86.0 (3)	35.5 (2)	47.0 (1)	45.3 (15)	33.8 (29)	31.0 (101)	28.7 (146)	44.7 (10)						31.9 (310)

[third survey]

Item	Station	Calm	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Ave
		Wind directions									Upper ; Average concentration			Lower ; Number of data					
SO₂ (ppb)	MS 1			3.2 (5)	1.0 (8)	1.3 (6)	1.1 (7)	1.6 (16)	0.2 (29)	1.6 (77)	3.5 (57)	6.5 (27)	9.0 (25)	7.0 (35)	6.8 (16)	23.0 (1)		2.0 (1)	3.8 (310)
	MS 2		9.5 (2)	4.0 (2)	5.1 (7)	2.3 (6)	4.4 (5)	13.0 (2)	6.3 (28)	13.1 (77)	3.4 (91)	7.1 (55)	10.5 (24)	11.7 (7)	7.3 (4)	21.0 (1)			7.7 (311)
	MS 3		6.5 (2)	42.0 (2)	36.3 (7)	20.8 (6)	34.0 (5)	39.0 (2)	24.2 (28)	55.5 (71)	26.7 (89)	11.2 (54)	9.2 (24)	10.3 (7)	6.8 (4)	12.0 (1)			29.2 (308)
	MS 4		2.0 (2)	2.0 (2)	2.1 (7)	2.5 (6)	2.2 (5)	1.5 (2)	3.2 (28)	1.7 (77)	1.8 (91)	4.0 (55)	3.8 (24)	5.3 (7)	2.0 (4)	5.0 (1)			2.5 (311)
	MS 5	9.7 (14)		9.0 (1)	8.4 (11)	8.0 (7)	7.4 (8)	8.6 (17)	7.9 (38)	8.0 (34)	7.8 (56)	8.2 (62)	9.9 (18)	10.2 (14)	11.7 (22)	10.0 (3)	9.3 (3)	11.5 (2)	8.6 (310)
NO₂ (ppb)	MS 1			10.0 (5)	11.0 (8)	9.5 (6)	9.4 (7)	8.6 (16)	5.8 (29)	6.4 (77)	12.4 (57)	18.5 (27)	20.6 (25)	17.1 (35)	16.4 (16)	20.0 (1)		17.0 (1)	11.9 (310)
	MS 2		7.0 (2)	10.5 (2)	7.4 (7)	10.3 (6)	7.4 (5)	10.0 (2)	7.0 (28)	8.8 (77)	5.4 (91)	6.8 (56)	9.3 (24)	7.9 (7)	7.3 (4)	19.0 (1)			7.3 (311)
	MS 3		2.5 (2)	7.5 (2)	7.7 (7)	11.7 (6)	8.4 (5)	8.5 (2)	5.5 (28)	4.3 (77)	4.2 (89)	3.8 (54)	4.5 (24)	4.3 (7)	2.5 (4)	15.0 (1)			4.6 (308)
	MS 4		3.0 (2)	8.5 (2)	8.4 (7)	14.7 (6)	8.5 (4)	6.0 (2)	6.4 (24)	5.9 (73)	3.9 (88)	6.2 (45)	5.6 (20)	8.4 (5)	6.0 (1)	13.0 (1)			5.7 (200)
	MS 5	8.8 (14)		8.0 (1)	8.3 (11)	6.9 (7)	5.8 (8)	4.2 (17)	3.1 (38)	2.6 (34)	2.2 (57)	2.3 (62)	3.4 (18)	4.6 (14)	6.3 (22)	10.7 (3)	6.0 (3)	9.5 (2)	3.8 (311)
NOx (ppb)	MS 1			28.6 (5)	24.6 (8)	44.0 (6)	26.3 (7)	20.3 (16)	11.6 (29)	11.3 (77)	27.8 (57)	57.2 (27)	59.6 (25)	66.9 (35)	63.5 (16)	86.0 (1)		44.0 (1)	33.6 (310)
	MS 2		10.5 (2)	14.0 (2)	12.7 (7)	11.8 (6)	8.8 (5)	12.0 (2)	12.2 (28)	19.2 (77)	8.4 (91)	10.8 (55)	14.6 (24)	12.6 (7)	11.5 (4)	30.0 (1)			12.8 (311)
	MS 3		10.5 (2)	20.0 (2)	36.4 (7)	20.8 (6)	22.0 (5)	25.5 (2)	14.6 (28)	14.4 (77)	8.6 (89)	8.0 (54)	8.0 (24)	8.0 (7)	6.0 (4)	23.0 (1)			11.7 (308)
	MS 4		47.0 (2)	30.5 (2)	62.0 (7)	47.3 (6)	37.5 (4)	37.0 (2)	29.3 (24)	19.6 (73)	20.0 (88)	26.0 (45)	21.0 (20)	43.8 (5)	15.0 (1)	22.0 (1)			24.5 (200)
	MS 5	18.7 (14)		19.0 (1)	17.7 (11)	16.1 (7)	9.1 (8)	8.2 (17)	5.9 (38)	4.9 (34)	4.5 (57)	5.1 (62)	7.1 (18)	8.4 (14)	10.6 (22)	21.0 (3)	13.3 (3)	17.0 (2)	7.6 (311)
SPM (μg/m³)	MS 1			40.0 (5)	37.5 (8)	59.3 (6)	56.6 (7)	30.8 (16)	23.8 (29)	26.1 (77)	37.0 (58)	61.1 (27)	64.6 (25)	60.1 (35)	61.0 (16)	73.0 (1)		38.0 (1)	42.1 (311)
	MS 2		30.0 (2)	37.5 (2)	49.0 (7)	42.7 (6)	36.4 (5)	39.5 (2)	30.4 (28)	34.8 (77)	28.4 (91)	32.7 (55)	31.5 (24)	27.0 (7)	26.8 (4)	36.0 (1)			32.1 (311)
	MS 3		62.5 (2)	82.5 (2)	115.9 (7)	81.0 (6)	78.6 (5)	70.5 (2)	45.0 (28)	45.2 (77)	35.6 (90)	42.7 (54)	40.2 (24)	43.7 (7)	30.5 (4)	86.0 (1)			44.9 (309)
	MS 4		47.5 (2)	57.5 (2)	80.4 (7)	70.8 (6)	57.4 (5)	49.5 (2)	49.8 (28)	34.7 (77)	30.5 (91)	51.3 (55)	39.9 (24)	61.4 (7)	38.3 (4)	125.0 (1)			41.5 (311)
	MS 5	39.7 (14)		21.0 (1)	29.5 (11)	31.0 (7)	19.3 (8)	26.6 (17)	22.9 (37)	21.5 (35)	26.8 (57)	24.8 (62)	27.5 (18)	35.4 (14)	42.1 (22)	32.3 (3)	25.7 (3)	56.5 (2)	27.6 (311)

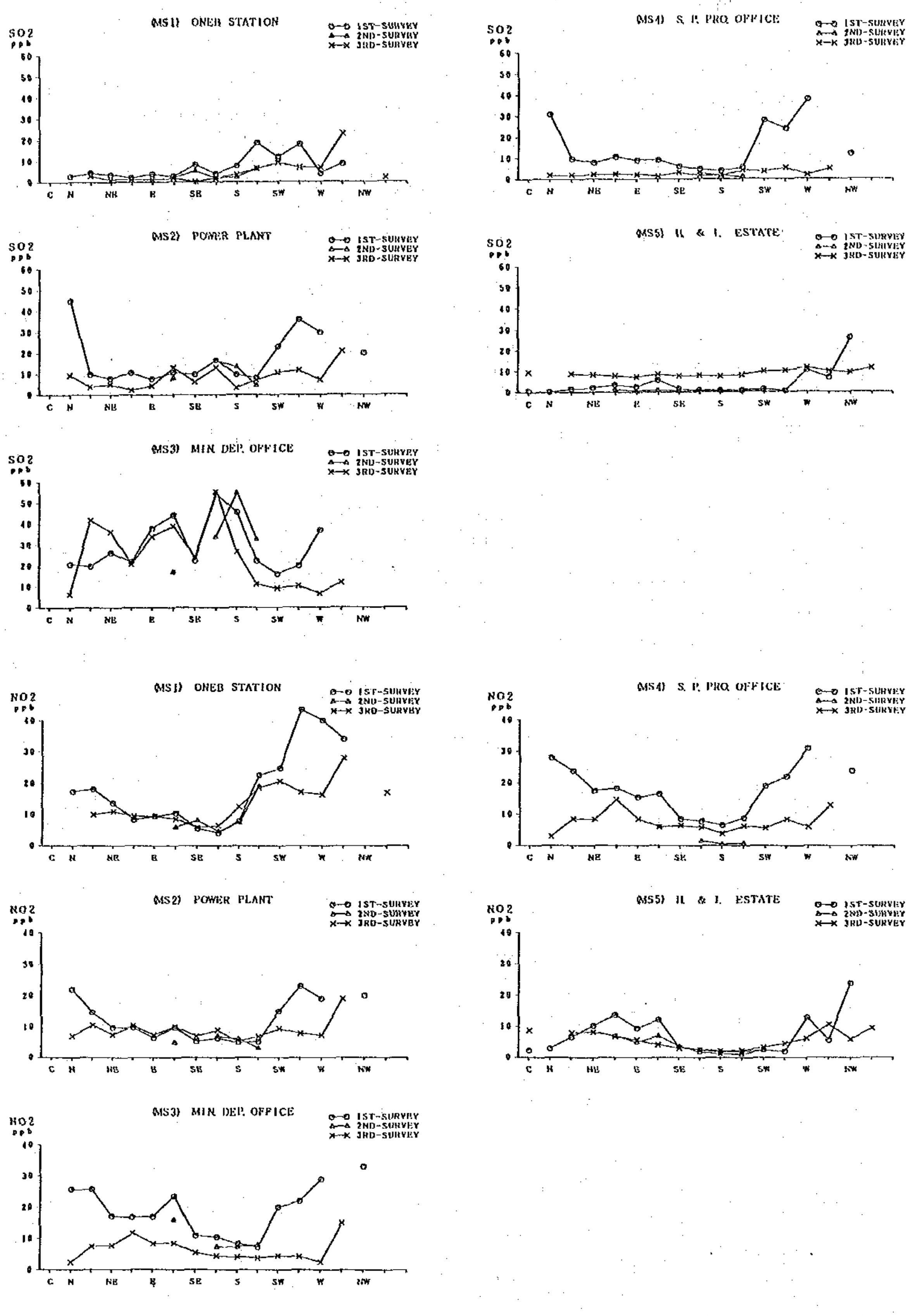

Fig. 2-5(1) Dependence of Air Pollutant Concentration during the Short Term Field Survey on Wind Directions

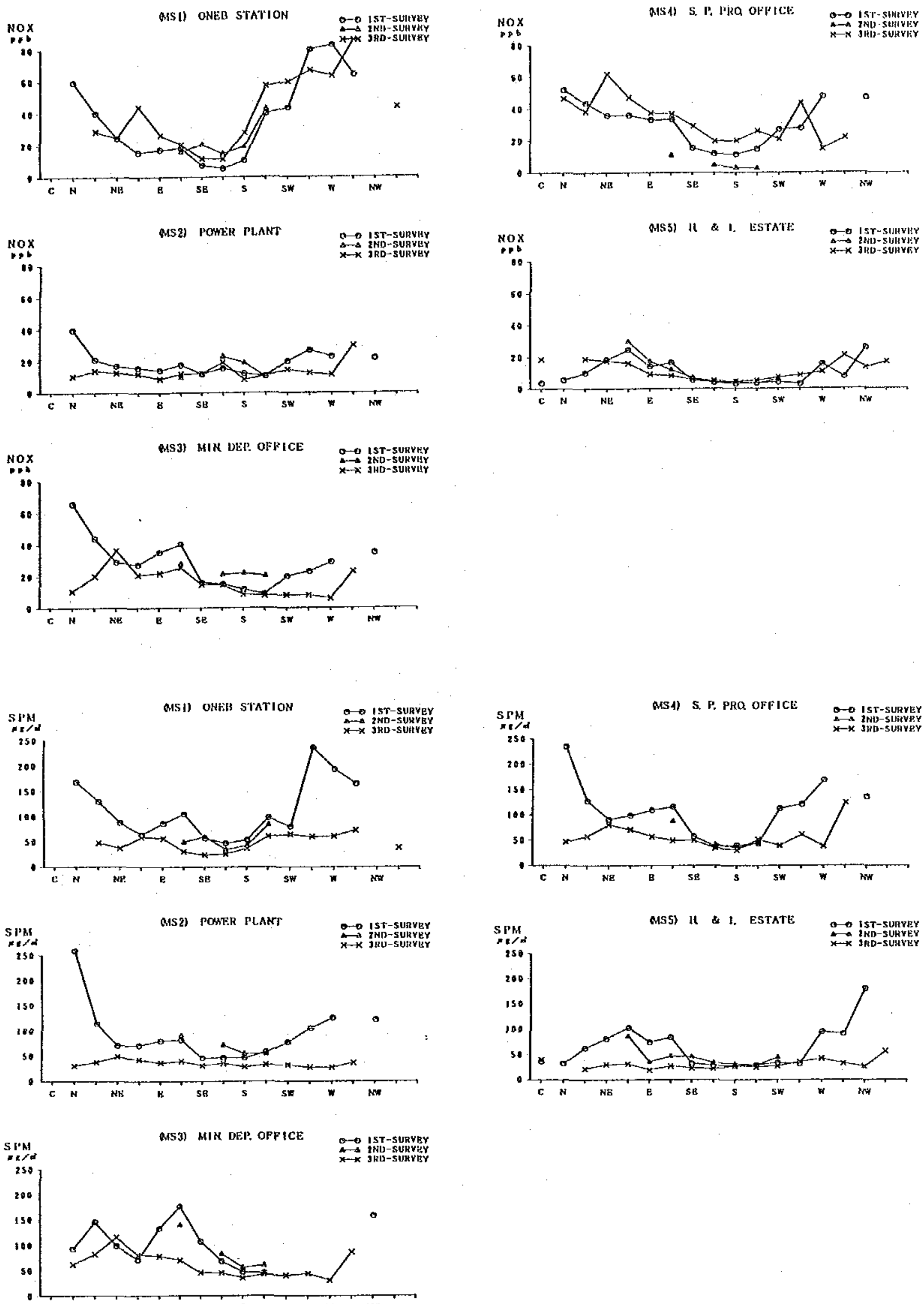

Fig. 2-5(2) Dependence of Air Pollutant Concentration during the Short Term Field Survey on Wind Directions

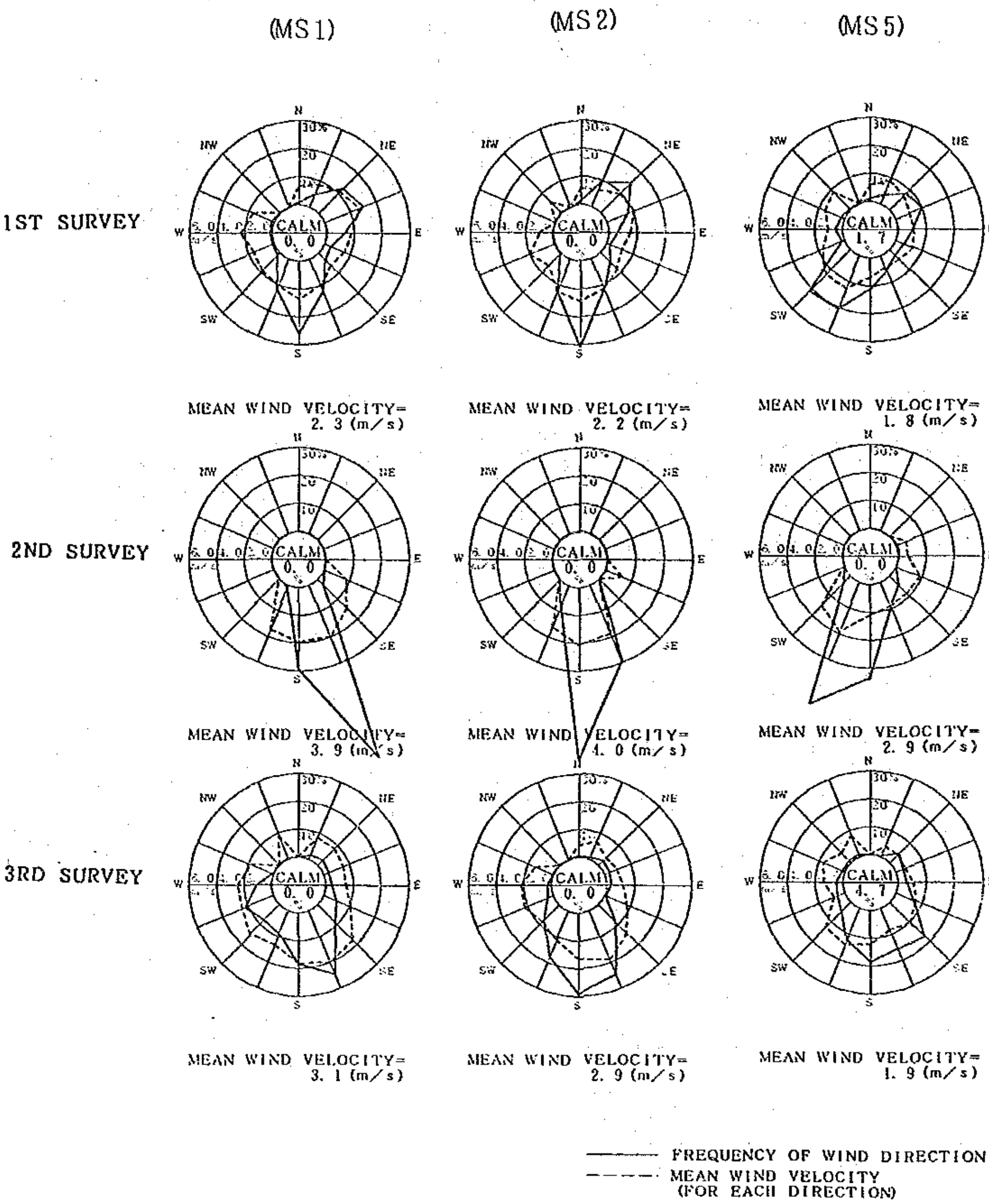

Fig 2-6 Wind Rose during the Short Term Field Surveys

The wind directions which relate to comparatively high concentrations of ambient air pollutants are as described below. As for MS3 and MS4, however, wind direction and velocity were not monitored and thus the wind directions of MS3 and MS4 were thought to be same as that of MS2. It is because the correlation coefficients of wind direction and wind velocity vectors among all of MS1, MS2 and MS5 are sufficiently high. Hence, the meteorological conditions in this target area were thought nearly identical as discussed in Chapter 1.1.5. The wind direction and velocity at MS3 and MS4 were thus chosen the same as those of MS2 which located in close proximity to MS3 and MS4.

(1) SO_2

① MS1

Pollutant concentration was found higher when wind maintains SSW-NNW direction, which is thought attributable to the effect of Sukhumvit road.

② MS2

Comparatively high concentration observed when the wind direction is SW-WNW is thought caused by scattered factories to the south-west of MS2.

③ MS3

Observed high concentration in the NNE-E~S wind is thought caused by steel works, food processing plants and vessels navigating the Chao Phraya river.

④ MS4

The station observed a high concentration in SW-W wind probably caused by navigating vessels.

⑤ MS5

No notable concentration increase was observed except an insignificantly high value in NW wind.

(2) NO_2, NO_x

① MS1

Appreciably high values of both NO_2 and NO_x in SSW-NNW wind are thought caused by the Sukhumvit roadway as such is the case with SO_2.

② MS2

The higher concentration of nitric oxides, more pronouncedly in NO_2 content than in NO_x, was observed in the wind direction of SW-WNW.

③ MS3

A higher concentration of NO_x (the same as SO_2) was observed in the wind direction of NNE-E-S, while NO_2 maintains high values in all directions except SE~S~SW.

④ MS4

Both NO_2 and NO_x content maintain high values in the wind direction of SSW~N~ESE and do not comply with the wind direction in which SO_2 keeps high values. Such high values of NO_2 and NO_x may be attributed to the influence coming from Route 3115 and Sukhumvit roadways in Samut Prakarn.

⑤ MS5

Values were observed somewhat higher in the wind direction of NE~ESE but the concentration level itself remains comparatively low.

(3) SPM

The wind direction in which the SPM concentration reads a high value agrees with that of the high NO_x value, which may suggest that sources for both pollutants are identical.

2.2.2 Dependence of Air Pollutant Concentration during the Short Term Field Survey on Wind Velocity Ranks

Table 2-5 and Fig. 2-7 show the dependence of air pollutant concentration during each short term field survey on seven wind velocity ranks. The results show the common trend that, except for SO_2 concentration at MS3, the air pollutant concentration becomes lower when wind velocity gets higher. The exception case is probably due to the reason that there is a plant emitting conciderably large volume of SO_2 around MS3, and when wind velocity was about 3 m/s, the maximum concentration C_{max} appeared near MS3.

Table 2-5(1) Dependence of Air Pollutant Concentration during the Short Term Field Survey on Wind Velocity Ranks

【first survey】

Item	Station	Wind velocity ranks						
		0.0 ~ 0.4	0.5 ~ 0.9	1.0 ~ 1.9	2.0 ~ 2.9	3.0 ~ 4.9	5.0m/s over	Ave
SO_2 (ppb)	MS 1		5.7 (22)	7.0 (93)	8.4 (136)	3.0 (56)	1.3 (3)	6.7 (310)
	MS 2		16.8 (24)	13.0 (105)	10.2 (95)	7.0 (77)		10.9 (301)
	MS 3		31.6 (20)	31.3 (98)	43.2 (88)	32.9 (74)		35.5 (280)
	MS 4		12.7 (24)	9.2 (106)	5.5 (95)	4.3 (83)		7.0 (308)
	MS 5	0.8 (4)	2.8 (49)	2.5 (90)	1.2 (62)	1.4 (30)		2.1 (235)
NO_2 (ppb)	MS 1		13.1 (22)	13.0 (93)	13.2 (136)	5.0 (56)	3.0 (3)	11.5 (310)
	MS 2		14.6 (22)	10.2 (97)	5.7 (92)	3.6 (74)		7.4 (285)
	MS 3		24.1 (24)	18.2 (106)	10.4 (91)	5.8 (79)		13.0 (300)
	MS 4		21.2 (24)	16.4 (106)	9.9 (95)	7.1 (83)		12.3 (308)
	MS 5	2.3 (4)	9.9 (49)	6.1 (89)	2.7 (64)	1.5 (30)		5.3 (236)
NOx (ppb)	MS 1		30.2 (22)	26.3 (93)	20.0 (136)	7.1 (56)	4.0 (3)	20.1 (310)
	MS 2		24.5 (22)	17.3 (97)	12.2 (92)	11.1 (74)		14.6 (285)
	MS 3		48.0 (23)	28.4 (105)	14.3 (91)	9.1 (79)		20.5 (298)
	MS 4		44.5 (24)	30.7 (106)	16.1 (95)	14.2 (83)		22.8 (308)
	MS 5	3.8 (4)	15.6 (49)	10.0 (89)	4.3 (64)	2.8 (30)		8.6 (236)
SPM (μg/m³)	MS 1		118.8 (22)	101.3 (93)	68.6 (136)	37.1 (56)	24.3 (3)	75.8 (310)
	MS 2		129.6 (24)	89.3 (108)	49.5 (97)	32.4 (82)		65.0 (311)
	MS 3		166.6 (20)	105.1 (97)	58.9 (87)	34.1 (80)		75.3 (284)
	MS 4		140.7 (24)	96.5 (106)	44.1 (95)	41.8 (83)		69.1 (308)
	MS 5	35.8 (4)	69.6 (49)	57.4 (90)	37.4 (63)	27.8 (30)		50.5 (236)

[Note] Upper ; Average concentration Lower ; Number of data

Table 2-5(2) Dependence of Air Pollutant Concentration during the Short Term Field Survey on Wind Velocity Ranks

【second survey】

Item	Station	Wind velocity ranks 0.0 ~ 0.4	0.5 ~ 0.9	1.0 ~ 1.9	2.0 ~ 2.9	3.0 ~ 4.9	5.0m/s over	Ave
SO_2 (ppb)	MS 1		4.0 (1)	3.2 (13)	3.3 (25)	1.8 (223)	1.7 (50)	2.0 (312)
	MS 2			9.7 (3)	9.6 (26)	13.8 (248)	14.9 (35)	13.6 (312)
	MS 3			19.0 (3)	36.5 (26)	48.9 (248)	41.9 (35)	46.8 (312)
	MS 4			4.0 (3)	1.8 (26)	2.0 (245)	2.2 (35)	2.1 (309)
	MS 5		0.6 (13)	0.3 (67)	0.4 (98)	0.3 (105)	0.4 (28)	0.4 (311)
NO_2 (ppb)	MS 1		10.0 (1)	9.1 (13)	7.9 (25)	5.4 (223)	4.5 (49)	5.6 (311)
	MS 2			6.0 (3)	9.3 (26)	5.8 (248)	5.9 (34)	6.1 (311)
	MS 3			12.3 (3)	8.8 (26)	7.4 (248)	6.4 (35)	7.4 (312)
	MS 4			4.7 (3)	1.7 (25)	0.7 (247)	0.5 (35)	0.8 (310)
	MS 5		4.6 (13)	1.7 (67)	1.4 (98)	1.2 (105)	1.1 (27)	1.5 (310)
NOx (ppb)	MS 1		25.0 (1)	21.5 (13)	19.1 (25)	16.0 (223)	14.9 (49)	16.3 (311)
	MS 2			13.0 (3)	23.2 (26)	19.2 (248)	20.5 (34)	19.6 (311)
	MS 3			24.7 (3)	22.7 (26)	21.7 (248)	20.5 (35)	21.7 (312)
	MS 4			7.7 (3)	4.6 (25)	3.4 (247)	3.5 (35)	3.5 (310)
	MS 5		14.6 (13)	4.6 (67)	4.1 (98)	2.9 (105)	3.2 (27)	4.2 (310)
SPM (μg/m³)	MS 1		105.0 (1)	64.0 (13)	50.1 (25)	37.1 (223)	30.7 (50)	38.5 (312)
	MS 2			66.3 (3)	56.0 (22)	61.2 (232)	55.1 (35)	60.2 (292)
	MS 3			99.3 (3)	105.7 (26)	62.3 (248)	50.8 (35)	65.0 (312)
	MS 4			69.3 (3)	44.7 (26)	37.4 (248)	34.1 (35)	38.0 (312)
	MS 5		54.6 (13)	33.1 (67)	30.2 (97)	30.9 (105)	28.3 (28)	31.9 (310)

[Note] Upper ; Average concentration Lower ; Number of data

【third survey】

Item	Station	Wind velocity ranks 0.0 ~ 0.4	0.5 ~ 0.9	1.0 ~ 1.9	2.0 ~ 2.9	3.0 ~ 4.9	5.0m/s over	Ave
SO_2 (ppb)	MS 1		11.0 (2)	6.0 (71)	5.0 (78)	2.6 (130)	0.2 (29)	3.8 (310)
	MS 2		7.5 (17)	9.5 (75)	4.9 (74)	7.8 (126)	11.1 (19)	7.7 (311)
	MS 3		32.5 (17)	16.2 (75)	21.8 (72)	38.3 (125)	45.2 (19)	29.2 (308)
	MS 4		3.2 (17)	4.0 (75)	2.6 (74)	1.7 (126)	1.6 (19)	2.5 (311)
	MS 5	9.7 (14)	9.2 (54)	8.6 (102)	8.2 (92)	8.4 (48)		8.6 (310)
NO_2 (ppb)	MS 1		10.5 (2)	13.8 (71)	15.4 (78)	10.5 (130)	4.2 (29)	11.9 (310)
	MS 2		8.8 (17)	8.4 (75)	6.0 (74)	7.1 (126)	8.6 (19)	7.3 (311)
	MS 3		7.9 (17)	6.2 (75)	4.5 (72)	3.8 (125)	1.9 (19)	4.6 (308)
	MS 4		9.9 (17)	7.4 (68)	5.6 (65)	4.3 (112)	4.3 (18)	5.7 (280)
	MS 5	8.8 (14)	6.2 (54)	3.8 (102)	2.5 (93)	2.3 (48)		3.8 (311)
NOx (ppb)	MS 1		55.5 (2)	48.6 (71)	45.9 (78)	23.2 (130)	9.2 (29)	33.6 (310)
	MS 2		11.6 (17)	12.8 (75)	8.7 (74)	14.0 (126)	21.5 (19)	12.8 (311)
	MS 3		23.2 (17)	13.1 (75)	9.7 (72)	10.7 (125)	10.6 (19)	11.7 (308)
	MS 4		58.2 (17)	28.7 (68)	23.9 (65)	17.6 (112)	21.6 (18)	24.5 (280)
	MS 5	18.7 (14)	12.1 (54)	7.2 (102)	5.4 (93)	4.9 (48)		7.6 (311)
SPM (μg/m³)	MS 1		96.0 (2)	60.7 (71)	51.6 (78)	30.4 (131)	19.8 (29)	42.1 (311)
	MS 2		45.1 (17)	40.1 (75)	26.6 (74)	28.9 (126)	32.8 (19)	32.1 (311)
	MS 3		91.8 (17)	54.5 (75)	39.9 (73)	37.4 (125)	33.4 (19)	44.9 (309)
	MS 4		84.4 (17)	51.9 (75)	40.3 (74)	31.9 (126)	30.7 (19)	41.5 (311)
	MS 5	39.7 (14)	35.4 (54)	28.1 (102)	24.0 (93)	21.5 (48)		27.6 (311)

[Note] Upper ; Average concentration Lower ; Number of data

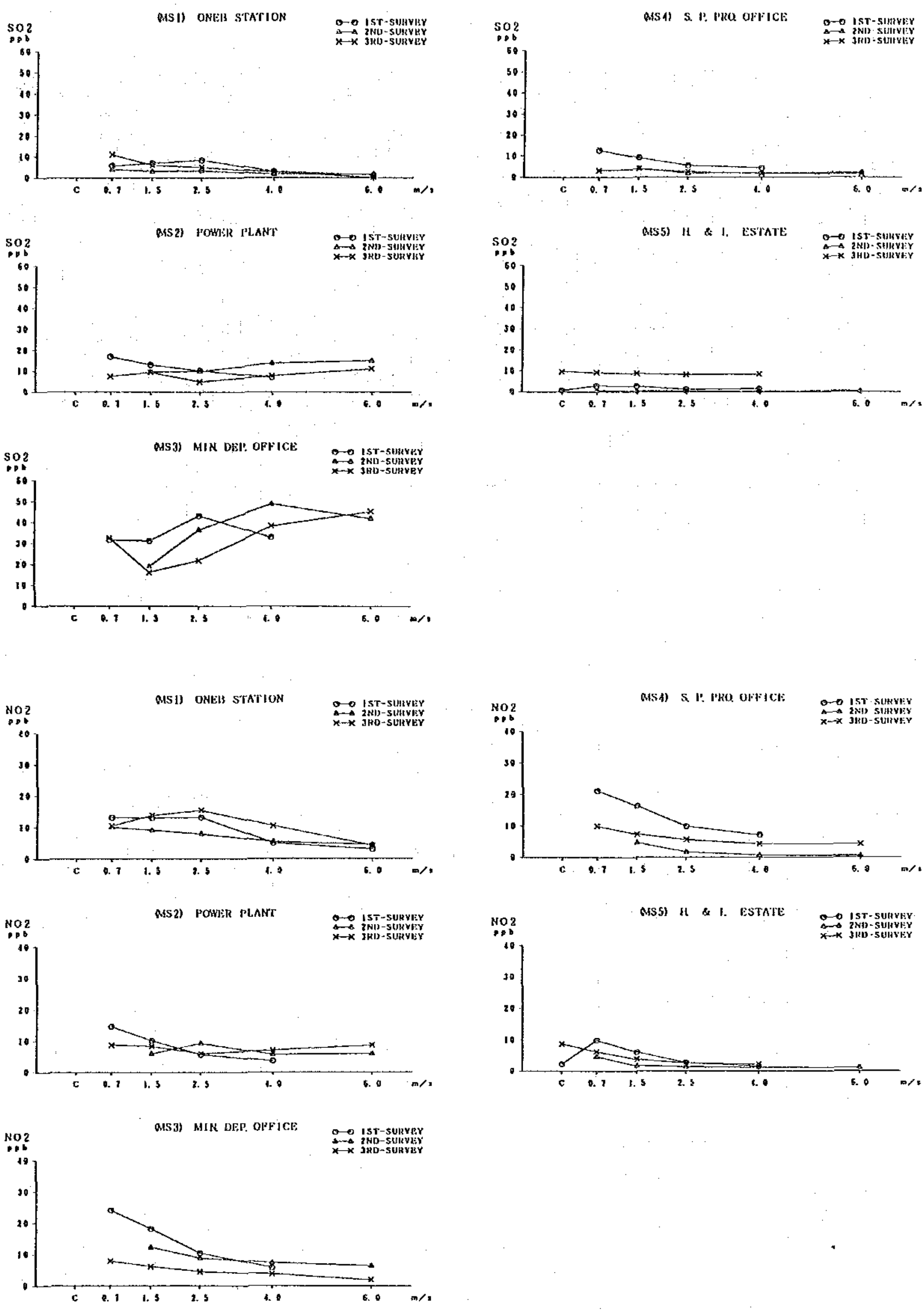

Fig. 2-7(1) Dependence of Air Pollutant Concentration during the Short Term Field Survey on Wind Velocity Ranks

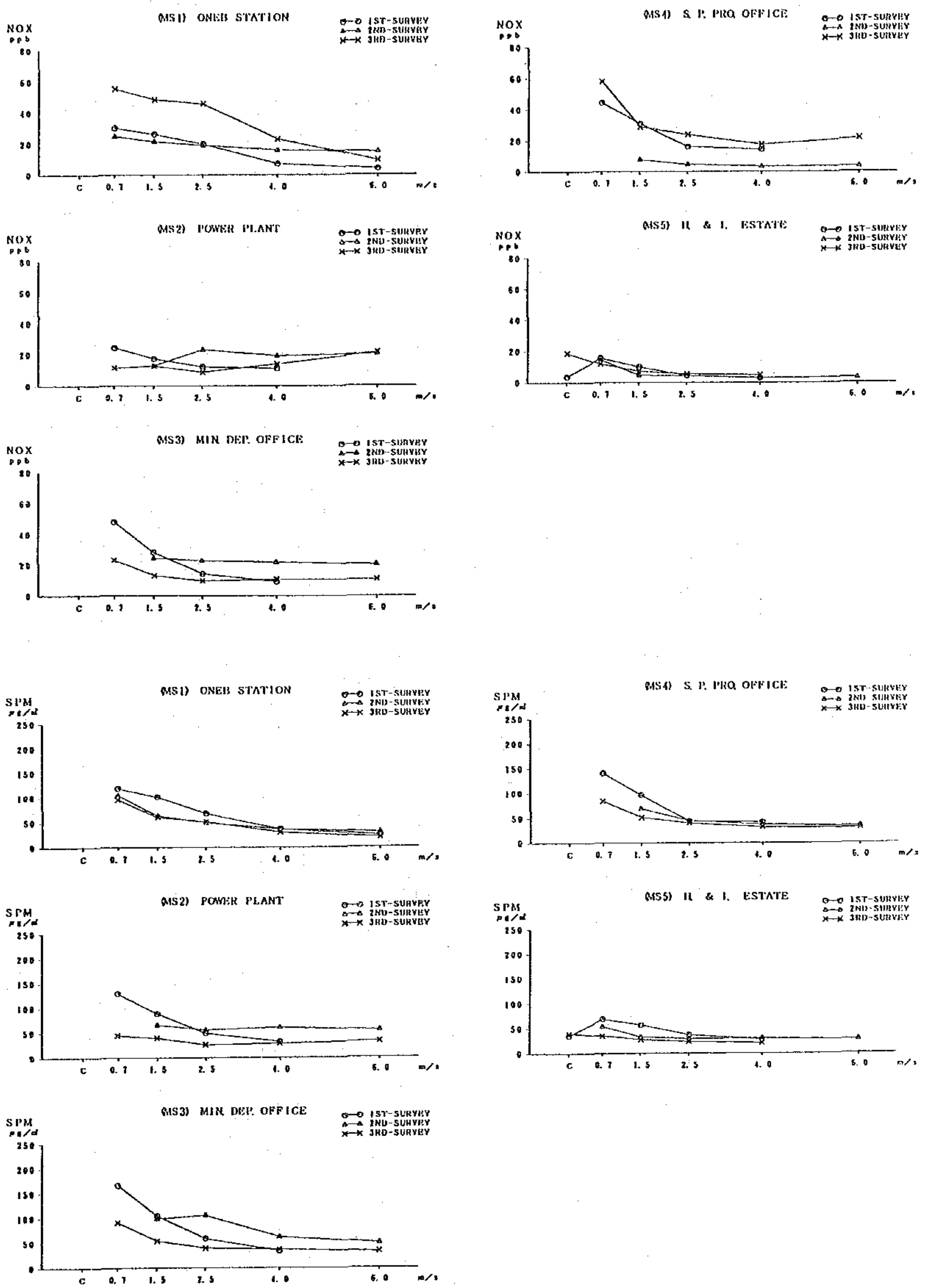

Fig. 2-7(2) Dependence of Air Pollutant Concentration during the Short Term Field Survey on Wind Velocity Ranks

2.2.3 Dependence of Air Pollutant Concentration during the Short Term Field Survey on Atmospheric Stability

The atmospheric diffusion depends strongly on atmospheric stability. And the ground level concentration is strongly influenced by diffusion conditions. Generally, when the distance between the location of emission sources and monitoring station is not large, the concentration gets higher when the atmospheric condition is unstable than when it is stable. Table 2-6 and Fig. 2-8 show the dependence of air pollutant concentration during the short term field survey on atmospheric stability. The results do not clearly show the relationship between air pollutant concentration and atmospheric stability except for SO_2 concentration at MS3. SO_2 concentration in MS3 is higher in a stable condition than in an unstable one. This trend can be seen in each field survey.

Table 2-6(1) Dependence of Air Pollutant Concentration during the Short Term Field Survey on Atmospheric Stability

【first survey】

Item	Station	Calm	Atmospheric stability at windy						Ave
			A	B	C	D	E	F	
SO_2 (ppb)	MS 1		23.0 (1)	5.7 (76)	4.4 (35)	6.1 (29)	3.3 (17)	8.2 (152)	6.7 (310)
	MS 2			7.6 (73)	6.6 (34)	9.5 (28)	9.6 (28)	14.2 (138)	10.9 (301)
	MS 3			21.8 (67)	26.3 (32)	37.3 (26)	49.7 (28)	41.5 (127)	35.5 (280)
	MS 4			5.6 (75)	5.5 (36)	8.1 (28)	3.9 (28)	8.5 (141)	7.0 (308)
	MS 5	0.8 (4)		1.2 (59)	2.6 (25)	2.2 (21)	1.0 (13)	2.5 (113)	2.1 (235)
NO_2 (ppb)	MS 1		10.0 (1)	6.5 (76)	7.8 (35)	13.5 (29)	7.0 (17)	15.1 (152)	11.5 (310)
	MS 2			5.1 (71)	4.9 (32)	7.1 (26)	4.3 (28)	10.0 (128)	7.4 (285)
	MS 3			8.7 (71)	8.6 (34)	12.8 (28)	8.8 (28)	17.2 (139)	13.0 (300)
	MS 4			10.6 (75)	10.1 (36)	14.3 (28)	5.5 (28)	14.6 (141)	12.3 (308)
	MS 5	2.3 (4)		3.6 (60)	4.2 (25)	6.6 (21)	3.5 (13)	6.5 (113)	5.3 (236)
NOx (ppb)	MS 1		12.0 (1)	9.8 (76)	13.1 (35)	32.7 (29)	12.0 (17)	25.5 (152)	20.1 (310)
	MS 2			12.4 (71)	12.6 (32)	17.3 (26)	11.7 (28)	16.5 (128)	14.6 (285)
	MS 3			12.8 (71)	15.1 (34)	29.6 (28)	13.2 (28)	25.5 (137)	20.5 (298)
	MS 4			19.6 (75)	20.5 (36)	35.6 (28)	10.4 (28)	25.1 (141)	22.8 (308)
	MS 5	3.8 (4)		5.7 (60)	7.0 (25)	13.5 (21)	7.6 (13)	9.9 (113)	8.6 (236)
SPM (μg/m³)	MS 1		84.0 (1)	50.5 (76)	53.3 (35)	92.0 (29)	58.8 (17)	92.5 (152)	75.8 (310)
	MS 2			43.4 (79)	47.9 (35)	68.3 (28)	37.9 (28)	86.1 (141)	65.0 (311)
	MS 3			51.1 (68)	49.0 (34)	87.4 (27)	49.1 (28)	98.5 (127)	75.3 (284)
	MS 4			55.1 (75)	55.6 (36)	87.7 (28)	40.0 (28)	82.0 (141)	69.1 (308)
	MS 5	35.8 (4)		40.8 (59)	48.4 (25)	68.5 (22)	39.2 (13)	54.3 (113)	50.5 (236)

[Note] Upper ; Average concentration Lower ; Number of data

Table 2-6(2) Dependence of Air Pollutant Concentration during the Short Term Field Survey on Atmospheric Stability

【second survey】

Item	Station	Calm	Atmospheric stability at windy A	B	C	D	E	F	Ave
SO_2 (ppb)	MS 1			1.6 (46)	2.3 (66)	2.1 (47)	1.8 (127)	2.7 (26)	2.0 (312)
	MS 2			10.1 (56)	10.5 (55)	15.4 (48)	16.3 (131)	9.7 (22)	13.6 (312)
	MS 3			22.4 (56)	27.7 (55)	47.0 (48)	66.7 (131)	37.4 (22)	46.8 (312)
	MS 4			2.1 (55)	1.8 (55)	2.5 (48)	2.0 (129)	1.7 (22)	2.1 (309)
	MS 5			0.3 (70)	0.5 (39)	0.6 (34)	0.2 (37)	0.3 (131)	0.4 (311)
NO_2 (ppb)	MS 1			6.0 (46)	6.0 (65)	6.1 (47)	4.9 (127)	7.2 (26)	5.6 (311)
	MS 2			4.9 (56)	4.7 (54)	6.4 (48)	6.4 (131)	9.8 (22)	6.1 (311)
	MS 3			4.4 (56)	5.8 (55)	7.8 (48)	9.1 (131)	8.9 (22)	7.4 (312)
	MS 4			0.5 (56)	0.9 (55)	1.3 (48)	0.6 (130)	1.7 (21)	0.8 (310)
	MS 5			1.6 (70)	1.7 (38)	1.7 (34)	1.1 (37)	1.5 (131)	1.5 (310)
NOx (ppb)	MS 1			17.3 (46)	17.6 (65)	17.1 (47)	14.7 (127)	18.1 (26)	16.3 (311)
	MS 2			18.2 (56)	16.9 (54)	20.5 (48)	20.3 (131)	23.6 (22)	19.6 (311)
	MS 3			16.8 (56)	18.9 (55)	22.1 (48)	24.6 (131)	22.5 (22)	21.7 (312)
	MS 4			3.8 (56)	4.4 (55)	4.3 (48)	2.6 (130)	4.4 (21)	3.5 (310)
	MS 5			4.4 (70)	3.8 (38)	4.6 (34)	1.9 (37)	4.7 (131)	4.2 (310)
SPM (μg/m³)	MS 1			33.8 (46)	38.2 (66)	41.4 (47)	36.6 (127)	51.1 (26)	38.5 (312)
	MS 2			50.3 (52)	54.3 (54)	70.1 (48)	64.2 (120)	52.8 (18)	60.2 (292)
	MS 3			46.8 (56)	59.6 (55)	62.6 (48)	71.6 (131)	90.1 (22)	65.0 (312)
	MS 4			32.7 (56)	41.7 (55)	40.5 (48)	36.9 (131)	42.9 (22)	38.0 (312)
	MS 5			25.4 (69)	32.9 (39)	38.1 (34)	36.9 (37)	32.0 (131)	31.9 (310)

[Note] Upper ; Average concentration Lower ; Number of data

【third survey】

Item	Station	Calm	Atmospheric stability at windy A	B	C	D	E	F	Ave
SO_2 (ppb)	MS 1			5.0 (48)	4.1 (51)	1.6 (92)	4.4 (88)	6.6 (31)	3.8 (310)
	MS 2			3.3 (57)	7.5 (48)	11.0 (84)	6.9 (92)	9.6 (30)	7.7 (311)
	MS 3			13.9 (56)	25.9 (47)	47.4 (84)	25.4 (91)	23.3 (30)	29.2 (308)
	MS 4			2.2 (57)	2.4 (48)	2.1 (84)	2.9 (92)	3.6 (30)	2.5 (311)
	MS 5	9.7 (14)		8.6 (72)	8.8 (45)	7.5 (28)	8.6 (109)	8.8 (42)	8.6 (310)
NO_2 (ppb)	MS 1			16.9 (48)	11.5 (51)	7.8 (92)	13.0 (88)	13.8 (31)	11.9 (310)
	MS 2			6.2 (57)	6.8 (48)	8.0 (84)	7.2 (92)	8.7 (30)	7.3 (311)
	MS 3			3.4 (56)	3.6 (47)	4.0 (84)	5.5 (91)	7.8 (30)	4.6 (308)
	MS 4			4.6 (49)	4.8 (43)	5.8 (77)	6.4 (81)	6.8 (30)	5.7 (280)
	MS 5	8.8 (14)		2.8 (73)	2.7 (45)	3.6 (28)	4.5 (109)	3.6 (42)	3.8 (311)
NOx (ppb)	MS 1			35.2 (48)	30.2 (51)	21.0 (92)	43.7 (88)	45.8 (31)	33.6 (310)
	MS 2			10.5 (57)	12.2 (48)	16.9 (84)	10.8 (92)	12.4 (30)	12.8 (311)
	MS 3			7.1 (56)	9.9 (47)	14.7 (84)	13.0 (91)	11.1 (30)	11.7 (308)
	MS 4			17.7 (49)	24.5 (43)	24.6 (77)	31.3 (81)	16.8 (30)	24.5 (280)
	MS 5	18.7 (14)		6.4 (73)	5.8 (45)	7.2 (28)	8.5 (109)	6.1 (42)	7.6 (311)
SPM (μg/m³)	MS 1			47.1 (48)	42.8 (52)	29.1 (92)	49.7 (88)	49.5 (31)	42.1 (311)
	MS 2			25.9 (57)	31.0 (48)	35.1 (84)	32.3 (92)	37.0 (30)	32.1 (311)
	MS 3			34.5 (56)	36.0 (47)	45.7 (84)	53.1 (92)	50.9 (30)	44.9 (309)
	MS 4			31.9 (57)	36.9 (48)	41.9 (84)	47.7 (92)	47.1 (30)	41.5 (311)
	MS 5	39.7 (14)		24.0 (73)	26.3 (45)	24.5 (29)	28.6 (108)	31.1 (42)	27.6 (311)

[Note] Upper ; Average concentration Lower ; Number of data