with reasonable success in Japan,[3] New Jersey[9] and Chicago.[10,13]

Development of Source Profiles

Tables I through VII summarize information on source fingerprints. Included in the tables are data expressed in the original units of measurement and as a weight percentage of the total NMOC. An entry of zero represents a quantitative estimate of source composition for a specific compound. In contrast, a blank entry represents the case when the compound was not measured and the actual value is unknown. For modeling purposes, unknown values should be taken as zero.

Vehicle emissions. Table I shows a summary of the most recent and complete data sets on the hydrocarbon emissions from motor vehicles. The table lists data collected using a wide variety of methods. For example, the dynamometer data represent the average tail-pipe emissions from the FTP driving cycle test for 46 in-service vehicles collected under laboratory conditions (note that the vehicles were tested without any modifications or engine tuning);[14] the roadway data represent

Table I. Vehicle emissions source fingerprint.

	Dynamometer[a]		Roadway[b]		Tunnel[c]		Japan[d]	VOC Species[e] Manual
	(g/mile)	(wt%)	($\mu g/m^3$)	(wt%)	(ppbC)[f]	(wt%)	(wt%)	(wt%)
Fitting compounds								
Ethane	.0272	1.68	9.24	1.77			1.61	1.57
Ethylene	.1592	9.84	36.72	7.03	408.7	9.39	6.22	4.37
Propane	.0589	3.64	4.41	0.84			3.16	
Propylene			13.12	2.51	122.4	2.80	2.91	1.62
Acetylene	.0683	4.22	29.88	5.72	160.7	3.43	2.85	0.83
i-Butane	.0104	0.64			76.4	1.81	2.38	1.89
n-Butane	.0790	4.88	16.42	3.14	198.1	4.69	7.77	10.57
i-Pentane	.0628	3.88	31.55	6.04	305.8	7.18	5.39	7.28
n-Pentane	.0282	1.74	15.11	2.89	145.9	3.44	3.11	3.21
2-Methylpentane	.0253	1.56					1.97	1.95
3-Methylpentane	.0165	1.02			73.8	1.73	1.19	
n-Hexane	.0120	0.74			74.8	1.76	2.28	0.97
2,4-Dimethylpentane	.0101	0.62			68.9	1.61		0.64
Benzene	.0580	3.58	15.49	2.96	202.2	4.29	2.90	3.11
Toluene	.1238	7.65	31.76	6.08	303.4	6.50	5.44	5.72
Ethylbenzene	.0176	1.09	6.43	1.23			0.83	0.85
p-Xylene/m-Xylene	.0568	3.51	21.65	4.14	162.7	3.53	1.24	2.84
o-Xylene	.0343	2.12	6.88	1.32	74.3	1.61	0.57	1.73
Chloroform								
1,1,1-Trichloroethane								
Carbon Tetrachloride								
Trichloroethylene								
Perchloroethylene								
Sub-total	.8484	52.43	238.67	45.67	2378.1	53.77	51.81	50.54
Non-fitting compounds								
1,3-Butadiene								1.87
2,2,4-Trimethylpentane	0.0381	2.35			56.6	1.36		2.19
Cyclohexane					45.6	1.06		1.55
2,3,3-Trimethylpentane	0.0202	1.25						1.21
3-Methylhexane	0.0183	1.13			49.7	1.17		1.18
1,3,5-Trimethylbenzene	0.0419	2.59			26.7	0.60		2.08
1,2,4-Trimethylbenzene	0.0541	3.34						2.55
1-Methyl-3-Ethylbenzene	0.0244	1.51						1.18
2-Methyldecane	0.0216	1.33						1.20
Total non-fitting	0.2186	13.50			178.6	4.19		15.01
Total paraffins	0.6910	42.70	214.25	41.02	1678.1	39.6		
Total olefins	0.3686	22.78	95.37	18.26	940.3	21.6		
Total aromatics	0.4867	30.08	146.30	28.01	1516.4	32.8		
Unknown Compounds	0.0719	4.44	36.93	7.07				23.30
Unexplained			29.46	5.64	161.0	6.0		11.15
Total NMHC	1.6182	100.00	522.30	100.00	4295.8	100.00		100.00
Total Aldehydes	0.0425	2.6264	9.66	1.85				
Carbon Monoxide	16.28	1006.06	4211.0	806.7	15600	715.2		
Oxides of Nitrogen	2.18	134.72	343.0	65.7	2416	118.6		

[a] Based on average emissions from FTP driving cycle test for 46 in-service vehicles.[14]
[b] From upwind-downwind sampling.[15]
[c] From NMOC measurements in the Lincoln Tunnel.[16]
[d] From ambient monitoring in Kanagawa Prefecture;[3,17] Wt% of the 17 measured components adjusted to total % for same components in dynamometer average.
[e] Composite.[18]
[f] Parts per billion carbon for hydrocarbons, parts per billion for CO and NO_x.

Difference: 6,703 tons/year

The difference is equal to more than three times the 1994 FEIS estimates. These figures were derived, each from two scientifically based, technically oriented organizations, the SIP non-road mobile sources emission data supplied by PSAPCA in consultation with EPA 1992 Seattle Study data, and an experienced consultant using information supplied by the Port of Seattle. Both studies estimated pollution production levels using fleet mix and operational data obtained from the Port of Seattle/FAA. Yet each study came up with such vastly divergent estimates that the conclusions cast doubt on the accuracy of ***either one***. The disparity between these two estimates demands a third party to evaluate the methods, data and conclusions used by each study and then render an unbiased opinion of either the flaw(s) of each or develop an entirely new study for comparative purposes.

The goal of the SIP is to chart air pollution and add improvements over time to eventually reach attainment of the standards to protect public health and better the environment. Implementation of control measures and identifying hot spots are two very important elements in achieving attainment of the Carbon Monoxide and Ozone standards. Many costly studies and control measures have been implemented to this end. If the airport project general conformity determination is approved with the existing predicted carbon monoxide and ozone precursor NO2 violations continuing without any TCM or mitigation to bring levels to at or below the standards, the purpose and intent of the State Implementation Plan is not achieved.

Additionally, it should be the responsibility of those regulatory agencies with the charge over air quality in the region to identify the airport hot-spots in the SIP. With CO and NO2 violations occurring in the FEIS which uses below reality existing condition numbers of operations and unsubstantiated projections for improvements with the third runway, it is inconceivable that the hot-spots went unidentified by EPA, Ecology and/or PSAPCA when the much higher SIP numbers were developed. There could conceivably be more hot-spots of violations within the region which have, as yet, not been identified if the airport SIP failed to identify rates which could be triple 18.0 ppm 8/hour CO at Sea-Tac.

Conformity and the Clean Air Act

"The purpose of conformity is to ensure that transportation activities improve, or at least do not worsen air quality." [1] "The key conformity requirements are that transportation activities:

- Cannot cause or contribute to any new violation of national ambient air quality standards
- Cannot increase the frequency or severity of any existing violation of the standards
- Cannot delay timely attainment of the standards"[2]

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[1] Supplement to the State Implementation Plan WDOE January 1993 page 5-9
[2] Ibid page 5-10