

APPENDIX C

Ambient Monitoring Data for Benzene, Formaldehyde,
1,3-Butadiene, and Acetaldehyde

Table C-1.
EPA Aerometric Information Retrieval System (AIRS) 11/6/91

Pollutant Name	Average Concentration			Sampling Sites	Land Use of Monitor Location	Sampling Time/Frequency	Num. of Samples		
	1987	1988	1989				87	88	89
Benzene	3.17	1.68		Birmingham, AL	Residential/Suburban	24 hour/Every 12 Days	7	18	
Benzene		1.40		Birmingham, AL	Residential/Suburban	24 hour/Every 12 Days		6	
Benzene	1.66			Oakland, CA	Residential/Suburban	24 hour/Every 12 Days	15		
Benzene	2.09			Oakland, CA	Residential/Suburban	24 hour/Every 12 Days	14		
Benzene	1.59			Oakland, CA	Commercial/Suburban	24 hour/Every 12 Days	13		
Benzene	3.53			Fresno, CA	Residential/Suburban	24 hour/Every 12 Days	11		
Benzene	2.04			Bakersfield, CA	Residential/Urban & Center City	24 hour/Every 12 Days	13		
Benzene	3.26			Los Angeles, CA	Commercial/Suburban	24 hour/Every 12 Days	23		
Benzene	3.49			Los Angeles, CA	Residential/Urban & Center City	24 hour/Every 12 Days	20		
Benzene	3.19			Los Angeles, CA	Residential/Suburban	24 hour/Every 12 Days	25		
Benzene	1.29			Merced, CA	Commercial/Suburban	24 hour/Every 12 Days	9		
Benzene	2.67			Riverside, CA	Residential/Suburban	24 hour/Every 12 Days	22		
Benzene	1.92			Sacramento, CA	Residential/Suburban	24 hour/Every 12 Days	10		
Benzene	2.65			San Bernardino, CA	Residential/Urban & Center City	24 hour/Every 12 Days	25		
Benzene	1.66			San Diego, CA	Residential/Suburban	24 hour/Every 12 Days	26		
Benzene	1.84			San Diego, CA	Commercial/Suburban	24 hour/Every 12 Days	21		
Benzene	1.08			San Francisco, CA	Commercial/Urban & Center City	24 hour/Every 12 Days	10		
Benzene	1.89			Stockton, CA	Residential/Urban & Center City	24 hour/Every 12 Days	15		
Benzene	2.13			Santa Barbara, CA	Mobile/Urban & Center City	24 hour/Every 12 Days	12		
Benzene	3.70			Santa Barbara, CA	Mobile/Urban & Center City	24 hour/Every 12 Days	11		
Benzene	2.04			San Jose, CA	Residential/Urban & Center City	24 hour/Every 12 Days	14		
Benzene	1.35			Modesto, CA	Commercial/Urban & Center City	24 hour/Every 12 Days	11		
Benzene	1.97			Oxnard, CA	Residential/Suburban	24 hour/Every 12 Days	23		
Benzene	1.41	0.73		Miami, FL	Commercial/Urban & Center City	24 hour/Every 12 Days	6	20	
Benzene		0.85		Miami, FL	Commercial/Urban & Center City	24 hour/Every 12 Days		5	
Benzene	1.25	0.56		Jacksonville, FL	Commercial/Suburban	24 hour/Every 12 Days	5	17	
Benzene		0.56		Jacksonville, FL	Commercial/Suburban	24 hour/Every 12 Days		5	
Benzene	1.02	0.91		Atlanta, GA	Commercial/Urban & Center City	24 hour/Every 12 Days	5	17	
Benzene		0.98		Atlanta, GA	Commercial/Urban & Center City	24 hour/Every 12 Days		4	
Benzene	1.44	1.04	1.37	Chicago, IL	Residential/Urban & Center City	24 hour/Every 12 Days	4	28	18
Benzene		0.95	0.88	Chicago, IL	Residential/Suburban	24 hour/Every 12 Days		19	20
Benzene	0.93	2.19	1.92	Chicago, IL	Industrial/Suburban	24 hour/Every 12 Days	4	28	16
Benzene	9.54	2.78		St. Louis, MO	Industrial/Suburban	24 hour/Every 12 Days	5	14	
Benzene	1.72	1.55		Louisville, KY	Commercial/Urban & Center City	24 hour/Every 12 Days	4	16	

Table C-1 Con't.

Benzene	1.66	0.80		Baton Rouge, LA	Commercial/Urban & Center City	24 hour/Every 12 Days	8	19	
Benzene		0.92		Baton Rouge, LA	Commercial/Urban & Center City	24 hour/Every 12 Days		5	
Benzene		1.10	0.70	Lowell, MA	Residential/Suburban	24 hour/Every 12 Days		28	17
Benzene	1.03	1.19	1.13	Boston, MA	Industrial/Urban & Center City	24 hour/Every 12 Days	4	24	20
Benzene	0.77	1.10	0.90	Boston, MA	Industrial/Urban & Center City	24 hour/Every 12 Days	4	24	18
Benzene		1.79		Detroit, MI	Industrial/Urban & Center City	24 hour/Every 12 Days		11	
Benzene		0.78		Dearborn, MI	Industrial/Suburban	24 hour/Every 12 Days		16	
Benzene		0.50		Dearborn, MI	Industrial/Suburban	24 hour/Every 12 Days		6	
Benzene		0.85		Port Huron, MI	Residential/Suburban	24 hour/Every 12 Days		14	
Benzene		1.37		Port Huron, MI	Residential/Suburban	24 hour/Every 12 Days		4	
Benzene		0.60		Lansing/E. Lansing, MI	Commercial/Urban & Center City	24 hour/Every 12 Days		16	
Benzene			1.18	New York, NY	Residential/Suburban	24 hour/Every 12 Days			62
Benzene			1.17	New York, NY	Residential/Suburban	24 hour/Every 12 Days			62
Benzene			1.05	New York, NY	Residential/Urban & Center City	24 hour/Every 12 Days			62
Benzene	1.50	2.39		Cleveland, OH	Commercial/Urban & Center City	24 hour/Every 12 Days	5	18	
Benzene		3.46		Cleveland, OH	Commercial/Urban & Center City	24 hour/Every 12 Days		4	
Benzene		0.67		Dallas, TX	Commercial/Urban & Center City	24 hour/Every 12 Days		21	
Benzene		0.63		Dallas, TX	Commercial/Urban & Center City	24 hour/Every 12 Days		4	
Benzene		1.67	1.61	Houston, TX	Residential/Suburban	24 hour/Every 12 Days		21	19
Benzene		1.43		Houston, TX	Residential/Suburban	24 hour/Every 12 Days		23	
Benzene		0.79		Houston, TX	Residential/Suburban	24 hour/Every 12 Days		5	
Benzene		2.19	1.95	Houston, TX	Residential/Suburban	24 hour/Every 12 Days		14	20
Benzene	2.11			Houston, TX	Residential/Suburban	24 hour/Every 12 Days	7		
Benzene		1.73	1.46	Deer Park, TX	No info. listed	24 hour/Every 12 Days		28	20
Benzene	1.05	1.17		Burlington, VT	Commercial/Urban & Center City	24 hour/Every 12 Days	7	28	
Benzene	1.01	0.87		Burlington, VT	Commercial/Urban & Center City	24 hour/Every 12 Days	4	10	
Benzene		1.52	1.32	Tacoma, WA	Industrial/Suburban	24 hour/Every 12 Days		20	19

Benzene Average 2.13ppb 1.27ppb 1.28ppb
Annual Concentrations

Table C-1. Con't.

Formaldehyde		3.90	Birmingham, AL	Residential/Suburban	24 hour/Every 12 Days		19
Formaldehyde	1.43	2.02	Miami, FL	Commercial/Urban & Center City	24 hour/Every 12 Days	6	19
Formaldehyde		2.43	Jacksonville, FL	Commercial/Suburban	24 hour/Every 12 Days		16
Formaldehyde	3.28	3.11	Atlanta, GA	Commercial/Urban & Center City	24 hour/Every 12 Days	5	^20
Formaldehyde	2.21	2.09	Chicago, IL	Residential/Suburban	24 hour/Every 12 Days	7	7
Formaldehyde	1.51	1.93	St. Louis, MO	Industrial/Suburban	24 hour/Every 12 Days	9	19
Formaldehyde	4.68	5.03	Louisville, KY	Commercial/Urban & Center City	24 hour/Every 12 Days	4	20
Formaldehyde	2.27	2.13	Baton Rouge, LA	Commercial/Urban & Center City	24 hour/Every 12 Days	8	20
Formaldehyde	3.70	3.56	Dearborn, MI	Industrial/Suburban	24 hour/Every 12 Days	8	18
Formaldehyde	3.11	2.56	Detroit, MI	Industrial/Urban & Center City	24 hour/Every 12 Days	8	18
Formaldehyde	2.46	1.20	Port Huron, MI	Residential/Suburban	24 hour/Every 12 Days	7	19
Formaldehyde	1.90	1.51	Lansing/E. Lansing, MI	Commercial/Suburban	24 hour/Every 12 Days	8	19
Formaldehyde	4.72	3.94	Cleveland, OH	Commercial/Urban & Center City	24 hour/Every 12 Days	6	18
Formaldehyde	2.26	1.80	Dallas, TX	Commercial/Urban & Center City	24 hour/Every 12 Days	9	19
Formaldehyde	3.11	2.94	Houston, TX	Residential/Suburban	24 hour/Every 12 Days	7	22
Formaldehyde	2.49	2.19	Burlington, VT	Commercial/Urban & Center City	24 hour/Every 12 Days	8	20

Formaldehyde 2.79ppb 2.65ppb _____
 Average
 Annual Concentrations:

Table C-1. Con't.

Acetaldehyde		2.49	Birmingham, AL	Residential/Suburban	24 hour/Every 12 Days		17
Acetaldehyde	1.06	1.59	Miami, FL	Commercial/Urban & Center City	24 hour/Every 12 Days	5	17
Acetaldehyde		1.50	Jacksonville, Fl	Commercial/Suburban	24 hour/Every 12 Days		12
Acetaldehyde	1.63	1.95	Atlanta, GA	Commercial/Urban & Center City	24 hour/Every 12 Days	4	18
Acetaldehyde	1.17	0.98	Chicago, IL	Residential/Suburban	24 hour/Every 12 Days	6	5
Acetaldehyde	0.83	1.36	St. Louis, MO	Industrial/Suburban	24 hour/Every 12 Days	7	17
Acetaldehyde		1.88	Louisville, KY	Commercial/Urban & Center City	24 hour/Every 12 Days		16
Acetaldehyde	1.54	1.42	Baton Rouge, LA	Commercial/Urban & Center City		8	17
Acetaldehyde	0.78	1.06	Port Huron, MI	Residential/Suburban	24 hour/Every 12 Days	5	17
Acetaldehyde	1.22	1.74	Dearborn, MI	Industrial/Suburban	24 hour/Every 12 Days	5	16
Acetaldehyde	1.35	1.84	Detroit, MI	Industrial/Urban & Center City	24 hour/Every 12 Days	8	16
Acetaldehyde	1.12	1.05	Lansing/E.Lansing, MI	Commercial/Urban & Center City	24 hour/Every 12 Days	6	16
Acetaldehyde	2.08	1.91	Cleveland, OH	Commercial/Urban & Center City	24 hour/Every 12 Days	6	15
Acetaldehyde	1.29	1.35	Dallas, TX	Commercial/Urban & Center City	24 hour/Every 12 Days	9	18
Acetaldehyde	2.15	2.90	Houston, TX	Residential/Suburban	24 hour/Every 12 Days	6	19
Acetaldehyde	1.23	1.06	Burlington, VT	Commercial/Urban & Center City	24 hour/Every 12 Days	7	17
Acetaldehyde	1.34ppb	1.63ppb					
Average Annual Concentrations:							

Table C-1. Con't.

Pollutant Name	Average Concentration			Sampling Sites	Land Use of Monitor Location	Sampling Time/Frequency	Num. of Samples		
	1988	1990	1991				88	90	91
1,3-Butadiene	0.44	(ppb)		Louisville, KY	Commercial/Urban & Center City	24 hour/Every 12 Days	6		
1,3-Butadiene	1.11	0.715		Houston, TX	Residential/Suburban	24 hour/Every 12 Days	6	4	
1,3-Butadiene	0.47			Burlington, VT	Commercial/Urban & Center City	24 hour/Every 12 Days	6		
1,3-Butadiene		0.33	0.07	Detroit, MI	Commercial/Urban & Center City	24 hour/Every 12 Days		19	28
1,3-Butadiene		0.20	0.11	Arlington County, VA	Commercial/Urban & Center City	24 hour/Every 12 Days		13	18
1,3-Butadiene		0.16	0.12	Henrico County, VA	Residential/Suburban	24 hour/Every 12 Days		21	12
1,3-Butadiene		0.22	0.11	Hampton, VA	Residential/Suburban	24 hour/Every 12 Days		14	22
1,3-Butadiene		0.13	0.06	Hopewell, VA	Residential/Suburban	24 hour/Every 12 Days		16	15
1,3-Butadiene		0.24	0.12	Roanoke, VA	Residential/Suburban	24 hour/Every 12 Days		14	22
1,3-Butadiene Average Annual Concentration:	0.67 ppb	0.29 ppb	0.10 ppb						

Table C-2.
TAMS--Toxic Air Monitoring System

9/5/91

Pollutant Name	Sample Year(s)	Average Concentration (ppb)	Sampling Sites	Monitor Location/Land Use	Sampling Time/Frequency
Benzene	November 1987 to September 1989	0.99	Boston-1	Urban Area-Industrial	24 hour/Every 12 Days
	November 1987 to September 1989	1.15	Boston-2	Urban Area-Industrial	24 hour/Every 12 Days
	January 1987 to September 1989	0.95	Boston-3	Suburban Area-Residential	24 hour/Every 12 Days
		1.03			
Benzene	November 1987 to September 1989	1.19	Chicago-1	Urban Area-Industrial	24 hour/Every 12 Days
	November 1987 to September 1989	1.99	Chicago-2	Urban Area-Industrial	24 hour/Every 12 Days
	May 1988 to September 1989	0.91	Chicago-3	O'Hare Airport-Industrial	24 hour/Every 12 Days
		1.36			
Benzene	February 1988 to September 1989	2.05	Houston-1	Urban Area-Industrial	24 hour/Every 12 Days
	December 1987 to September 1989	1.59	Houston-2	Urban Area-Industrial	24 hour/Every 12 Days
	February 1988 to September 1989	1.64	Houston-3	Suburban Area-Residential	24 hour/Every 12 Days
		1.76			
Benzene	May 1988 to September 1989	0.62	Seattle/Tacoma	Port Of Tacoma-Industrial	24 hour/Every 12 Days
Formaldehyde	November 1987 to September 1989	1.41	Boston-1	Urban Area-Industrial	24 hour/Every 12 Days
	November 1987 to September 1989	1.83	Boston-2	Urban Area-Industrial	24 hour/Every 12 Days
	January 1987 to September 1989	1.44	Boston-3	Suburban Area-Residential	24 hour/Every 12 Days
		1.56			
Formaldehyde	November 1987 to September 1989	1.93	Chicago-1	Urban Area-Industrial	24 hour/Every 12 Days
	November 1987 to September 1989	2.27	Chicago-2	Urban Area-Industrial	24 hour/Every 12 Days
	May 1988 to September 1989	2.18	Chicago-3	O'Hare Airport-Industrial	24 hour/Every 12 Days
		2.13			

Table C-2 Con't.

Formaldehyde	February 1988 to September 1989	1.78	Houston-1	Urban Area-Industrial	24 hour/Every 12 Days
	December 1987 to September 1989	1.85	Houston-2	Urban Area-Industrial	24 hour/Every 12 Days
	February 1988 to September 1989	1.23	Houston-3	Suburban Area-Residential	24 hour/Every 12 Days
		1.62			
Formaldehyde	May 1988 to September 1989	1.54	Seattle/Tacoma	Port of Tacoma-Industrial	24 hour/Every 12 Days

Table C-3.
Urban Air Toxics Monitoring Program (UATMP) 9/5/91

Pollutant Name	Average Concentration (ppb)**		Sampling Sites	Monitor Location//Land Use	Sampling Time/Frequency	Num. Samples Compound Detected/Maximum Total	
	1989	1990				1989	1990
Benzene	1.62	1.37	Baton Rouge, LA	Urban/Center City-Commercial	24-Hour/Every 12 Days	31/31	29/29
Benzene	3.37	1.55	Chicago, IL	Suburban Area-Residential	24-Hour/Every 12 Days	27/27	29/29
Benzene	1.83	1.40	Camden, NJ	Suburban Area-Residential	24-Hour/Every 12 Days	32/32	30/30
Benzene	0.92		Dallas, TX	Urban/Center City-Commercial	24-Hour/Every 12 Days	25/25	
Benzene	1.83		Fort Lauderdale, FL	Urban/Center City-Commercial	24-Hour/Every 12 Days	31/31	
Benzene	2.35	2.69	Houston, TX	Suburban Area-Residential	24-Hour/Every 12 Days	34/34	28/28
Benzene	1.47		Miami, FL	Urban/Center City-Commercial	24-Hour/Every 12 Days	33/33	
Benzene	0.60	1.24	Pensacola, FL	Suburban Area-Industrial	24-Hour/Every 12 Days	7/7	42/42
Benzene	3.97		St. Louis, MO	Urban/Center City-Commercial	24-Hour/Every 12 Days	30/30	
Benzene	2.93	1.94	Sauget, IL	Suburban Area-Industrial	24-Hour/Every 12 Days	31/31	27/27
Benzene	1.38	1.28	Washington, DC-1	Urban/Center City-Commercial	24-Hour/Every 12 Days	27/27	30/30
Benzene	2.08	1.78	Washington, DC-2	Urban/Center City-Commercial	24-Hour/Every 12 Days	27/27	27/27
Benzene	0.91	1.18	Wichita, KS-1	Urban/Center City-Residential	24-Hour/Every 12 Days	31/31	30/30
Benzene	1.07		Wichita, KS-2	Suburban Area-Residential	24-Hour/Every 12 Days	31/31	
Benzene		1.39	Port Neches, TX	Suburban Area-Residential	24-Hour/Every 12 Days		28/28
Benzene		1.00	Orlando, FL	Urban/Center City-Commercial	24-Hour/Every 12 Days		28/28
Benzene		0.84	Toledo, OH	Suburban Area-Residential	24-Hour/Every 12 Days		21/21
Benzene Average Concentration ppb*:	1.96	1.47					

* calculated by averaging equally all 397 samples taken from 14 sites in 1989 and 349 samples from 12 sites in 1990.

** The arithmetic average concentration of all samples using half Model Detection Limit (MDL) value for samples in which the compound was not found.

Table C-3. Con't. UATMP-1,3-Butadiene Results

1,3-butadiene	0.39	0.36	Baton Rouge, LA	Urban/Center City-Commercial	24-Hour/Every 12 Days	11/31	8/29
1,3-butadiene	0.24	0.06	Chicago, IL	Suburban Area-Residential	24-Hour/Every 12 Days	10/27	4/29
1,3-butadiene	0.20	0.10	Camden, NJ	Suburban Area-Residential	24-Hour/Every 12 Days	19/32	9/30
1,3-butadiene	0.08		Dallas, TX	Urban/Center City-Commercial	24-Hour/Every 12 Days	8/25	
1,3-butadiene	0.20		Fort Lauderdale, FL	Urban/Center City-Commercial	24-Hour/Every 12 Days	18/31	
1,3-butadiene	0.60	0.47	Houston, TX	Suburban Area-Residential	24-Hour/Every 12 Days	23/34	17/28
1,3-butadiene	0.11		Miami, FL	Urban/Center City-Commercial	24-Hour/Every 12 Days	7/33	
1,3-butadiene		0.06	Pensacola, FL	Suburban Area-Industrial	24 Hour/Every 12 Days		6/42
1,3-butadiene	0.09		St. Louis, MO	Urban/Center City-Commercial	24-Hour/Every 12 Days	12/30	
1,3-butadiene	0.20	0.06	Sauget, IL	Suburban Area-Industrial	24-Hour/Every 12 Days	7/31	2/27
1,3-butadiene	0.11	0.10	Washington, DC-1	Urban/Center City-Commercial	24-Hour/Every 12 Days	9/27	11/30
1,3-butadiene	0.29	0.15	Washington, DC-2	Urban/Center City-Commercial	24-Hour/Every 12 Days	19/27	12/27
1,3-butadiene	0.16	0.06	Wichita, KS-1	Urban/Center City-Residential	24-Hour/Every 12 Days	10/31	1/30
1,3-butadiene	0.09		Wichita, KS-2	Suburban Area-Residential	24-Hour/Every 12 Days	7/31	
1,3-butadiene		11.09	Port Neches, TX	Suburban Area-Residential	24-Hour/Every 12 Days		24/28
1,3-butadiene		0.10	Orlando, FL	Urban/Center City-Commercial	24 Hours/Every 12 Days		8/28
1,3-butadiene		0.06	Toledo, OH	Suburban Area-Residential	24 Hours/Every 12 Days		4/21
1,3-butadiene Average Concentration:	<u>0.21</u>	<u>1.02</u>					

* Calculated by averaging all 390 samples taken from 13 sites equally in 1989 and 349 samples from 12 sites in 1990.

** The arithmetic average concentration of all samples using half Model Detection Limit (MDL) value for samples in which the compound was not found.

Table C-3 Con't. UATMP-Aldehyde Results

Acetaldehyde	1.25	1.88	Baton Rouge, LA	Urban/Center City-Commercial	24-Hour/Every 12 Days	30/31	22/30
Acetaldehyde	1.36	2.04	Chicago, IL	Suburban Area-Residential	24-Hour/Every 12 Days	27/30	28/28
Acetaldehyde	1.61	2.34	Camden, NJ	Suburban Area-Residential	24-Hour/Every 12 Days	32/32	30/30
Acetaldehyde	1.32		Dallas, TX	Urban/Center City-Commercial	24-Hour/Every 12 Days	29/31	
Acetaldehyde	1.28		Ft. Lauderdale, FL	Urban/Center City-Commercial	24-Hour/Every 12 Days	32/32	
Acetaldehyde	1.86	0.68	Houston, TX	Suburban Area-Residential	24-Hour/Every 12 Days	38/38	23/27
Acetaldehyde	1.16		Miami, FL	Urban/Center City-Commercial	24-Hour/Every 12 Days	31/32	
Acetaldehyde	1.17	0.81	Pensacola, FL	Suburban Area-Industrial	24-Hour/Every 12 Days	7/7	40/42
Acetaldehyde	1.45		St. Louis, MO	Urban/Center City-Commercial	24-Hour/Every 12 Days	30/31	
Acetaldehyde	0.92	1.03	Sauget, IL	Suburban Area-Industrial	24-Hour/Every 12 Days	29/30	28/29
Acetaldehyde	1.82	1.70	Washington, DC-1	Urban/Center City-Commercial	24-Hour/Every 12 Days	28/28	30/30
Acetaldehyde	1.61	2.47	Washington, DC-2	Urban/Center City-Commercial	24-Hour/Every 12 Days	30/30	30/30
Acetaldehyde	0.98	1.86	Wichita, KS-1	Urban/Center City-Residential	24-Hour/Every 12 Days	28/30	30/30
Acetaldehyde	1.02		Wichita, KS-2	Suburban Area-Residential	24-Hour/Every 12 Days	35/36	
Acetaldehyde		2.36	Port Neches, TX	Suburban Area-Residential	24-Hour/Every 12 Days		29/30
Acetaldehyde		1.43	Orlando, FL	Urban/Center City-Commercial	24 Hour/Every 12 Days		25/28
Acetaldehyde		0.91	Toledo, OH	Suburban Area-Residential	24 Hour/Every 12 Days		17/22
Acetaldehyde Average Concentration: ppb*	<u>1.36</u>	<u>1.72***</u>					

* Calculated by averaging equally all 418 samples taken from 14 sites for 1989 and all 356 samples taken from 12 sites in 1990.

** The arithmetic average concentration of all samples using half Model Detection Limit (MDL) value for samples in which the compound was not found.

*** Sampling technique in 1990 accounted for the interference of ozone resulting in higher exposure numbers.

Table C-3 Con't. UATMP-Formaldehyde Results

Formaldehyde	1.52	4.99	Baton Rouge, LA	Urban/Center City-Commercial	24-Hour/Every 12 Days	31/31	30/30
Formaldehyde	2.07	4.75	Chicago, IL	Suburban Area-Residential	24-Hour/Every 12 Days	30/30	28/28
Formaldehyde	2.41	4.90	Camden, NJ	Suburban Area-Residential	24-Hour/Every 12 Days	32/32	30/30
Formaldehyde	2.01		Dallas, TX	Urban/Center City-Commercial	24-Hour/Every 12 Days	29/31	
Formaldehyde	2.24		Ft. Lauderdale, FL	Urban/Center City-Commercial	24-Hour/Every 12 Days	32/32	
Formaldehyde	2.32	1.46	Houston, TX	Suburban Area-Residential	24-Hour/Every 12 Days	38/38	26/27
Formaldehyde	1.76		Miami, FL	Urban/Center City-Commercial	24-Hour/Every 12 Days	32/32	
Formaldehyde	1.59	2.47	Pensacola, FL	Suburban Area-Industrial	24-Hour/Every 12 Days	7/7	42/42
Formaldehyde	2.41		St. Louis, MO	Urban/Center City-Commercial	24-Hour/Every 12 Days	31/31	
Formaldehyde	1.45	2.49	Sauget, IL	Suburban Area-Industrial	24-Hour/Every 12 Days	30/30	29/29
Formaldehyde	3.77	4.86	Washington, DC-1	Urban/Center City-Commercial	24-Hour/Every 12 Days	28/28	30/30
Formaldehyde	3.09	7.92	Washington, DC-2	Urban/Center City-Commercial	24-Hour/Every 12 Days	30/30	30/30
Formaldehyde	1.46	4.73	Wichita, KS-1	Urban/Center City-Residential	24-Hour/Every 12 Days	30/30	30/30
Formaldehyde	1.40		Wichita, KS-2	Suburban Area-Residential	24-Hour/Every 12 Days	36/36	
Formaldehyde		4.82	Port Neches, TX	Suburban Area-Residential	24 Hour/Every 12 Days		29/30
Formaldehyde		4.39	Orlando, TX	Urban/Center City-Commercial	24 Hour/Every 12 Days		28/28
Formaldehyde		2.40	Toledo, OH	Suburban Area-Residential	24 Hour/Every 12 Days		22/22
Formaldehyde Average Concentration: ppb*	<u>2.12</u>	<u>4.21***</u>					

* Calculated by averaging equally all 418 samples taken from 14 sites in 1989 and all 356 samples taken from 12 sites in 1990.

** The arithmetic average concentration of all samples using half Model Detection Limit (MDL) value for samples in which the compound was not found.

*** Sampling technique in 1990 accounted for the interference of ozone resulting in higher exposure numbers.

Table C-4.
National Ambient Volatile Organic (VOC's) Database Update

10/4/91

Pollutant Name	Sample Year(s)	Average Concentration (ppb)	# of Samples Used For Average	Sampling Sites	Land Use of Monitor Location	# of Samples/Sampling Time
Benzene	1/14/87 to 9/22/87	2.04	13	Bakersfield, CA	Urban	1/24-Hours
Benzene	1/8/87 to 9/27/87	1.91	26	Chula Vista, CA	Urban	1/24-Hours
Benzene	1/25/87 to 9/13/87	1.89	10	Citrus Heights, CA	Urban	1/24-Hours
Benzene	1/5/87 to 9/28/87	2.06	14	Concord, CA	Urban	1/24-Hours
Benzene	2/2/87 to 9/22/87	1.83	21	El Cajon, CA	Urban	1/24-Hours
Benzene	1/5/87 to 9/29/87	3.26	23	El Monte, CA	Urban	1/24-Hours
Benzene	1/7/87 to 9/30/87	1.66	15	Fremont, CA	Urban	1/24-Hours
Benzene	1/6/87 to 9/14/87	3.53	11	Fresno, CA	Urban	1/24-Hours
Benzene	1/16/87 to 9/28/87	3.19	25	Long Beach, CA	Urban	1/24-Hours
Benzene	1/7/87 to 9/21/87	3.49	20	Los Angeles, CA	Urban	1/24-Hours
Benzene	1/13/87 to 6/21/87	1.29	9	Merced, CA	Urban	1/24-Hours
Benzene	1/12/87 to 8/30/87	1.36	11	Modesto, CA	Urban	1/24-Hours
Benzene	1/6/87 to 8/12/87	1.58	13	Richmond, CA	Urban	1/24-Hours
Benzene	1/7/87 to 9/13/87	2.67	22	Rubidoux, CA	Urban	1/24-Hours
Benzene	2/3/87 to 2/3/87	3.60	1	San Francisco, CA	Urban	1/24-Hours
Benzene	1/27/87 to 9/21/87	2.04	14	San Jose, CA	Urban	1/24-Hours
Benzene	1/28/87 to 9/15/87	2.88	23	Santa Barbara, CA	Urban	1/24-Hours
Benzene	1/1/87 to 9/30/87	1.97	23	Simi Valley, CA	Urban	1/24-Hours
Benzene	1/11/87 to 9/29/87	1.89	15	Stockton, CA	Urban	1/24-Hours
Benzene	1/13/87 to 9/23/87	2.65	25	Upland, CA	Urban	1/24-Hours
Benzene	1/3/87 to 2/20/87	2.61	6	Philadelphia, PA	Suburban	1/24-Hours
Benzene	1/8/87 to 4/28/87	1.19	8	San Leandro, CA	Urban	1/24-Hours
Benzene	1/8/87 to 4/28/87	1.08	8	Livermore, CA	Urban	1/24-Hours
Benzene	1/19/87 to 4/15/87	1.35	8	San Rafael, CA	Urban	1/24-Hours
Benzene	1/12/87 to 4/22/87	1.93	8	Napa, CA	Urban	1/24-Hours
Benzene	1/12/87 to 4/22/87	2.20	8	Vallejo, CA	Urban	1/24-Hours
Benzene	1/19/87 to 4/15/87	2.01	8	Santa Rosa, CA	Urban	1/24-Hours

Table C-4 Con't.

Benzene	1/6/87 to 4/26/87	2.31	8	Redwood City, CA	Urban	1/24-Hours
Benzene	1/6/87 to 4/26/87	1.51	8	Mountain View, CA	Urban	1/24-Hours
Benzene	4/26/87 to 4/26/87	0.800	1	Oakland, CA	Urban	1/24-Hours
Benzene	1/1/87 to 6/30/87	2.54	159	Baton Rouge, LA	Urban	Varies

Overall Benzene Average Concentration: 2.21 ppb

* Calculated by averaging all 564 samples taken from 31 cities equally
Zero values included in average.

Formaldehyde	1/3/87 to 6/8/87	3.25	36	Philadelphia, PA	Suburban	1/24-Hours
--------------	------------------	------	----	------------------	----------	------------

Overall Formaldehyde Average Concentration: 3.25 ppb

* Calculated by averaging all 36 samples taken from Philadelphia equally
Zero values included in average

1,3-Butadiene	9/22/87 to 10/4/87	0.30	2	Bakersfield, CA	Urban	1/24-Hours
1,3-Butadiene	9/16/87 to 9/28/87	0.35	2	Concord, CA	Urban	1/24-Hours
1,3-Butadiene	10/4/87 to 10/4/87	0.60	1	Fremont, CA	Urban	1/24-Hours
1,3-Butadiene	10/4/87 to 10/4/87	0.40	1	Richmond, CA	Urban	1/24-Hours
1,3-Butadiene	9/9/87 to 10/7/87	0.25	2	San Jose, CA	Urban	1/24-Hours
1,3-Butadiene	9/29/87 to 9/27/87	0.30	1	Stockton, CA	Urban	1/24-Hours

Overall 1,3-Butadiene Average Concentration: 0.344 ppb

* calculated by averaging all 9 samples taken from 6 cities equally