2005 Air Toxics Summary

New Jersey Department of Environmental Protection

Introduction

Air pollutants can be divided into two categories: the criteria pollutants (ozone, sulfur dioxide, carbon monoxide, nitrogen dioxide, particulate matter, and lead); and air toxics. The criteria pollutants have been addressed at the national level since the 1970's. The United States Environmental Protection Agency (USEPA) has set National Ambient Air Quality Standards (NAAQS) for them, and they are subject to a standard planning process that includes monitoring, reporting, and control requirements. Each of these pollutants is discussed in its own section of this New Jersey Department of Environmental Protection (NJDEP) 2005 Air Quality Report.

Air toxics are basically all the other chemicals released into the air that have the potential to cause adverse health effects in humans. These effects cover a wide range of conditions, from lung irritation to birth defects to cancer. There are no NAAQS for these pollutants, but in 1990 the U.S. Congress directed the USEPA to begin to address a list of almost 200 air toxics by developing control technology standards for specific categories of sources that emit them. These air toxics are known as the Clean Air Act Hazardous Air Pollutants (HAPs). You can get more information about HAPs at the USEPA Air Toxics web site at www.epa.gov/ttn/atw. NJDEP also has several web pages dedicated to air toxics. They can be accessed at www.state.nj.us/dep/airtoxics.

Health Effects

People exposed to significant amounts of air toxics may have an increased chance of getting cancer or experiencing other serious health effects. The non-cancer health effects can range from respiratory, neurological, reproductive, developmental, or immune system damage, to irritation and effects on specific organs. In addition to inhalation exposure, there can be risks from the deposition of toxic pollutants onto soils or surface waters. There, they can be taken up by plants and animals, which are later consumed by humans.

The effects on human health resulting from exposure to specific air toxics can be estimated by using chemical-specific "health benchmarks." These toxicity values are developed by the USEPA and other agencies, using health studies for a chemical. For carcinogens, the health benchmark is the concentration of the pollutant that corresponds to a one in a million increase in the risk of getting cancer if a person was to breathe that concentration over his or her entire lifetime. The health benchmark for non-carcinogens is a concentration at which no adverse health effects are expected to occur (this is also known as a reference concentration). Not all air toxics have health benchmarks because of a lack of toxicity studies. Available health benchmarks, for the air toxics monitored in New Jersey are listed in Tables 5 through 8. If ambient air concentrations exceed the health benchmarks then some action, such as a reduction in emissions, should be considered.

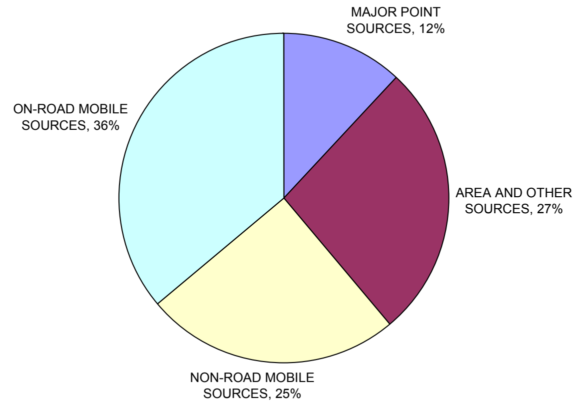
Sources of Air Toxics

A number of years ago, USEPA began the National-Scale Air Toxics Assessment (NATA). Starting with the year 1996, they set out on a three-year cycle to determine people's exposure to air toxics around the country. To do this, USEPA first prepared a comprehensive inventory of air toxics emissions from all man-made sources. The emissions inventory is then reviewed and revised by each state. Although there are likely to be some errors in the details of such a massive undertaking, the emissions inventory still can give us a reasonable indication of the most important sources of air toxic emissions in our state. The pie chart in Figure 1, based on the 1999 NATA emissions estimates, shows that mobile sources are the largest contributors of air toxics emissions in New Jersey.

On-road mobile sources (cars and trucks) account for 36% of the air toxics emissions, and non-road mobile sources (airplanes, trains, construction equipment, lawnmowers, boats, dirt bikes, etc.) contribute 25%. Area sources (residential, commercial, and small industrial sources) represent 27% of the inventory, and major point sources (such as factories and power plants) account for the remaining 12%.

Air toxics come from many different sources, not only manufacturing, but also other kinds of human activity. When New Jersey's emissions estimates are broken down by county (see Figure 2) it is evident that the areas with the largest air toxic emissions are generally those with the largest populations. This is directly related to high levels of vehicle use, solvent use, heating, and other population-related activities in those counties.

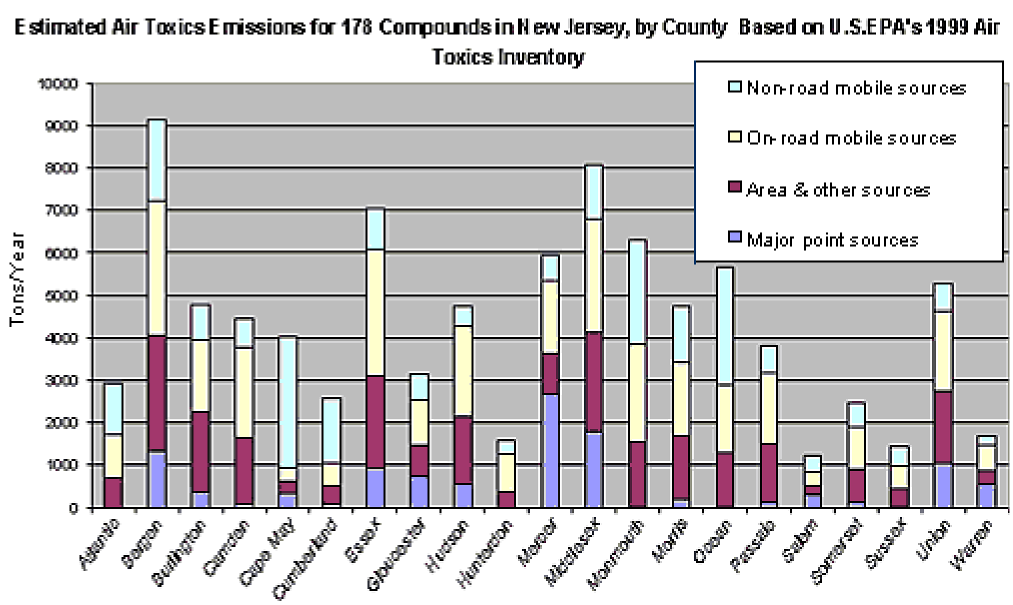
Figure 1
1999 Air Toxics Emissions Estimates for New Jersey



Estimating Air Toxics Exposure

The second step in USEPA's NATA project is to use the emissions information in an air dispersion model to estimate air toxic concentrations in the different parts of the country. The map in Figure 3 shows the predicted concentrations of benzene throughout New Jersey. The high concentration areas tend to overlap the more densely populated areas of the state, following the pattern of emissions. Not all air toxics follow this pattern, as some are more closely associated with individual point sources,

Figure 2



but in general, larger populations result in greater emissions of, and exposure to, air toxics.

Analysis of the NATA state and county average air toxics concentrations indicates that twenty-two chemicals were predicted to exceed their health benchmarks, or level of concern, in one or more counties in 1999. Twenty-one of these are considered to be cancer causing (carcinogenic) chemicals, and one (acrolein) is not. Estimated air concentrations of these 22 pollutants vary around the state, depending on the types of sources that emit them. This is summarized in Table 1.

Figure 3
NATA Predicted concentrations in New Jersey for 1999

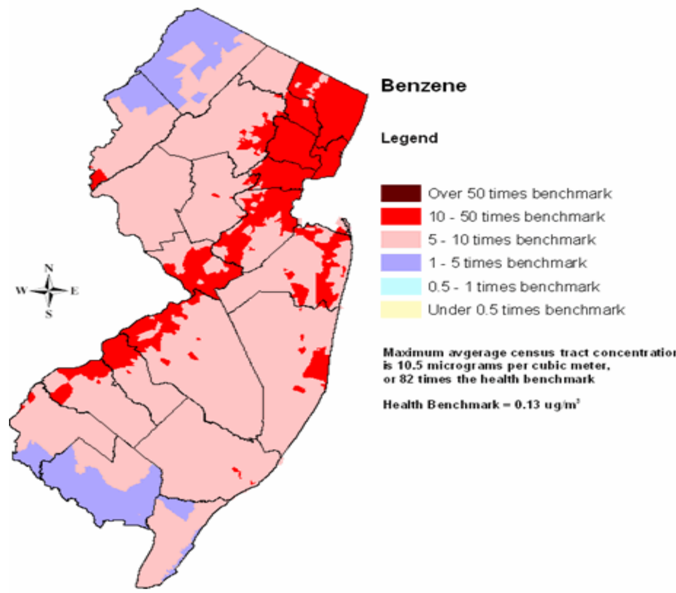


Table 1
Air Toxics of Greatest Concern in New Jersey
Based on 1999 National Air Toxics Assessment

Pollutant of Concern	Number of Counties Above Health Benchmarks	Primary Source of Emissions
Acetaldehyde	Statewide	On-road, background
Acrolein	Statewide	Mobile, area
Arsenic Compounds	4	Major, area
Benzene	Statewide	Mobile
Bis(2-ethylhexyl) phthalate	Statewide	Background
1,3-Butadiene	Statewide	On-road, background
Cadmium Compounds	1	Area
Carbon Tetrachloride	Statewide	Background
Chloroform	20	Area, background
Chromium VI	14	Area
1,4-Dichlorobenzene	4	Area
1,3-Dichloropropene	1	Area
Diesel Particulate Matter	Statewide	Mobile
Ethylene Dibromide	Statewide	Background
Ethylene Dichloride	11	Background
Ethylene Oxide	2	Area
Formaldehyde	Statewide	Mobile, background
Methyl Chloride	Statewide	Background
Naphthalene	14	Area
Nickel Compounds	1	Area, major
Perchloroethyllene	10	Area, background
1,1,2,2-Tetrachloroethane	Statewide	Background

NJ Air Toxics Monitoring Program Results For 2005

NJDEP has established four air toxics monitoring sites around the state. They are located in Camden, Elizabeth, New Brunswick and Chester (see Figure 4). The Camden site has been measuring several toxic volatile organic compounds (VOCs) since 1989. The Elizabeth site began measuring VOCs in 2000, and the New Brunswick and Chester sites became operational in July 2001. Analysis of toxic metals at all four sites also began in 2001. Metals data can be found in Appendix B (Fine Particulate Speciation Summary 2005) of this Air Quality Report (http://www.state.nj.us/dep/airmon/appb05.pdf)

2005 air toxic monitoring results for VOCs are shown in Table 2. This table contains the average concentration for each air toxic measured at the four New Jersey monitoring sites. All values are in micrograms per cubic meter ($\mu g/m^3$). More detail can be found in Tables 5 through 8, including additional statistics, detection limit information, health benchmarks used by NJDEP, risk ratios, and concentrations in parts per billion by volume (ppbv). The ppbv units are more common for monitoring results, while $\mu g/m^3$ units are generally used in modeling and health studies. Many of the compounds that were tested for were below the detection limit of the method used. These are listed separately in Table 9.

Reported averages for which a significant portion of the data (more than 50%) were below the detection limit should be viewed with extreme caution. Median values (the value of the middle sample value when the results are ranked) are reported along with the mean (average) concentrations because for some compounds only a single or very few high values were recorded. These high values will tend to increase the average concentration significantly but would have less effect on the median value. In such cases, the median value may be a better indicator of long term exposures, on which most of the health benchmarks for air toxics are based.

The Chester site has the lowest concentrations for the majority of the prevalent air toxics, However on September 4th , 2005, many compounds not detected anywhere else in the state were measured at Chester at low concentrations. This is in contrast to previous years when Chester had the fewest compounds detected. The reason for this change is currently being investigated.

Figure 4
2005 Air Toxics Monitoring Network

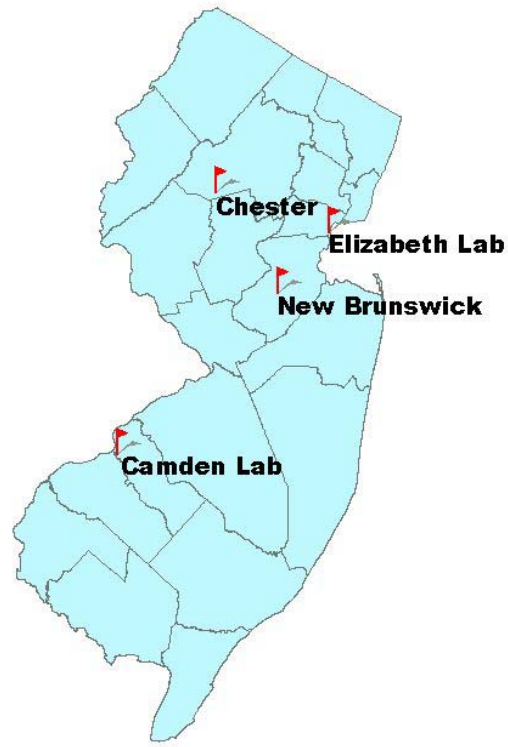


Table 2
New Jersey Air Toxics Summary – 2005

Annual Average Concentration
micrograms per cubic meter (μg/m^3) [a]

Pollutant	Camden	Chester	Elizabeth	New Brunswick
Acetaldehyde	2.88	1.53	5.03	6.20
Acetone	2.92	2.28	3.09	4.05
Acetonitrile	(24.42)	(3.26)	(0.85)	(6.05)
Acetylene	1.54	0.61	1.65	1.21
Acrylonitrile	-	-	(0.02)	-
Acrolein	(0.29)	1.19	(0.43)	1.44
tert-Amyl Methyl Ether	(0.00)	(0.00)	(0.00)	(0.00)
Benzaldehyde	0.32	0.09	0.20	0.12
Benzene	1.57	0.65	1.59	0.99
Bromochloromethane	-	(0.01)	-	-
Bromodichloromethane	-	(0.01)	-	-
Bromoform	-	(0.02)	-	-
Bromomethane	0.71	(0.03)	(0.03)	(0.02)
1,3-Butadiene	0.10	(0.02)	0.13	0.05
Butyraldehyde	0.34	0.24	0.36	0.48
Carbon Tetrachloride	0.52	0.47	0.55	0.50
Chlorobenzene	-	(0.01)	-	-
Chloroethane	0.04	(0.03)	(0.06)	(0.02)
Chloroform	(0.07)	(0.04)	(0.09)	(0.08)
Chloromethane	1.36	1.23	1.31	1.30
Chloromethylbenzene	-	(0.00)	-	-
Chloroprene	-	(0.00)	-	-
Crotonaldehyde	0.32	0.41	0.28	0.33
Dibromochloromethane	-	(0.02)	-	(0.00)
1,2-Dibromoethane	-	(0.01)	-	-
m-Dichlorobenzene	(0.00)	(0.01)	(0.00)	-
o-Dichlorobenzene	(0.00)	(0.01)	(0.00)	-
p-Dichlorobenzene	0.15	(0.02)	(0.08)	0.42
1,1-Dichloroethane	-	(0.01)	-	-
1,1-Dichloroethene	-	(0.01)	-	-
cis-1,2-Dichloroethylene	(0.01)	(0.02)	-	-
trans-1,2-Dichloroethylene	-	(0.01)	-	-
Dichlorodifluoromethane	3.31	2.95	3.14	3.12
1,2-Dichloroethane	(0.00)	(0.01)	(0.00)	(0.01)
Dichloromethane	0.57	0.62	0.81	0.55
1,2-Dichloropropane	-	-	-	-
cis-1,3-Dichloropropene	-	(0.00)	-	-
trans-1,3-Dichloropropene	-	-	-	-
Dichlorotetrafluoroethane	0.08	0.08	(0.07)	(0.07)
2,5-Dimethylbenzaldehyde	(0.00)	(0.00)	(0.01)	-

[a] Numbers in parenthesis indicate averages based on less than 50% detection

Table 2 (Continued)
New Jersey Air Toxics Summary – 2005

Annual Average Concentration
micrograms per cubic meter ($\mu g/m^3$) [a]

Pollutant	Camden	Chester	Elizabeth	New Brunswick
Ethyl Acrylate	-	-	-	-
Ethylbenzene	0.56	0.20	0.70	0.60
Ethyl tert-Butyl Ether	(0.00)	-	-	-
Formaldehyde	4.31	2.44	4.69	5.34
Hexachloro-1,3-butadiene	(0.03)	(0.03)	(0.03)	(0.03)
Hexaldehyde	0.30	0.10	0.13	0.06
Isovaleraldehyde	(0.03)	(0.01)	(0.01)	(0.01)
Methyl Ethyl Ketone	(0.64)	(0.87)	(1.39)	(1.11)
Methyl Isobutyl Ketone	(0.02)	(0.02)	(0.13)	(0.04)
Methyl Methacrylate	-	-	(0.01)	(0.00)
Methyl tert-Butyl Ether	1.50	(0.07)	2.68	(0.49)
n-Octane	0.26	(0.26)	0.72	(0.14)
Propionaldehyde	0.31	0.24	0.34	0.42
Propylene	1.87	0.63	6.58	1.06
Styrene	0.22	0.07	0.16	0.16
1,1,2,2-Tetrachloroethane	-	(0.01)	(0.00)	-
Tetrachloroethylene	0.59	(0.09)	0.31	0.24
Tolualdehydes	0.15	0.09	0.14	0.09
Toluene	3.73	1.00	3.91	2.90
1,2,4-Trichlorobenzene	(0.03)	(0.01)	(0.01)	(0.01)
1,1,1-Trichloroethane	0.09	0.08	0.09	(0.07)
1,1,2-Trichloroethane	-	(0.01)	-	-
Trichloroethylene	(0.38)	(0.01)	(0.08)	(0.05)
Trichlorofluoromethane	1.81	1.55	1.71	1.72
Trichlorotrifluoroethane	0.83	0.81	0.80	0.93
1,2,4-Trimethylbenzene	0.49	(0.09)	0.51	0.60
1,3,5-Trimethylbenzene	0.15	(0.03)	0.18	0.24
Valeraldehyde	0.17	0.07	0.19	0.12
Vinyl chloride	(0.02)	(0.01)	(0.01)	(0.00)
m,p-Xylene	1.48	0.42	1.77	1.11
o-Xylene	0.67	0.20	0.81	0.50

[a] Numbers in parenthesis indicate averages based on less than 50% detection

ESTIMATING HEALTH RISK

A simplified way to determine whether the ambient concentration of an air toxic could pose a potential human health risk is to compare the air concentration to its health benchmark. The number that we get when we divide the air concentration by the benchmark is called a **risk ratio**. If the risk ratio is less than one, the air concentration should not pose a health risk. If it is greater than one, it may be of concern. The risk ratio also indicates how much higher or lower the estimated air concentration is than the health benchmark.

Camden, Elizabeth, and New Brunswick all had nine compounds with annual average concentrations that exceeded their health benchmarks, while Chester only had six. The toxic air pollutants that exceeded their health benchmarks at all sites include acetaldehyde, benzene, carbon tetrachloride, chloromethane, and formaldehyde. Camden, New Brunswick and Elizabeth all exceeded the health benchmarks for 1,3-butadiene and tetrachloroethylene.

The top five toxic compounds of concern based on annual risk ratios are listed in Table 3. Formaldehyde contributed the highest risk at every site, but note that the magnitude of the risk was much lower at Chester. Benzene, carbon tetrachloride, and acetaldehyde were common to all four sites as well.

TRENDS AND COMPARISONS

The site in Camden is the only monitoring location that has been measuring air toxics for an extended period. The graph in Figure 5 shows the change in concentrations for three of the most prevalent air toxics (benzene, toluene, and xylene) from 1990 to 2005. The graph shows that while average concentrations can vary significantly from year to year, the overall trend is downward. High individual samples may also result in high annual averages in some years. Concentrations of most air toxics have declined significantly over the last ten years. Because air toxics comprise such a large and diverse group of compounds, however, these general trends may not hold for other compounds.

Table 3
Analytes with the 5 Highest Risk Ratios
(Based on Annual Mean Risk Ratio)
at Each Monitoring Site in 2005

	Camden		Chester		Elizabeth		New Brunswick	
Rank	**Analyte**	**Risk Ratio**	**Analyte**	**Risk Ratio**	**Analyte**	**Risk Ratio**	**Analyte**	**Risk Ratio**
1	Formaldehyde	56 [a,b]	Formaldehyde	31	Formaldehyde	61	Formaldehyde	69
2	Benzene	12	Carbon Tetrachloride	7	Benzene	12	Acetaldehyde	14
3	Carbon Tetrachloride	8	1,2 Dibromo-ethane	6	Acetaldehyde	11	Benzene	8
4	Acetaldehyde	6	Benzene	5	Carbon Tetrachloride	8	Carbon Tetrachloride	8
5	Tetrachloro-ethylene	4	Acetaldehyde	3	1,3 Butadiene	4	p-dichloro-benzene	5

[a] The risk ratio for a chemical is a comparison of the annual mean air concentration to the long-term health benchmark

[b] The long-term health benchmark is defined as the chemical-specific air concentration above which there may be human health concerns. For a carcinogen (cancer-causing chemical), the health benchmark is set at the air concentration that would cause no more than a one in a million increase in the likelihood of getting cancer, even after a lifetime of exposure. For a non-carcinogen, the health benchmark is the maximum air concentration to which exposure is likely to cause no harm, even if that exposure occurs on a daily basis for a lifetime. These toxicity values are not available for all chemicals. For more information, go to www.nj.gov/dep/aqpp/risk.html

Figure 5
Annual Averages for Selected Hazardous Air Pollutants (HAPs) at Camden Lab from 1990-2005

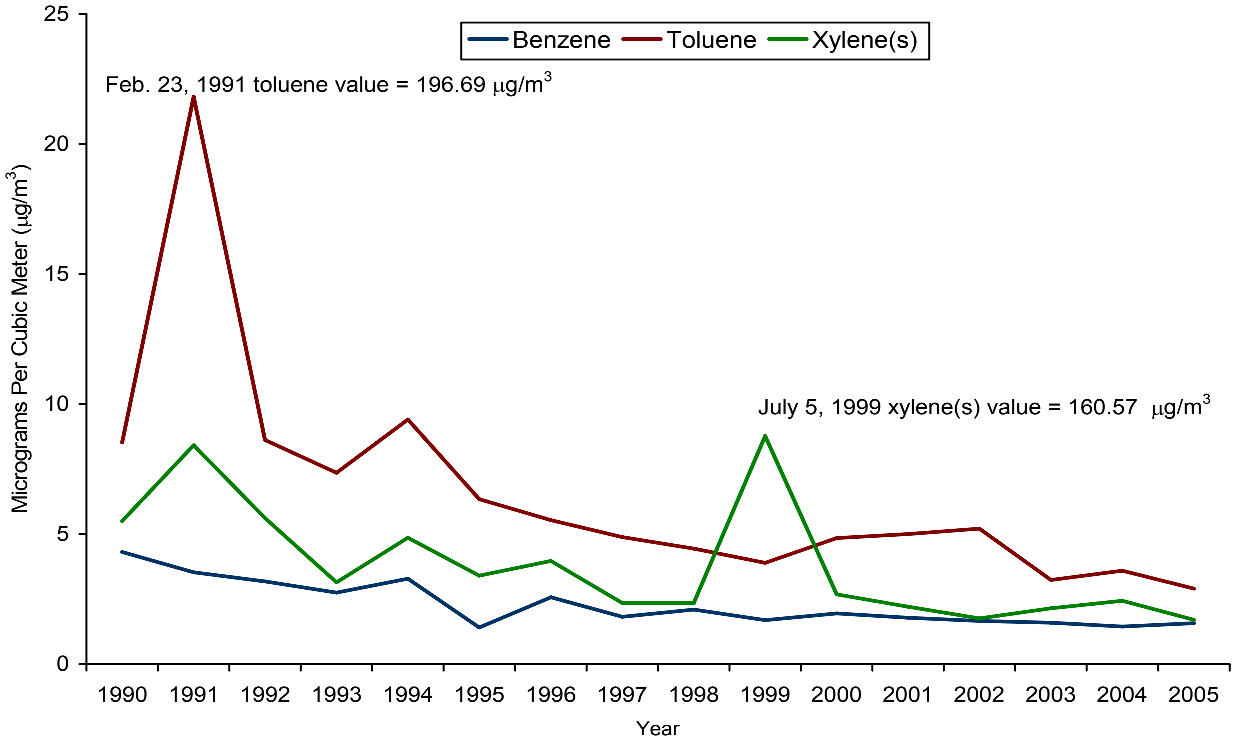


Figure 6 shows a comparison of the concentrations in Camden predicted by NATA for 1999 and the concentrations actually measured in Camden in 1999 for twelve compounds. Table 4 compares the 1999 NATA predictions with the measured concentrations for 1999 and 2005. It appears from this analysis that the agreement between predicted and monitored concentrations is fairly good. Finally, for the majority of the air toxics in Table 4, the 2005 levels measured at Camden were substantially lower than the concentrations measured in 1999.

Figure 6
Air Toxics Levels Measured in 1999 at Camden, New Jersey Compared to NATA Predicted Levels

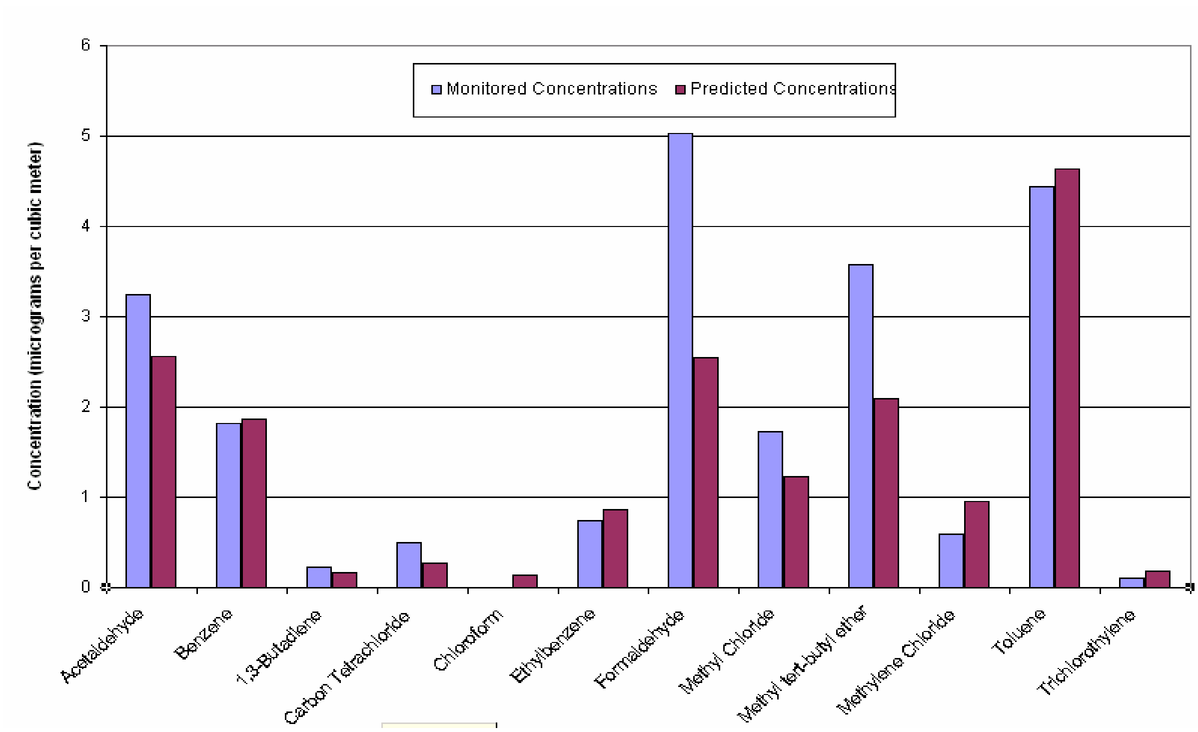


Table 4
Comparison of NATA Predicted to Measured Levels in Camden, NJ
μg/m^3 – Micrograms Per Cubic Meter

Pollutant (HAP)	NATA Predicted 1999, μg/m^3	Measured 1999 Level, μg/m^3	Measured 2005 Level, μg/m^3
Acetaldehyde	2.56	3.24	2.88
Benzene	1.87	1.82	1.57
1,3-Butadiene	0.17	0.22	0.10
Carbon Tetrachloride	0.28	0.50	0.52
Chloroform	0.14	0.002	0.07
Ethylbenzene	0.74	0.87	0.56
Formaldehyde	2.54	5.03	4.31
Methyl Chloride	1.23	1.73	1.36
Methyl tert-butyl ether	2.09	3.57	1.5
Methylene Chloride	0.95	0.59	0.57
Toluene	4.63	4.44	3.73
Trichlorothylene	0.18	0.11	0.38

Table 5. 2005 Air toxics data for Camden, NJ

ANALYTE[a]	CAS #	Annual Mean (ppbv)[b,c]	Annual Median (ppbv)[b]	24-hour Max (ppbv)	Annual Mean (µg/m^3)[b,c]	Annual Median (µg/m^3)[c]	24-hour Max (µg/m^3)	Long-Term Health Benchmark (µg/m^3)[d]	Annual Mean Risk Ratio[e]	Detection Limit (µg/m^3)	% above minimum detection limit[f]
Acetaldehyde	75-07-0	1.6	1.49	4.84	**2.88**	2.68	8.72	0.45	**6**	0.03	100
Acetone	67-64-1	1.23	1.1	2.92	2.92	2.61	6.94	31000	0.0001	0.02	100
Acetonitrile	75-05-8	(14.55)	0	385	(24.42)	0	646.39	60	0.41	0.22	35
Acetylene	74-86-2	1.45	1.18	4.45	1.54	1.25	4.74			0.05	100
Acrolein	107-02-8	(0.13)	0	0.78	(0.29)	0	1.79			0.07	33
tert-Amyl Methyl Ether	994-05-8	(0)	0	0.04	(0)	0	0.17			0.29	2
Benzaldehyde	100-52-7	0.07	0.05	1.13	0.32	0.23	4.9			0.01	100
Benzene	71-43-2	0.49	0.4	1.73	**1.57**	1.26	5.53	0.13	**12**	0.16	100
Bromomethane	74-83-9	0.18	0.03	2.73	0.71	0.1	10.6	5	0.14	0.19	74
1,3-Butadiene	106-99-0	0.04	0.02	0.25	**0.1**	0.04	0.55	0.033	**3**	0.13	56
Butyraldehyde	123-72-8	0.11	0.09	0.77	0.34	0.27	2.27			0.01	100
Carbon Tetrachloride	56-23-5	0.08	0.1	0.16	**0.52**	0.63	1.01	0.067	**8**	0.38	83
Chloroethane	75-00-3	0.01	0.01	0.12	0.04	0.03	0.32			0.26	52
Chloroform	67-66-3	(0.01)	0	0.06	**(0.07)**	0	0.29	0.043	**1.5**	0.2	43
Chloromethane	74-87-3	0.66	0.66	0.91	**1.36**	1.36	1.88	0.56	**2**	0.1	100
Crotonaldehyde	123-73-9	0.11	0.05	0.62	0.32	0.13	1.79			0.01	96
m-Dichlorobenzene	541-73-1	(0)	0	0.02	(0)	0	0.12			0.42	2
o-Dichlorobenzene	95-50-1	(0)	0	0.03	(0)	0	0.18	200	N.A.	0.24	2
p-Dichlorobenzene	106-46-7	0.03	0.01	0.11	**0.15**	0.06	0.66	0.091	**1.7**	0.36	54
Dichlorodifluoromethane	75-71-8	0.67	0.64	1.31	3.31	3.17	6.48	200	0.02	0.15	100
1,2-Dichloroethane	107-06-2	(0)	0	0.04	(0)	0	0.16	0.038	0.08	0.24	2
cis-1,2-Dichloroethylene	156-59-2	(0)	0	0.08	(0.01)	0	0.32			0.24	2
Dichloromethane	75-09-2	0.16	0.13	0.95	0.57	0.45	3.3	2.1	0.27	0.28	91
Dichlorotetrafluoroethane	1320-37-2	0.01	0.02	0.02	0.08	0.14	0.14			0.21	56
2,5-Dimethylbenzaldehyde	5799-94-2	(0.01)	0	0.47	(0.05)	0	2.55			0.02	9
Ethyl tert-Butyl Ether	637-92-3	(0)	0	0.01	(0)	0	0.04			0.21	2
Ethylbenzene	100-41-4	0.13	0.11	0.37	0.56	0.48	1.61			0.17	98
Formaldehyde	50-00-0	3.51	2.66	23.1	**4.31**	3.27	28.37	0.077	**56**	0.02	100
Hexachloro-1,3-butadiene	87-68-3	(0)	0	0.02	(0.03)	0	0.21	0.045	0.61	1.71	17
Hexaldehyde	66-25-1	0.07	0.05	1.27	0.3	0.2	5.2			0.01	100
Isovaleraldehyde	590-86-3	(0.01)	0	0.08	(0.03)	0	0.27			0.01	32
Methyl Ethyl Ketone	78-93-3	(0.22)	0	1.17	(0.64)	0	3.45			0.44	43
Methyl Isobutyl Ketone	108-10-1	(0)	0	0.07	(0.02)	0	0.29			0.33	13
Methyl tert-Butyl Ether	1634-04-4	0.42	0.21	1.88	1.5	0.74	6.78	3.8	0.39	0.25	61
n-Octane	111-65-9	0.05	0.04	0.35	0.26	0.19	1.64			0.28	61
Propionaldehyde	123-38-6	0.13	0.11	0.57	0.31	0.26	1.35			0.01	87
Propylene	115-07-1	1.09	0.82	4.72	1.87	1.4	8.12	3000	0.0006	0.12	100
Styrene	100-42-5	0.05	0.04	0.33	0.22	0.17	1.41	1.8	0.12	0.17	87
Tetrachloroethylene	127-18-4	0.09	0.04	1.74	**0.59**	0.27	11.8	0.17	**3**	0.34	74
Tolualdehydes	1334-78-7	0.03	0.02	0.17	0.15	0.11	0.82			0.02	91
Toluene	108-88-3	0.99	0.77	3.86	3.73	2.9	14.54	400	0.01	0.19	100
1,2,4-Trichlorobenzene	102-82-1	(0)	0	0.16	(0.03)	0	1.19	200	0.0002	1.34	6
1,1,1-Trichloroethane	71-55-6	0.02	0.02	0.05	0.09	0.11	0.27			0.27	54
Trichloroethylene	79-01-6	(0.07)	0	0.58	(0.38)	0	3.12	0.5	0.75	0.27	48
Trichlorofluoromethane	75-69-4	0.32	0.3	0.52	1.81	1.69	2.92	700	0.0026	0.22	100
Trichlorotrifluoroethane	26523-64-8	0.11	0.1	0.16	0.83	0.77	1.23			0.31	100
1,2,4-Trimethylbenzene	95-63-6	0.1	0.09	0.33	0.49	0.44	1.62			0.29	81
1,3,5-Trimethylbenzene	108-67-8	0.03	0.03	0.1	0.15	0.15	0.49			0.2	74
Valeraldehyde	110-62-3	0.05	0.04	0.63	0.17	0.13	2.23			0.01	96
Vinyl chloride	75-01-4	(0.01)	0	0.13	(0.02)	0	0.33	0.11	0.14	0.1	22
m,p-Xylene	1330-20-7	0.34	0.28	1.1	1.48	1.19	4.78	100	0.01	0.22	100
o-Xylene	95-47-6	0.15	0.12	0.45	0.67	0.52	1.95	100	0.01	0.17	98

[a] Analytes in bold text had annual means above the long-term health benchmark

[b] Numbers in parentheses are arithmetic means (or averages) based on less than 50 percent detection

[c] For a valid 24-hour sampling event when the analyzing laboratory reports the term "Not Detected" for a particular pollutant, the concentration of 0.0 ppbv or 0.0 µg/m^3 is assigned to that pollutant. These zero concentrations were included in the calculation of annual averages and medians for each pollutant regardless of percent detection as zeros

[d] The long-term health benchmark is defined as the chemical-specific air concentration above which there may be human health concerns. For a carcinogen (cancer-causing chemical), the health benchmark is set at the air concentration that would cause no more than a one in a million increase in the likelihood of getting cancer, even after a lifetime of exposure. For a non-carcinogen, the health benchmark is the maximum air concentration to which exposure is likely to cause no harm, even if that exposure occurs on a daily basis for a lifetime. These toxicity values are not available for all chemicals. For more information, go to www.nj.gov/dep/aqpp/risk.html

[e] The risk ratio for a chemical is a comparison of the annual mean air concentration to the long-term health benchmark. If the annual mean is 0, then the annual mean risk ratio is displayed as N.A. (not applicable)

[f] There were 54 total VOC samples, 53 total carbonyl samples, and 30 total samples for acrolein collected in 2005

Table 6. 2005 Air toxics data for Chester, NJ

ANALYTE[a]	CAS #	Annual Mean (ppbv)[b,c]	Annual Median (ppbv)[b]	24-hour Max (ppbv)	Annual Mean ($\mu g/m^3$)[b,c]	Annual Median ($\mu g/m^3$)[c]	24-hour Max ($\mu g/m^3$)	Long-Term Health Benchmark ($\mu g/m^3$)[d]	Annual Mean Risk Ratio [e]	Detection Limit ($\mu g/m^3$)	% above minimum detection limit [f]
Acetaldehyde	75-07-0	0.85	0.79	4.64	**1.53**	1.43	8.36	0.45	**3**	0.03	100
Acetone	67-64-1	0.96	0.93	1.81	2.28	2.21	4.3	31000	0.0001	0.02	100
Acetonitrile	75-05-8	(1.94)	0	56.9	(3.26)	0	95.53	60	0.05	0.22	27
Acetylene	74-86-2	0.58	0.51	1.31	0.61	0.54	1.39			0.05	100
Acrolein	107-02-8	0.52	0.27	2.53	1.19	0.62	5.8			0.07	52
tert-Amyl Methyl Ether	994-05-8	(0)	0	0.05	(0)	0	0.21			0.29	2
Benzaldehyde	100-52-7	0.02	0.02	0.07	0.09	0.08	0.31			0.01	96
Benzene	71-43-2	0.2	0.18	0.49	**0.65**	0.58	1.57	0.13	**5**	0.16	98
Bromochloromethane	74-97-5	(0)	0	0.08	(0.01)	0	0.42			0.48	2
Bromodichloromethane	75-27-4	(0)	0	0.08	(0.01)	0	0.54			0.27	2
Bromoform	75-25-2	(0)	0	0.08	(0.02)	0	0.83	0.91	0.02	0.62	2
Bromomethane	74-83-9	(0.01)	0	0.1	(0.03)	0	0.39	5	0.01	0.19	47
1,3-Butadiene	106-99-0	(0.01)	0	0.1	(0.02)	0	0.22	0.033	0.51	0.13	35
Butyraldehyde	123-72-8	0.08	0.08	0.31	0.24	0.23	0.91			0.01	100
Carbon Tetrachloride	56-23-5	0.08	0.09	0.17	**0.47**	0.57	1.07	0.067	**7**	0.38	78
Chlorobenzene	108-90-7	(0)	0	0.09	(0.01)	0	0.41	1000	0.00001	0.18	2
Chloroethane	75-00-3	(0.01)	0	0.21	(0.03)	0	0.55			0.26	39
Chloroform	67-66-3	(0.01)	0	0.1	(0.04)	0	0.49	0.043	0.98	0.2	29
Chloromethane	74-87-3	0.6	0.6	0.85	**1.23**	1.24	1.76	0.56	**2**	0.1	100
Chloromethylbenzene	100-44-7	(0)	0	0.04	(0)	0	0.21			0.26	2
Chloroprene	126-99-8	(0)	0	0.07	(0)	0	0.25	1	N.A.	0.18	2
Crotonaldehyde	123-73-9	0.14	0.04	1.1	0.41	0.11	3.15			0.01	98
Dibromochloromethane	594-18-3	(0)	0	0.08	(0.02)	0	0.79			0.69	2
1,2-Dibromoethane	106-93-4	(0)	0	0.07	**(0.01)**	0	0.54	0.0017	**6**	0.38	2
m-Dichlorobenzene	541-73-1	(0)	0	0.05	(0.01)	0	0.3		0.00	0.42	6
o-Dichlorobenzene	95-50-1	(0)	0	0.05	(0.01)	0	0.3	200	0.0001	0.24	4
p-Dichlorobenzene	106-46-7	(0)	0	0.05	(0.02)	0	0.3	0.091	0.19	0.36	22
Dichlorodifluoromethane	75-71-8	0.6	0.59	0.83	2.95	2.92	4.1	200	0.01	0.15	100
1,1-Dichloroethane	75-34-3	(0)	0	0.08	(0.01)	0	0.32	0.63	0.01	0.2	2
1,2-Dichloroethane	107-06-2	(0)	0	0.07	(0.01)	0	0.28	0.038	0.25	0.24	4
1,1-Dichloroethene	75-35-4	(0)	0	0.07	(0.01)	0	0.28	200	0.0001	0.2	2
cis-1,2-Dichloroethylene	156-59-2	(0.02)	0	1.05	(0.08)	0	4.16			0.24	2
trans-1,2-Dichloroethylene	156-60-5	(0)	0	0.08	(0.01)	0	0.32			0.2	2
Dichloromethane	75-09-2	0.18	0.09	2.71	0.62	0.31	9.41	2.1	0.29	0.28	75
cis-1,3-Dichloropropene	542-75-6	(0)	0	0.05	(0)	0	0.23	0.25	0.02	0.23	2
Dichlorotetrafluoroethane	1320-37-2	0.01	0.02	0.09	0.08	0.14	0.63			0.21	53
2,5-Dimethylbenzaldehyde	5799-94-2	(0)	0	0.02	(0)	0	0.13			0.02	2
Ethylbenzene	100-41-4	0.05	0.05	0.13	0.2	0.22	0.56			0.17	86
Formaldehyde	50-00-0	1.98	1.41	9.26	**2.44**	1.73	11.37	0.077	**32**	0.02	100
Hexachloro-1,3-butadiene	87-68-3	(0)	0	0.04	(0.03)	0	0.43	0.045	0.74	1.71	16
Hexaldehyde	66-25-1	0.02	0.02	0.05	0.1	0.09	0.21			0.01	100
Isovaleraldehyde	590-86-3	(0)	0	0.03	(0.01)	0	0.12			0.01	28
Methyl Ethyl Ketone	78-93-3	(0.3)	0	4.65	(0.87)	0	13.69			0.44	33
Methyl Isobutyl Ketone	108-10-1	(0)	0	0.08	(0.02)	0	0.33			0.33	10
Methyl tert-Butyl Ether	1634-04-4	(0.02)	0	0.22	(0.07)	0	0.79	3.8	0.02	0.25	20
n-Octane	111-65-9	(0.06)	0	1.16	(0.26)	0	5.42			0.28	39
Propionaldehyde	123-38-6	0.1	0.09	0.38	0.24	0.22	0.89			0.01	93
Propylene	115-07-1	0.36	0.28	3.41	0.63	0.48	5.87	3000	0.0002	0.12	98
Styrene	100-42-5	0.02	0.01	0.14	0.07	0.04	0.6	1.8	0.04	0.17	51
1,1,2,2-Tetrachloroethane	79-34-5	(0)	0	0.08	(0.01)	0	0.55	0.017	0.71	0.34	4
Tetrachloroethylene	127-18-4	(0.01)	0	0.09	(0.09)	0	0.61	0.17	0.55	0.34	49
1,2,4-Trichlorobenzene	102-82-1	(0)	0	0.05	(0.01)	0	0.37	200	0.0001	1.34	4
1,1,1-Trichloroethane	71-55-6	0.02	0.02	0.1	0.08	0.11	0.55	1000	0.0001	0.27	53
1,1,2-Trichloroethane	79-00-5	(0)	0	0.07	(0.01)	0	0.38	0.063	0.12	0.44	2
Trichloroethylene	79-01-6	(0)	0	0.07	(0.01)	0	0.38	0.5	0.03	0.27	14
Trichlorofluoromethane	75-69-4	0.28	0.27	0.46	1.55	1.52	2.58	700	0.0022	0.22	100
Trichlorotrifluoroethane	26523-64-8	0.11	0.1	0.17	0.81	0.77	1.3			0.31	100
1,2,4-Trimethylbenzene	95-63-6	(0.02)	0	0.15	(0.09)	0	0.74			0.29	43
1,3,5-Trimethylbenzene	108-67-8	(0.01)	0	0.06	(0.03)	0	0.29			0.2	37
Tolualdehydes	1334-78-7	0.02	0.01	0.07	0.09	0.07	0.32			0.02	78
Toluene	108-88-3	0.27	0.24	0.61	1	0.9	2.3	400	0.00	0.19	100
Valeraldehyde	110-62-3	0.02	0.02	0.07	0.07	0.06	0.26			0.01	98
Vinyl chloride	75-01-4	(0)	0	0.07	(0.01)	0	0.18	0.11	0.05	0.1	12
m,p-Xylene	1330-20-7	0.1	0.09	0.25	0.42	0.39	1.09	100	0.0042	0.22	90
o-Xylene	95-47-6	0.05	0.05	0.12	0.2	0.22	0.52	100	0.002	0.17	84

[a] Analytes in bold text had annual means above the long-term health benchmark

[b] Numbers in parentheses are arithmetic means (or averages) based on less than 50 percent detection

[c] For a valid 24-hour sampling event when the analyzing laboratory reports the term "Not Detected" for a particular pollutant, the concentration of 0.0 ppbv or 0.0 $\mu g/m^3$ is assigned to that pollutant. These zero concentrations were included in the calculation of annual averages and medians for each pollutant regardless of percent detection as zeros

[d] The long-term health benchmark is defined as the chemical-specific air concentration above which there may be human health concerns. For a carcinogen (cancer-causing chemical), the health benchmark is set at the air concentration that would cause no more than a one in a million increase in the likelihood of getting cancer, even after a lifetime of exposure. For a non-carcinogen, the health benchmark is the maximum air concentration to which exposure is likely to cause no harm, even if that exposure occurs on a daily basis for a lifetime. These toxicity values are not available for all chemicals. For more information, go to www.nj.gov/dep/aqpp/risk.html

[e] The risk ratio for a chemical is a comparison of the annual mean air concentration to the long-term health benchmark. If the annual mean is 0, then the annual mean risk ratio is displayed as N.A. (not applicable)

[f] There were 54 total VOC samples, 51 total carbonyl samples, and 27 total samples for acrolein collected in 2005

Table 7. 2005 Air toxics data for Elizabeth, NJ

ANALYTE[a]	CAS #	Annual Mean (ppbv)[b,c]	Annual Median (ppbv)[b]	24-hour Max (ppbv)	Annual Mean ($\mu g/m^3$)[b,c]	Annual Median ($\mu g/m^3$)[c]	24-hour Max ($\mu g/m^3$)	Long-Term Health Benchmark ($\mu g/m^3$)[d]	Annual Mean Risk Ratio [e]	Detection Limit ($\mu g/m^3$)	% above minimum detection limit [f]
Acetaldehyde	75-07-0	2.79	2.38	8.34	**5.03**	4.28	15.03	0.45	**11**	0.03	100
Acetone	67-64-1	1.3	1.18	3.35	3.09	2.8	7.96	31000	0.0001	0.02	100
Acetonitrile	75-05-8	(0.5)	0	11.8	(0.85)	0	19.81	60	0.01	0.22	17
Acetylene	74-86-2	1.55	1.36	4.28	1.65	1.44	4.55			0.05	100
Acrolein	107-02-8	(0.19)	0	1.65	(0.43)	0	3.78			0.07	30
Acrylonitrile	107-13-1	(0.01)	0	0.53	**(0.02)**	0	1.15	0.015	**1.3**	0.17	2
Benzaldehyde	100-52-7	0.05	0.04	0.12	0.2	0.17	0.52			0.01	100
Benzene	71-43-2	0.5	0.45	1.16	**1.59**	1.42	3.71	0.13	**12**	0.16	100
Bromomethane	74-83-9	(0.01)	0	0.06	(0.03)	0	0.23	5	0.01	0.19	40
1,3-Butadiene	106-99-0	0.06	0.06	0.18	**0.13**	0.13	0.4	0.033	**4**	0.13	68
Butyraldehyde	123-72-8	0.12	0.1	0.47	0.36	0.31	1.38			0.01	100
Carbon Tetrachloride	56-23-5	0.09	0.09	0.18	**0.55**	0.57	1.13	0.067	**8**	0.38	87
Chloroethane	75-00-3	(0.02)	0	0.39	(0.06)	0	1.03			0.26	38
Chloroform	67-66-3	(0.02)	0	0.12	**(0.09)**	0	0.59	0.043	**2**	0.2	43
Chloromethane	74-87-3	0.64	0.61	0.93	**1.31**	1.26	1.92	0.56	**2**	0.1	100
Crotonaldehyde	123-73-9	0.1	0.04	0.57	0.28	0.12	1.63			0.01	100
m-Dichlorobenzene	541-73-1	(0)	0	0.01	(0)	0	0.06			0.42	2
o-Dichlorobenzene	95-50-1	(0)	0	0.01	(0)	0	0.06	200	N.A.	0.24	5
p-Dichlorobenzene	106-46-7	(0.01)	0	0.13	(0.08)	0	0.78	0.091	0.93	0.36	45
Dichlorodifluoromethane	75-71-8	0.64	0.62	0.89	3.14	3.07	4.4	200	0.02	0.15	100
1,2-Dichloroethane	107-06-2	(0)	0	0.07	(0)	0	0.28	0.038	0.12	0.24	2
Dichloromethane	75-09-2	0.23	0.19	1.79	0.81	0.66	6.22	2.1	0.38	0.28	87
Dichlorotetrafluoroethane	1320-37-2	(0.01)	0	0.05	(0.07)	0	0.35			0.21	48
2,5-Dimethylbenzaldehyde	5799-94-2	(0)	0	0.03	(0.01)	0	0.15			0.02	7
Ethylbenzene	100-41-4	0.16	0.13	0.54	0.7	0.56	2.34			0.17	98
Formaldehyde	50-00-0	3.82	3.83	8.9	**4.69**	4.7	10.93	0.077	**61**	0.02	100
Hexachloro-1,3-butadiene	87-68-3	(0)	0	0.02	(0.03)	0	0.21	0.045	0.71	1.71	22
Hexaldehyde	66-25-1	0.03	0.03	0.09	0.13	0.11	0.36			0.01	100
Isovaleraldehyde	590-86-3	(0)	0	0.02	(0.01)	0	0.07			0.01	13
Methyl Ethyl Ketone	78-93-3	(0.47)	0	9.77	(1.39)	0	28.77			0.44	42
Methyl Isobutyl Ketone	108-10-1	(0.03)	0	1.02	(0.13)	0	4.18			0.33	15
Methyl Methacrylate	80-62-6	(0)	0	0.12	(0.01)	0	0.42	700	0.00001	0.39	5
Methyl tert-Butyl Ether	1634-04-4	0.74	0.52	7.29	2.68	1.87	26.28	3.8	0.71	0.25	72
n-Octane	111-65-9	0.15	0.06	4.76	0.72	0.28	22.24			0.28	70
Propionaldehyde	123-38-6	0.14	0.13	0.53	0.34	0.31	1.26			0.01	93
Propylene	115-07-1	3.83	1.75	27.4	6.58	3	47.16	3000	0.0022	0.12	100
Styrene	100-42-5	0.04	0.04	0.13	0.16	0.17	0.55	1.8	0.09	0.17	72
1,1,2,2-Tetrachloroethane	79-34-5	(0)	0	0.01	(0)	0	0.07	0.017	0.07	0.34	2
Tetrachloroethylene	127-18-4	0.05	0.05	0.16	**0.31**	0.31	1.09	0.17	**1.8**	0.34	70
Tolualdehydes	1334-78-7	0.03	0.02	0.1	0.14	0.12	0.47			0.02	93
Toluene	108-88-3	1.04	0.89	3.71	3.91	3.35	13.98	400	0.01	0.19	100
1,2,4-Trichlorobenzene	102-82-1	(0)	0	0.02	(0.01)	0	0.15	200	N.A.	1.34	12
1,1,1-Trichloroethane	71-55-6	0.02	0.02	0.06	0.09	0.11	0.33	1000	0.0001	0.27	52
Trichloroethylene	79-01-6	(0.02)	0	0.12	(0.08)	0	0.64	0.5	0.16	0.27	35
Trichlorofluoromethane	75-69-4	0.3	0.29	0.48	1.71	1.63	2.7	700	0.0024	0.22	100
Trichlorotrifluoroethane	26523-64-8	0.1	0.1	0.31	0.8	0.73	2.38			0.31	100
1,2,4-Trimethylbenzene	95-63-6	0.1	0.09	0.4	0.51	0.44	1.97			0.29	77
1,3,5-Trimethylbenzene	108-67-8	0.04	0.03	0.14	0.18	0.15	0.69			0.2	72
Valeraldehyde	110-62-3	0.06	0.04	0.45	0.19	0.12	1.59			0.01	100
Vinyl chloride	75-01-4	(0)	0	0.02	(0.01)	0	0.05	0.11	0.06	0.1	20
m,p-Xylene	1330-20-7	0.41	0.32	1.46	1.77	1.39	6.34	100	0.02	0.22	100
o-Xylene	95-47-6	0.19	0.15	0.6	0.81	0.63	2.61	100	0.01	0.17	98

[a] Analytes in bold text had annual means above the long-term health benchmark

[b] Numbers in parentheses are arithmetic means (or averages) based on less than 50 percent detection

[c] For a valid 24-hour sampling event when the analyzing laboratory reports the term “Not Detected” for a particular pollutant, the concentration of 0.0 ppbv or 0.0 $\mu g/m^3$ is assigned to that pollutant. These zero concentrations were included in the calculation of annual averages and medians for each pollutant regardless of percent detection as zeros

[d] The long-term health benchmark is defined as the chemical-specific air concentration above which there may be human health concerns. For a carcinogen (cancer-causing chemical), the health benchmark is set at the air concentration that would cause no more than a one in a million increase in the likelihood of getting cancer, even after a lifetime of exposure. For a non-carcinogen, the health benchmark is the maximum air concentration to which exposure is likely to cause no harm, even if that exposure occurs on a daily basis for a lifetime. These toxicity values are not available for all chemicals. For more information, go to www.nj.gov/dep/aqpp/risk.html

[e] The risk ratio for a chemical is a comparison of the annual mean air concentration to the long-term health benchmark. If the annual mean is 0, then the annual mean risk ratio is displayed as N.A. (not applicable)

[f] There were 60 total VOC samples, 60 total carbonyl samples, and 30 total samples for acrolein collected in 2005

Table 8. 2005 Air toxics data for New Brunswick, NJ

ANALYTE[a]	CAS #	Annual Mean (ppbv)[b,c]	Annual Median (ppbv)[b]	24-hour Max (ppbv)	Annual Mean (μg/m^3)[b,c]	Annual Median (μg/m^3)[c]	24-hour Max (μg/m^3)	Long-Term Health Benchmark (μg/m^3)[d]	Annual Mean Risk Ratio [e]	Detection Limit (μg/m^3)	% above minimum detection limit [f]
Acetaldehyde	75-07-0	3.44	2.81	8.97	**6.2**	5.05	16.16	0.45	**14**	0.03	100
Acetone	67-64-1	1.7	1.59	3.89	4.05	3.77	9.24	31000	0.0001	0.02	100
Acetonitrile	75-05-8	(3.6)	0	32.8	(6.05)	0	55.07	60	0.10	0.22	32
Acetylene	74-86-2	1.14	0.91	4.43	1.21	0.97	4.71			0.05	100
Acrolein	107-02-8	0.63	0.37	4	1.44	0.85	9.17			0.07	67
Benzaldehyde	100-52-7	0.03	0.03	0.1	0.12	0.12	0.43			0.01	95
Benzene	71-43-2	0.31	0.26	1.03	**0.99**	0.83	3.29	0.13	**8**	0.16	100
Bromomethane	74-83-9	(0.01)	0	0.03	(0.02)	0	0.12	5	0.004	0.19	39
1,3-Butadiene	106-99-0	(0.02)	0	0.21	**(0.05)**	0	0.46	0.033	**1.5**	0.13	49
Butyraldehyde	123-72-8	0.16	0.12	0.73	0.48	0.36	2.15			0.01	100
Carbon Tetrachloride	56-23-5	0.08	0.09	0.14	**0.5**	0.57	0.88	0.067	**7**	0.38	86
Chloroethane	75-00-3	(0.01)	0	0.07	(0.02)	0	0.18			0.26	35
Chloroform	67-66-3	(0.02)	0	0.15	**(0.08)**	0	0.73	0.043	**1.8**	0.2	40
Chloromethane	74-87-3	0.63	0.63	0.87	**1.3**	1.3	1.8	0.56	**2**	0.1	100
Crotonaldehyde	123-73-9	0.12	0.05	0.63	0.33	0.13	1.81			0.01	100
Dibromochloromethane	594-18-3	(0)	0	0.01	(0)	0	0.1			0.69	2
p-Dichlorobenzene	106-46-7	(0.07)	0	3.64	**(0.42)**	0	21.89	0.091	**5**	0.36	32
Dichlorodifluoromethane	75-71-8	0.63	0.62	1.09	3.12	3.07	5.39	200	0.02	0.15	100
1,2-Dichloroethane	107-06-2	(0)	0	0.05	(0.01)	0	0.2	0.038	0.19	0.24	4
Dichloromethane	75-09-2	0.16	0.12	1.01	0.55	0.42	3.51	2.1	0.26	0.28	81
Dichlorotetrafluoroethane	1320-37-2	(0.01)	0	0.02	(0.07)	0	0.14			0.21	47
Ethylbenzene	100-41-4	0.14	0.11	0.38	0.6	0.48	1.65			0.17	100
Formaldehyde	50-00-0	4.34	3.57	11.8	**5.34**	4.38	14.49	0.077	**69**	0.02	100
Hexachloro-1,3-butadiene	87-68-3	(0)	0	0.03	(0.03)	0	0.32	0.045	0.71	1.71	16
Hexaldehyde	66-25-1	0.02	0.01	0.04	0.06	0.06	0.16			0.01	86
Isovaleraldehyde	590-86-3	(0)	0	0.02	(0.01)	0	0.08			0.01	29
Methyl Ethyl Ketone	78-93-3	(0.38)	0	9.55	(1.11)	0	28.12			0.44	42
Methyl Isobutyl Ketone	108-10-1	(0.01)	0	0.19	(0.04)	0	0.78			0.33	9
Methyl Methacrylate	80-62-6	(0)	0	0.05	(0)	0	0.18	700	N.A.	0.39	2
Methyl tert-Butyl Ether	1634-04-4	(0.14)	0	0.76	(0.49)	0	2.74	3.8	0.13	0.25	44
n-Octane	111-65-9	(0.03)	0	0.22	(0.14)	0	1.03			0.28	47
Propionaldehyde	123-38-6	0.18	0.13	0.61	0.42	0.32	1.46			0.01	97
Propylene	115-07-1	0.62	0.51	2.02	1.06	0.88	3.48	3000	0.0004	0.12	100
Styrene	100-42-5	0.04	0.03	0.3	0.16	0.13	1.28	1.8	0.09	0.17	58
Tetrachloroethylene	127-18-4	0.04	0.02	0.55	**0.24**	0.14	3.73	0.17	**1.4**	0.34	54
Tolualdehydes	1334-78-7	0.02	0.01	0.07	0.09	0.06	0.34			0.02	78
Toluene	108-88-3	0.77	0.52	8.61	2.9	1.96	32.44	400	0.01	0.19	100
1,2,4-Trichlorobenzene	102-82-1	(0)	0	0.04	(0.01)	0	0.3	200	0.0001	1.34	2
1,1,1-Trichloroethane	71-55-6	(0.01)	0	0.05	(0.07)	0	0.27	1000	0.0001	0.27	47
Trichloroethylene	79-01-6	(0.01)	0	0.06	(0.05)	0	0.32	0.5	0.09	0.27	32
1,2,4-Trimethylbenzene	95-63-6	0.12	0.07	1.23	0.6	0.34	6.05			0.29	67
1,3,5-Trimethylbenzene	108-67-8	0.05	0.02	0.48	0.24	0.1	2.36			0.2	63
Trichlorofluoromethane	75-69-4	0.31	0.29	0.66	1.72	1.63	3.71	700	0.0025	0.22	100
Trichlorotrifluoroethane	26523-64-8	0.12	0.1	0.88	0.93	0.77	6.74			0.31	100
Valeraldehyde	110-62-3	0.03	0.03	0.11	0.12	0.11	0.38			0.01	98
Vinyl chloride	75-01-4	(0)	0	0.06	(0)	0	0.15	0.11	0.04	0.1	11
m,p-Xylene	1330-20-7	0.25	0.22	0.76	1.11	0.96	3.3	100	0.01	0.22	100
o-Xylene	95-47-6	0.11	0.1	0.41	0.5	0.43	1.78	100	0.01	0.17	91

[a] Analytes in bold text had annual means above the long-term health benchmark

[b] Numbers in parentheses are arithmetic means (or averages) based on less than 50 percent detection

[c] For a valid 24-hour sampling event when the analyzing laboratory reports the term "Not Detected" for a particular pollutant, the concentration of 0.0 ppbv or 0.0 μg/m^3 is assigned to that pollutant. These zero concentrations were included in the calculation of annual averages and medians for each pollutant regardless of percent detection as zeros

[d] The long-term health benchmark is defined as the chemical-specific air concentration above which there may be human health concerns. For a carcinogen (cancer-causing chemical), the health benchmark is set at the air concentration that would cause no more than a one in a million increase in the likelihood of getting cancer, even after a lifetime of exposure. For a non-carcinogen, the health benchmark is the maximum air concentration to which exposure is likely to cause no harm, even if that exposure occurs on a daily basis for a lifetime. These toxicity values are not available for all chemicals. For more information, go to www.nj.gov/dep/aqpp/risk.html

[e] The risk ratio for a chemical is a comparison of the annual mean air concentration to the long-term health benchmark. If the annual mean is 0, then the annual mean risk ratio is displayed as N.A. (not applicable)

[f] There were 57 total VOC samples, 58 total carbonyl samples, and 27 total samples for acrolein collected in 2005

Table 9. Analytes with 100 percent non-detects in 2005

Analyte	CAS #	Detection Limit (µg/m³)	Location: Camden	Chester	Elizabeth	New Brunswick
Acrylonitrile	107-13-1	0.17	X	X		X
tert-Amyl Methyl Ether	994-05-8	0.29			X	X
Bromochloromethane	74-97-5	0.48	X		X	X
Bromodichloromethane	75-27-4	0.27	X		X	X
Bromoform	75-25-2	0.62	X		X	X
Chlorobenzene	108-90-7	0.18	X		X	X
Chloromethylbenzene	100-44-7	0.26	X		X	X
Chloroprene	126-99-8	0.18	X		X	X
Dibromochloromethane	594-18-3	0.69	X		X	
m-Dichlorobenzene	541-73-1	0.42				X
o-Dichlorobenzene	95-50-1	0.24				X
1,1-Dichloroethane	75-34-3	0.2	X		X	X
1,1-Dichloroethene	75-35-4	0.2	X		X	X
1,2-Dibromoethane	106-93-4	0.38	X		X	X
cis-1,2-Dichloroethylene	156-59-2	0.24			X	X
trans-1,2-Dichloroethylene	156-60-5	0.20	X		X	X
1,2-Dichloropropane	78-87-5	0.32	X	X	X	X
cis-1,3-Dichloropropene	542-75-6	0.23	X		X	X
trans-1,3-Dichloropropene	542-75-6	0.23	X	X	X	X
2,5-Dimethylbenzaldehyde	5799-94-2	0.02				X
Ethyl Acrylate	140-88-5	0.25	X	X	X	X
Ethyl tert-Butyl Ether	637-92-3	0.21		X	X	X
Methyl Methacrylate	80-62-6	0.39	X	X		
1,1,2,2-Tetrachloroethane	79-34-5	0.34	X			X
1,1,2-Trichloroethane	79-00-5	0.44	X		X	X

In 2005, these chemicals were never collected above their respective detection limits, however they may be present in the air below the detection limit level.

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