2010 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 1970s. 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) 2009 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 soil or surface water. 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 on 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 a non-carcinogen is the air concentration at which no adverse health effect is expected to occur, even if a person is exposed to that concentration on a daily basis for a lifetime (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 4 through 7. 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 prepares a comprehensive inventory of air toxics emissions from all man-made sources. The emissions inventory is reviewed and updated 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 2005 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 33% of the air toxics emissions, and non-road mobile sources (airplanes, trains, construction equipment, lawnmowers, boats, dirt bikes, etc.) contribute and additional 34%. Area sources (residential, commercial, and small industrial sources) represent 28% of the inventory, and major point sources (such as factories and power plants) account for the remaining 5%.

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 across the country. The map in Figure 2 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, 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-one chemicals were predicted to exceed their health benchmarks, or level of concern, in one or more counties in 2005. Twenty of these are considered to be cancer-causing (carcinogenic) chemicals, and one (acrolein) is not. Estimated air concentrations of these 21 pollutants vary around the state, depending on the types of sources that emit them. This is summarized in Table 1.

Figure 1
2005 Air Toxics Emissions Source Estimates for New Jersey

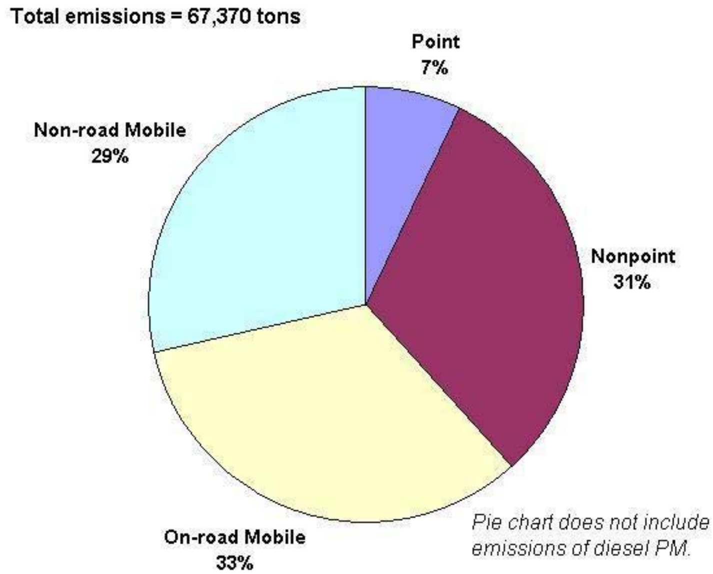


Figure 2. Benzene
2005 NATA Predicted Concentrations for NJ

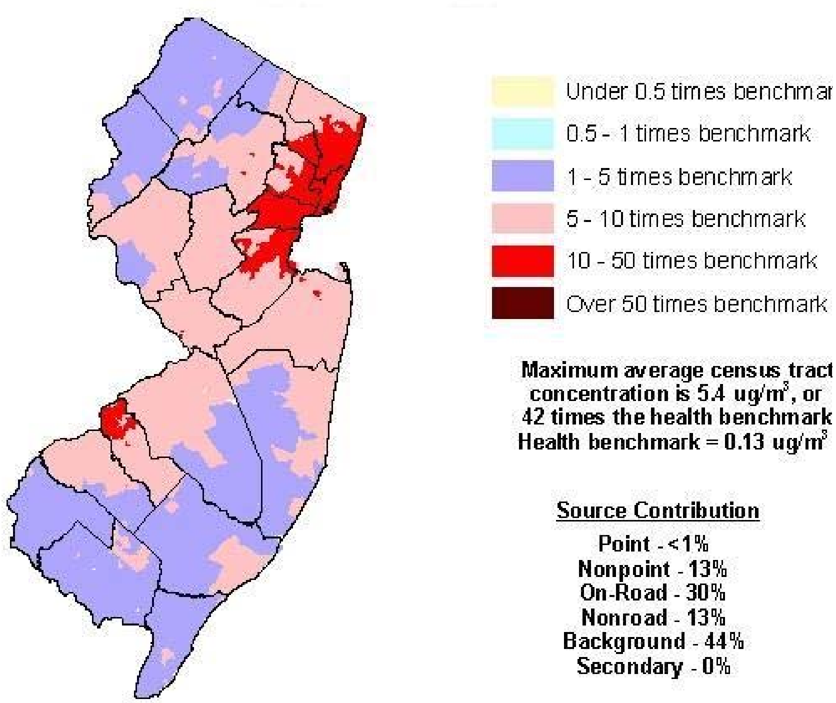


Table 1
Air Toxics of Greatest Concern in New Jersey
Based on 2005 National-Scale Air Toxics Assessment

Pollutant of Concern	Number of Counties Above Health Benchmark	Primary Source of Emissions
Acetaldehyde	Statewide	Background, Secondary
Acrolein	Statewide	Background, Nonpoint
Acrylonitrile	2 (Bergen & Essex)	Point, Nonpoint
Arsenic Compounds	19	Background, Secondary
Benzene	Statewide	Background, Mobile
1,3-Butadiene	Statewide	Background, Mobile
Cadmium Compounds	1 (Warren)	Nonpoint, Background
Carbon Tetrachloride	Statewide	Background
Chloroform	Statewide	Nonpont, Background
Chromium (hexavalent)	20	Background, Point
Cobalt Compounds	7	Point
1,4-Dichlorobenzene	8	Nonpoint, Background
1,3-Dichloropropene	1 (Hudson)	Nonpoint
Diesel Particulate Matter	Statewide	Mobile
Ethylbenzene	6	Mobile, Nonpoint
Ethylene Oxide	6	Background, Nonpoint
Formaldehyde	Statewide	Background, Secondary
Methyl Chloride	Statewide	Background
Naphthalene	20	Nonpoint, Mobile
Nickel compounds	1	Nonpoint, Point
PAH/POM	18	Nonpoint
Perchloroethylene	8	Nonpoint, Background
1,1,2-Trichloroethane	1 (Salem)	Nonpoint

NJ Air Toxics Monitoring Program Results For 2010

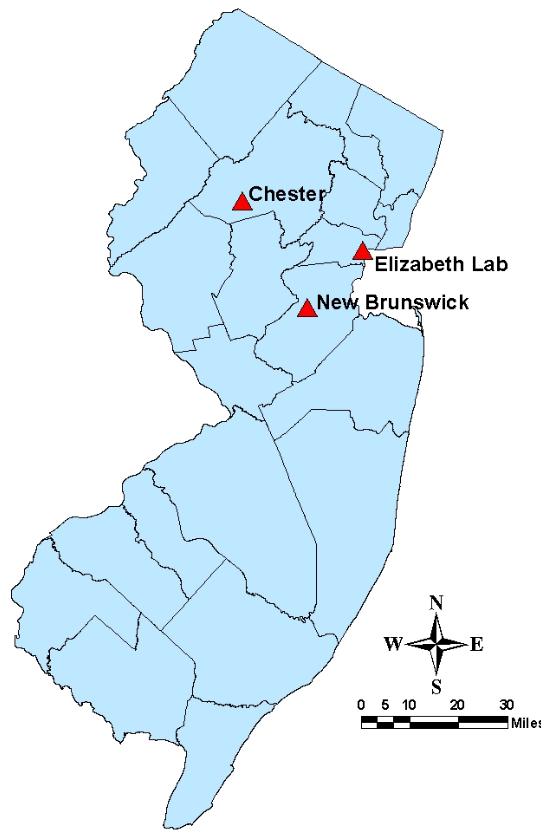
NJDEP has established three air toxics monitoring sites around the state. They are located in Elizabeth, New Brunswick and Chester (see Figure 3). The Camden Lab site, which had been measuring several toxic volatile organic compounds (VOCs) since 1989, was shut down on September 29, 2008, because the NJDEP lost access to the station. The Elizabeth Lab site began measuring VOCs in 2000, and the New Brunswick and Chester sites became operational in July 2001. Analysis of toxic metals at each site also began in 2001. Metals data can be found in Appendix B (Fine Particulate Speciation Summary 2010) of the Air Quality Report.

2010 air toxic monitoring results for VOCs are shown in Table 2. This table contains the annual average concentration for each air toxic measured at the three 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 7, 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 analyzed were below the detection limit of the method used. These are listed separately in Table 8.

Reported averages for which significant portions 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 (the basis for most of the air toxics health benchmarks).

The Chester had the lowest concentrations for the bulk of the prevalent air toxics. The highest concentrations for most compounds were split between Elizabeth and New Brunswick, with the majority occurring at Elizabeth. Chester had the most individual compounds detected, mainly from a collection on May 20th, 2010 that detected multiple compounds that were only found above detection limits on that particular day.

Figure 3
2010 Air Toxics Monitoring Network



USEPA has recently determined that the methods used to collect and analyze acrolein in ambient air are not producing reliable results. More information is available at www.epa.gov/schoolair/acrolein.html . Although we are including the 2010 New Jersey acrolein data in this report, the concentrations are highly uncertain and should be used with caution.

Table 2
New Jersey Air Toxics Summary – 2010

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

Pollutant	CAS #	Chester	Elizabeth Lab	New Brunswick
Acetaldehyde	75-07-0	1.30	2.72	2.91
Acetone	67-64-1	2.34	3.52	3.34
Acetonitrile	75-05-8	1.21	1.43	1.69
Acetylene	74-86-2	0.50	1.12	0.74
Acrolein [b]	107-02-8	0.71	1.08	2.55
Acrylonitrile	107-13-1	(0.04)	(0.02)	(0.14)
Benzaldehyde	100-52-7	0.07	0.17	0.05
Benzene	71-43-2	0.47	1.00	0.65
Bromochloromethane	74-97-5	(0.0009)	-	-
Bromodichloromethane	75-27-4	-	-	(0.003)
Bromoform	75-25-2	-	-	(0.0006)
Bromomethane	74-83-9	0.03	0.05	0.04
1,3-Butadiene	106-99-0	(0.01)	0.12	0.05
Butyraldehyde	123-72-8	0.20	0.48	0.23
Carbon Disulfide	75-15-0	12.53	2.85	1.24
Carbon Tetrachloride	56-23-5	0.64	0.60	0.56
Chlorobenzene	108-90-7	-	-	0.0007
Chloroethane	75-00-3	(0.005)	(0.02)	0.03
Chloroform	67-66-3	0.08	0.13	0.12
Chloromethane	74-87-3	1.24	1.29	1.28
Chloromethylbenzene	100-44-7	(0.0008)	-	-
Chloroprene	126-99-8	-	(0.001)	-
Crotonaldehyde	123-73-9	0.30	0.37	0.20
Dibromochloromethane	594-18-3	(0.003)	(0.002)	(0.005)
1,2-Dibromoethane	106-93-4	(0.001)	(0.002)	(0.0008)
m-Dichlorobenzene	541-73-1	(0.0009)	-	(0.002)
o-Dichlorobenzene	95-50-1	(0.0007)	(0.0005)	(0.002)
p-Dichlorobenzene	106-46-7	(0.01)	0.08	0.05
Dichlorodifluoromethane	75-71-8	2.80	2.84	2.81
1,1-Dichloroethane	75-34-3	(0.001)	(0.0004)	(0.002)
1,2-Dichloroethane	107-06-02	(0.02)	(0.02)	(0.02)
1,1-Dichloroethene	75-35-4	(0.0009)	(0.002)	(0.0004)
cis-1,2-Dichloroethylene	156-59-2	(0.01)	(0.009)	-
trans-1,2-Dichloroethylene	156-60-5	(0.0006)	(0.007)	(0.01)
Dichloromethane	75-09-2	0.41	0.61	0.75
1,2-Dichloropropane	78-87-5	-	-	(0.001)
Dichlorotetrafluoroethane	1320-37-2	0.12	0.13	0.13
Ethyl Acrylate	140-88-5	-	(0.001)	-
Ethyl tert-Butyl Ether	637-92-3	(0.0004)	-	(0.0005)

[a] Numbers in parenthesis indicate averages based on less than 50% detection and dashes represent 100% non-detects
[b] Acrolein concentrations are highly uncertain because of problems with collection and analysis methods

Table 2 (Continued)
New Jersey Air Toxics Summary – 2010

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

Pollutant	CAS #	Chester	Elizabeth Lab	New Brunswick
Ethylbenzene	100-41-4	0.09	0.42	0.22
Formaldehyde	50-00-0	1.63	4.44	1.63
Hexachloro-1,3-butadiene	87-68-3	(0.001)	-	(0.002)
Hexaldehyde	66-25-1	0.08	0.33	0.06
Isovaleraldehyde	590-86-3	(0.0007)	-	(0.0008)
Methyl Ethyl Ketone	78-93-3	0.73	1.30	1.25
Methyl Isobutyl Ketone	108-10-1	0.05	0.15	0.14
Methyl Methacrylate	80-62-6	(0.002)	(0.04)	(0.001)
Methyl tert-Butyl Ether	1634-04-4	-	(0.003)	(0.002)
n-Octane	111-65-9	0.06	0.31	0.14
Propionaldehyde	123-38-6	0.23	0.54	0.17
Propylene	115-07-1	0.39	4.37	0.71
Styrene	100-42-5	0.04	0.29	0.11
1,1,2,2-Tetrachloroethane	79-34-5	(0.001)	(0.0006)	(0.001)
Tetrachloroethylene	127-18-4	0.07	0.20	0.12
Tolualdehydes		0.07	0.16	0.05
Toluene	108-88-3	0.58	3.27	1.19
1,2,4-Trichlorobenzene	102-82-1	(0.002)	-	(0.002)
1,1,1-Trichloroethane	71-55-6	0.04	0.06	0.06
1,1,2-Trichloroethane	79-00-5	(0.009)	-	-
Trichloroethylene	79-01-6	(0.003)	(0.03)	(0.02)
Trichlorofluoromethane	75-69-4	1.55	1.61	1.58
Trichlorotrifluoroethane	76-131	0.71	0.71	0.71
1,2,4-Trimethylbenzene	95-63-6	0.07	0.43	0.20
1,3,5-Trimethylbenzene	108-67-8	0.03	0.15	0.08
Valeraldehyde	110-62-3	0.07	0.25	0.06
Vinyl chloride	75-01-4	-	(0.0002)	(0.002)
m,p-Xylene	1330-20-7	0.17	1.11	0.53
o-Xylene	95-47-6	0.08	0.45	0.21

[a] Numbers in parenthesis indicate averages based on less than 50% detection and dashes represent 100% non-detects

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 a 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 compared to the health benchmark.

Elizabeth Lab had eleven compounds with annual average concentrations that exceeded their health benchmarks, New Brunswick had nine and Chester had eight. The toxic air pollutants that exceeded their health benchmarks at all sites are acetaldehyde, acrolein, acrylonitrile, benzene, carbon tetrachloride, chloroform, chloromethane, and formaldehyde.

The top five toxic compounds of concern based on annual risk ratios are listed in Table 3. Formaldehyde contributed the highest risks at every site, but note that the magnitude of the risks varied substantially. Carbon tetrachloride and acetaldehyde and were common to all four sites as well. Since the acrolein concentrations were determined to be highly uncertain, acrolein risk ratios were excluded from this table. Where available, risk ratios are displayed in Tables 5-7 for each site.

TRENDS AND COMPARISONS

The closed site in Camden was the New Jersey monitoring location that had the longest history of measuring air toxics. The graph in Figure 4 shows the change in concentrations for three of the most prevalent air toxics, benzene, toluene, and xylene, from 1990 to 2008. 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 Five Highest Risk Ratios [a,b,c]
at NJ's Air Toxics Monitoring Sites in 2010

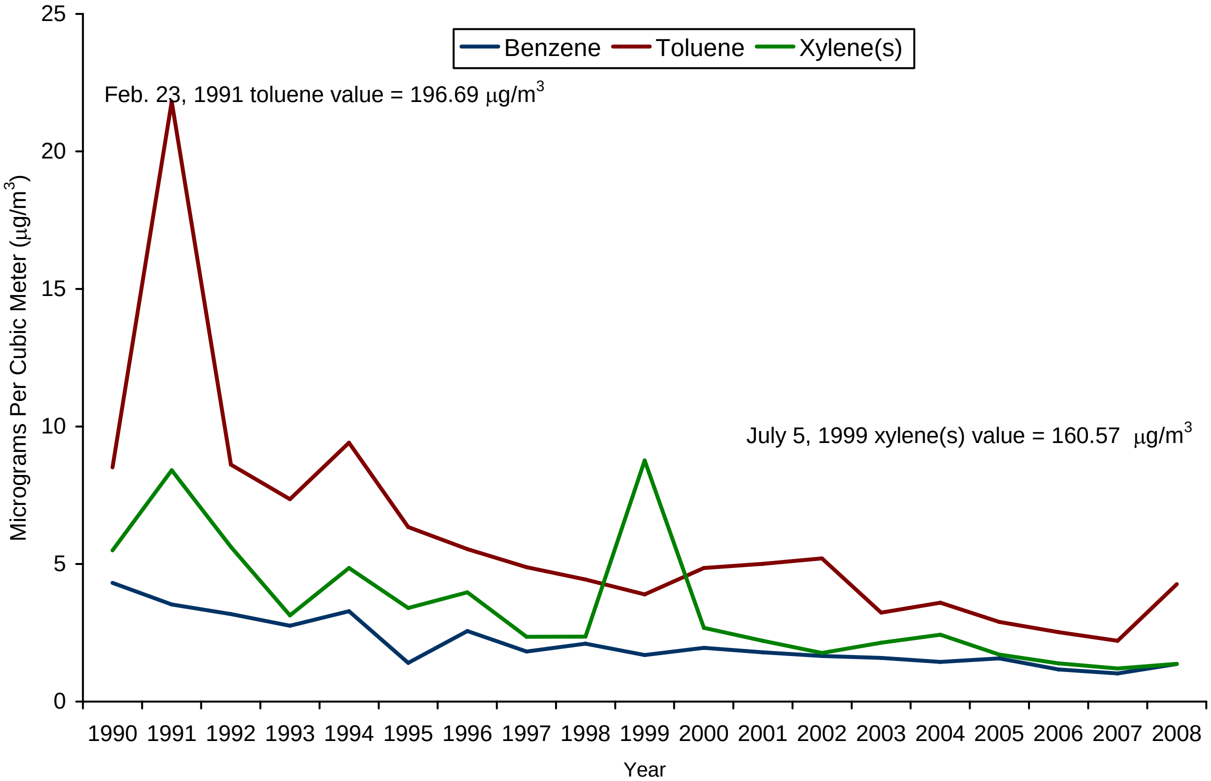
	Chester		Elizabeth Lab		New Brunswick	
Rank	**Analyte**	**Risk Ratio**	**Analyte**	**Risk Ratio**	**Analyte**	**Risk Ratio**
1	Formaldehyde	21	Formaldehyde	58	Formaldehyde	21
2	Carbon Tetrachloride	9.5	Carbon Tetrachloride	8.9	Acrylonitrile	9.4
3	Benzene	3.6	Benzene	7.7	Carbon Tetrachloride	8.3
4	Acetaldehyde	2.9	Acetaldehyde	6.1	Acetaldehyde	6.5
5	Acrylonitrile	2.5	1-3 Butadiene	3.6	Benzene	5.0

[a] The risk ratio for a chemical is a comparison of the annual mean air concentration to a 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.

[C] Acrolein concentrations are highly uncertain because of problems with collection and analysis methods therefore acrolein was excluded from this table. Health benchmarks for acrolein are available in Tables 5-7.

Figure 4
Historical Annual Averages for Selected Hazardous Air Pollutants (HAPs) at Camden from 1990-2008[a]



[a] Annual concentrations for Camden in 2008 calculated from data spanning January 1st to October 21st.

The graphs in Figures 5 through 8 below show concentrations of some of the air toxics in New Jersey with the highest risk ratios (see Table 3): benzene, acetaldehyde, carbon tetrachloride, and formaldehyde. These graphs compare data from our three different monitoring sites (and Camden through 2008) over the past seven or more years. (Acrolein data began to be reported in 2005.) As seen in Figures 4 and 5, benzene concentrations have been gradually decreasing over the past decade. Most benzene now comes from mobile and area sources, and is transported in from other regions. Acetaldehyde, shown in Figure 6, is also emitted primarily by on-road mobile sources such as cars.

Figure 5. Benzene Monitored Concentrations 1990-2010

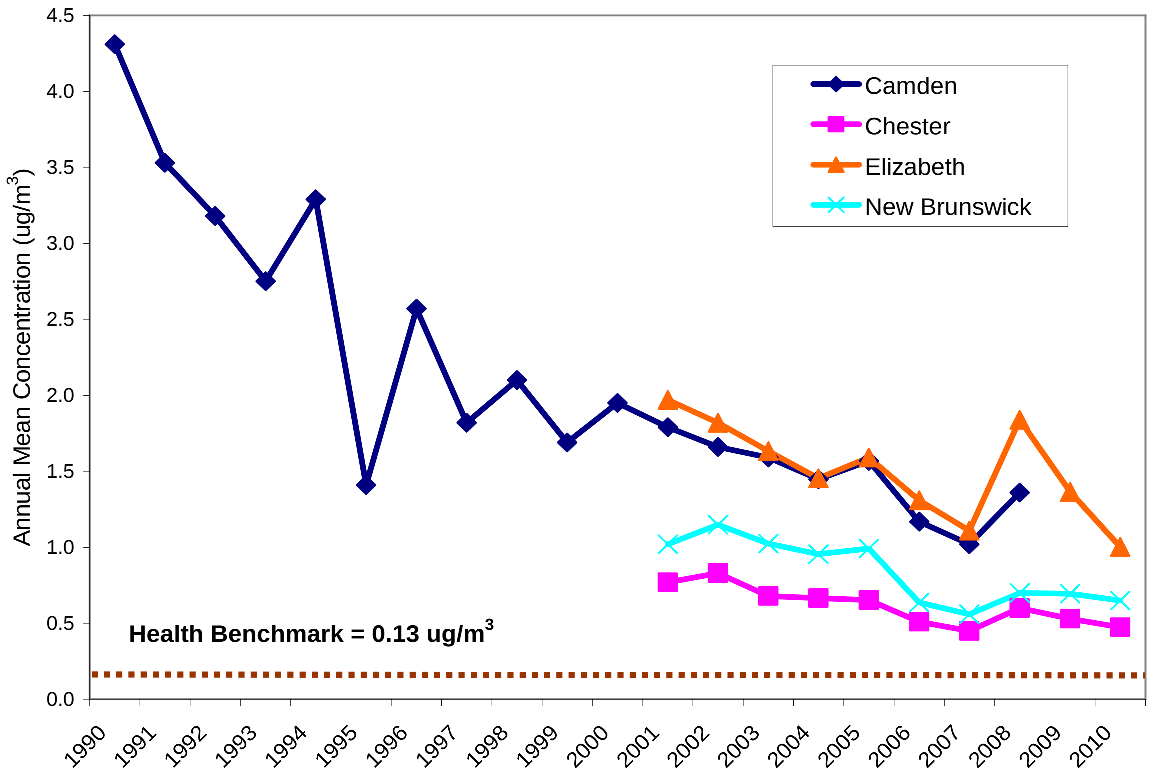
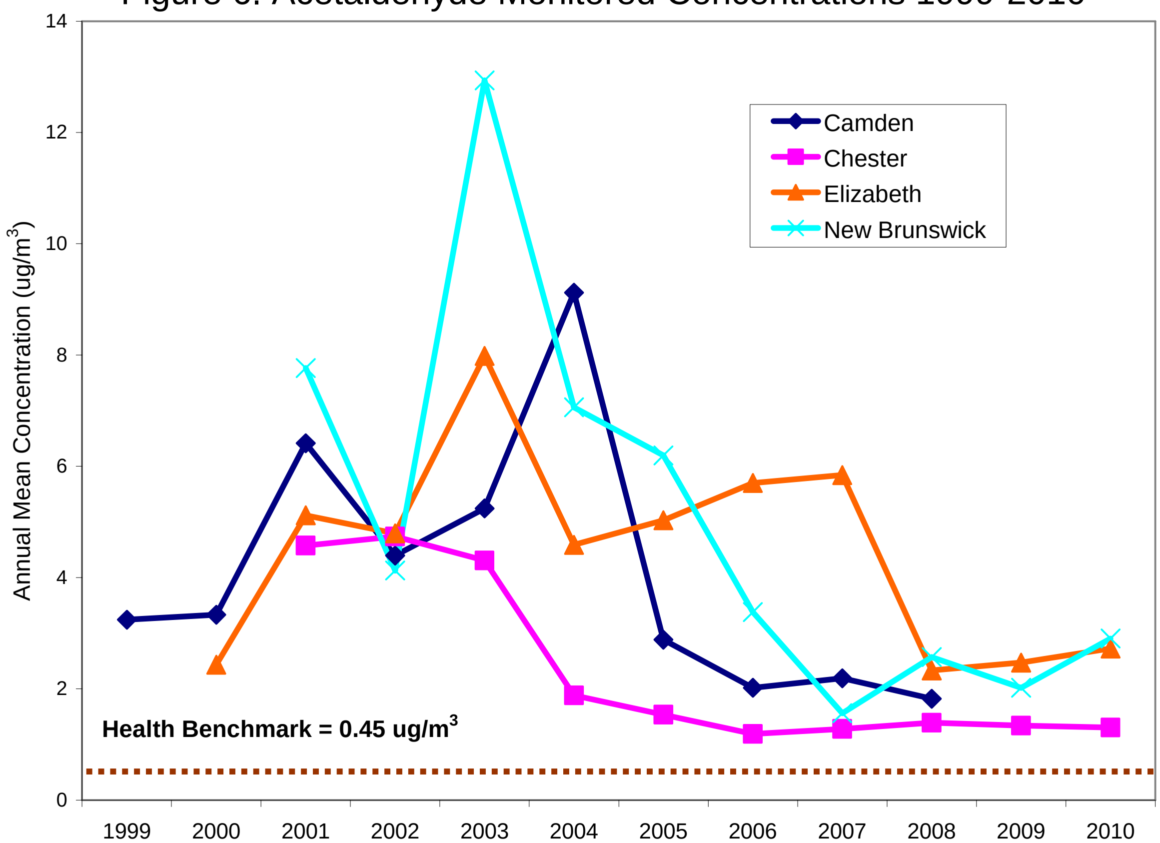
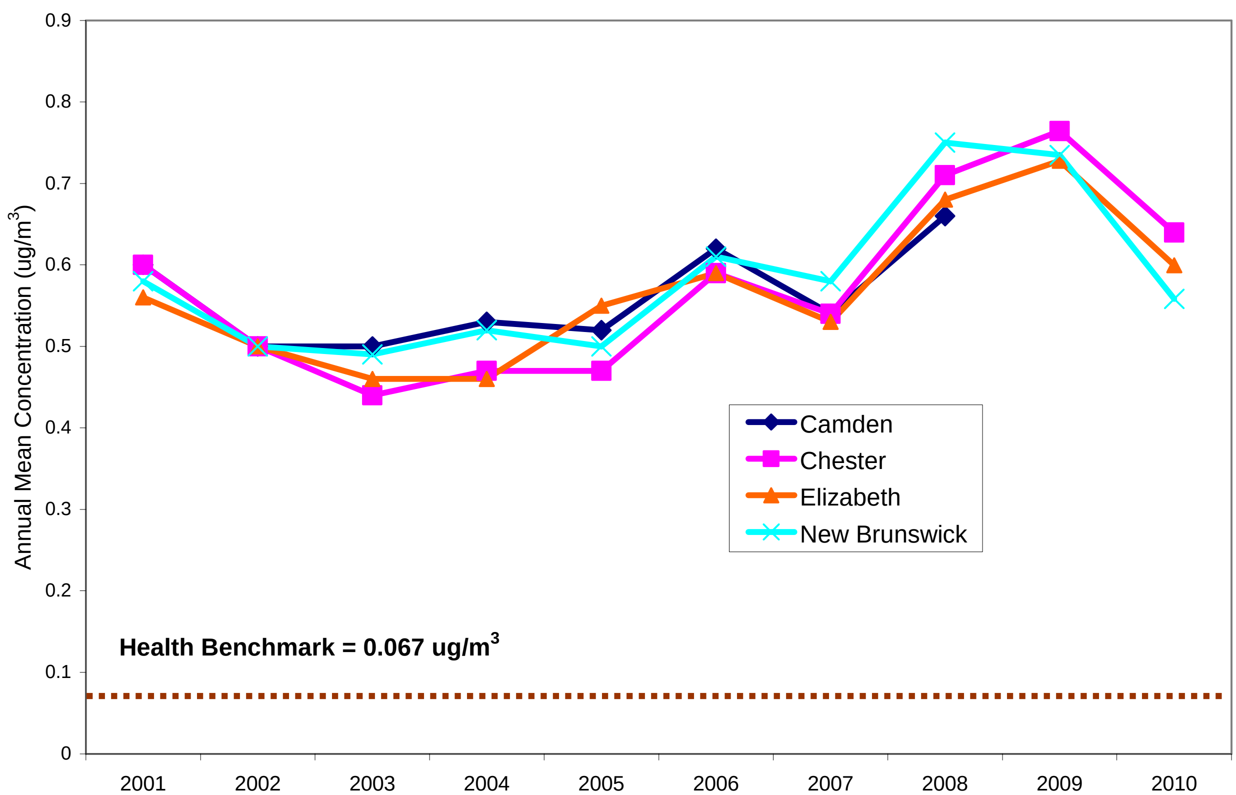


Figure 6. Acetaldehyde Monitored Concentrations 1999-2010



Carbon tetrachloride (Figure 7) was once used extensively as a degreaser, household cleaner, propellant, refrigerant, and fumigant. It has been phased out of most production and use because of its toxicity and its ability to deplete stratospheric ozone. However, about 100 tons are still emitted annually by industry in the U.S, although no emissions have been reported in New Jersey for a number of years. It degrades slowly in the environment, so levels in the air remain relatively steady.

Figure 7. Carbon Tetrachloride Monitored Concentrations 2001-2010



Formaldehyde (Figure 8) is a ubiquitous pollutant that is often found at higher concentrations indoors rather than outdoors because of its use in many consumer goods. It is used in the production of fertilizer, paper, plywood, and urea-formaldehyde resins. In New Jersey the primary emitters of formaldehyde are on-road mobile sources, although secondary formation and transport can contribute significantly to high outdoor concentrations. Monitored concentrations in New Jersey average around 30 times over the health benchmark (thirty in a million risk level).

Figure 8. Formaldehyde Monitored Concentrations 1996-2010

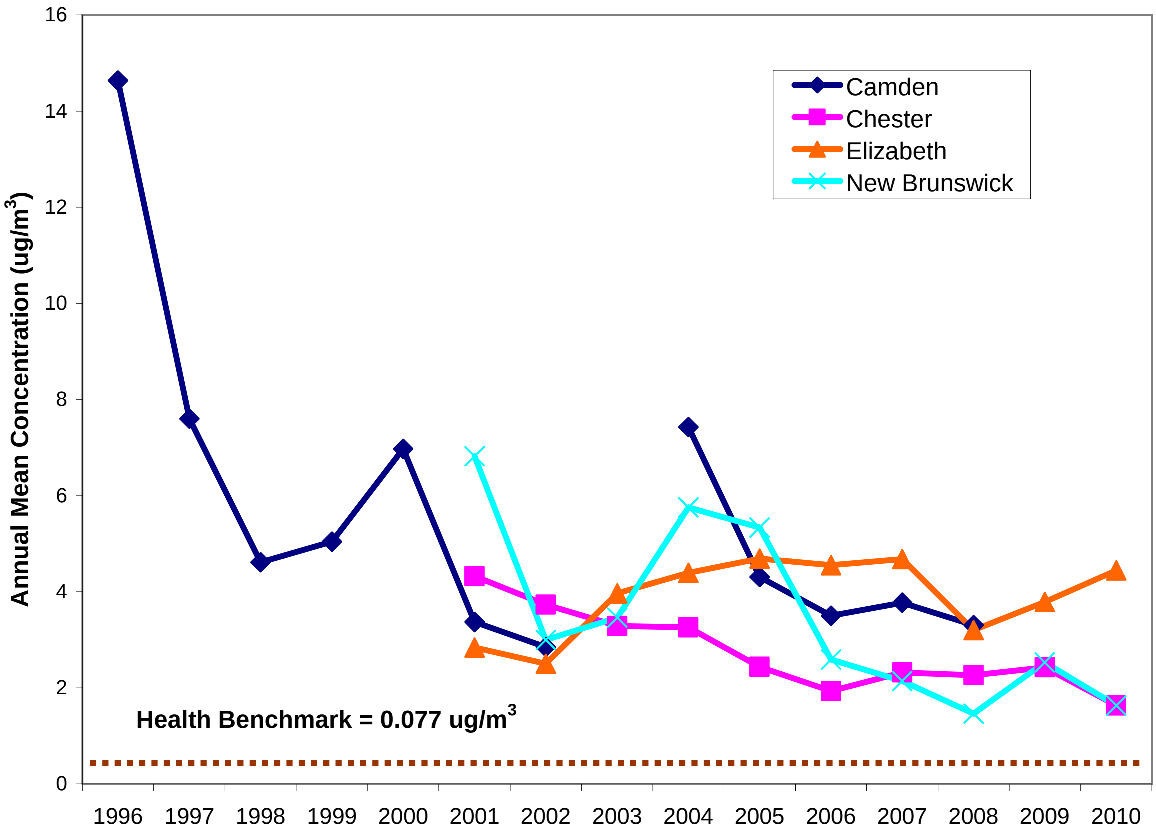


Figure 9 below shows a comparison of annual average concentrations measured at New Jersey's four air toxics monitoring sites in 2005 with annual average concentrations predicted by USEPA's 2005 NATA (at the monitoring site census tract). The comparison for five chemicals (acetaldehyde, benzene, chloromethane, ethylbenzene and formaldehyde) at all four monitoring sites shows agreement within a factor of 2 or less.

Figure 9
2005 NJ Monitored Air Toxics Concentrations
Compared to NATA Predicted Concentrations

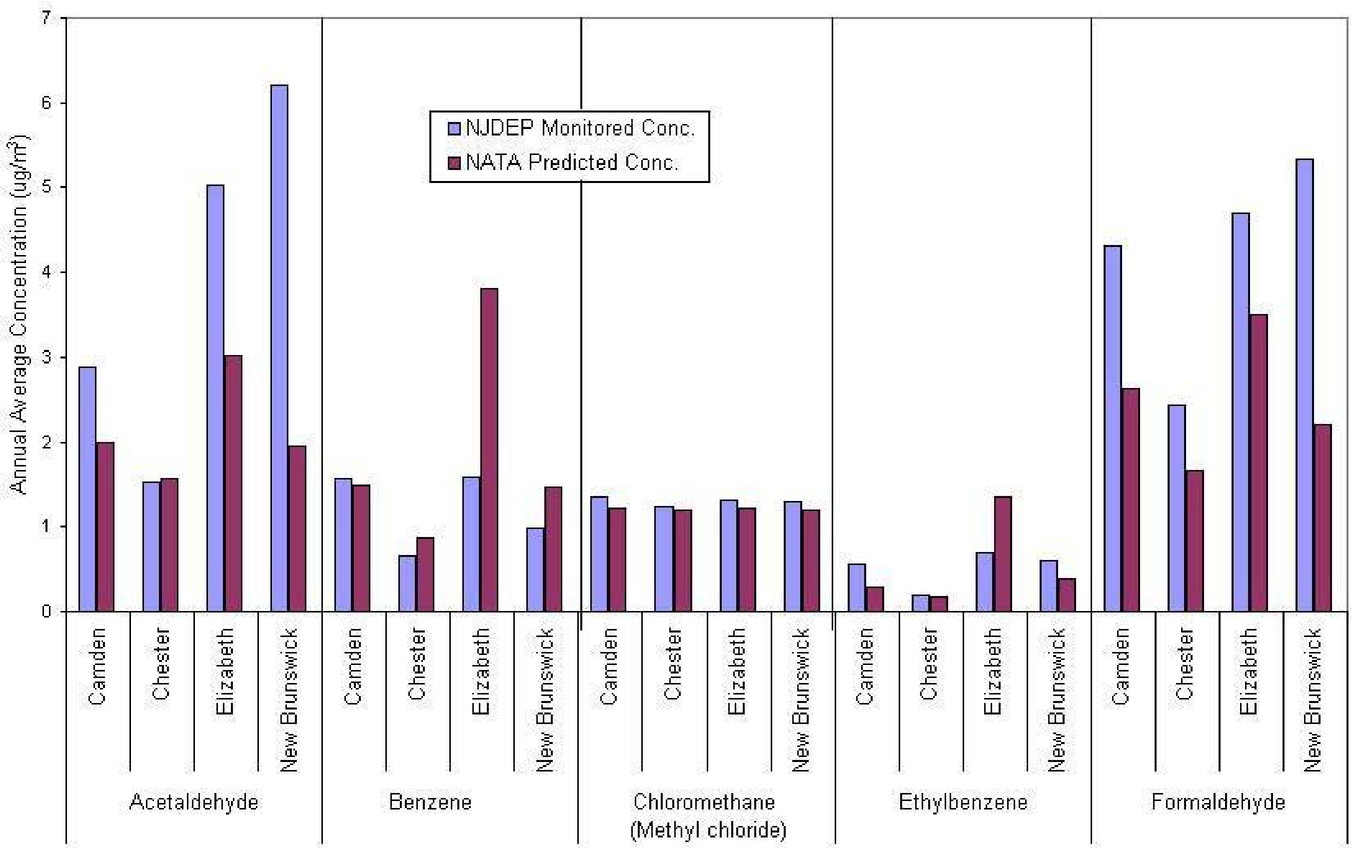


Table 5
2010 Air Toxics Data for Chester, NJ

Analyte[a]	CAS No.	Annual Mean (ppbv)[b,c]	Annual Median (ppbv)[b]	24-Hour Max. (ppbv)	Annual Mean (µg/m³)[b,c]	Annual Median (µg/m³)[c]	24-Hour Max. (µg/m³)	Health Benchmark (µg/m³)[d]	Annual Mean Risk Ratio[e]	Detection Limit (µg/m³)	% Above Minimum Detection Limit[f]
Acetaldehyde	75-07-0	0.72	0.64	2.20	**1.30**	1.14	3.96	0.45	**2.9**	0.016	100
Acetone	67-64-1	0.98	0.88	5.68	2.34	2.08	13.49	31000	0.0001	0.019	100
Acetonitrile	75-05-8	0.72	0.26	25.70	1.21	0.44	43.15	60	0.02	0.097	100
Acetylene	74-86-2	0.47	0.45	1.11	0.50	0.48	1.18			0.013	100
Acrolein[g]	107-02-8	**0.31**	0.14	4.18	**0.71**	0.33	9.58	0.02	**36**	0.034	95
Acrylonitrile	107-13-1	**(0.02)**	0	0.11	**(0.04)**	0	0.23	0.015	**2.5**	0.033	28
Benzaldehyde	100-52-7	0.02	0.01	0.04	0.07	0.06	0.19			0.009	100
Benzene	71-43-2	**0.15**	0.14	0.30	**0.47**	0.45	0.96	0.13	**3.6**	0.019	100
Bromochloromethane	74-97-5	(0.0002)	0	0.01	(0.0009)	0	0.05			0.026	2
Bromomethane	74-83-9	0.008	0.01	0.02	0.03	0.04	0.09	5	0.01	0.008	63
1,3-Butadiene	106-99-0	(0.004)	0	0.03	(0.01)	0	0.06	0.033	0.3	0.007	30
Butyraldehyde	123-72-8	0.07	0.06	0.16	0.20	0.19	0.47			0.009	100
Carbon Disulfide	75-15-0	4.02	2.85	9.74	12.53	8.88	30.33	700	0.02	0.006	100
Carbon Tetrachloride	56-23-5	**0.10**	0.10	0.15	**0.64**	0.62	0.91	0.067	**9.5**	0.013	100
Chloroethane	75-00-3	(0.002)	0	0.03	(0.005)	0	0.08	10000	0.0000005	0.005	9
Chloroform	67-66-3	**0.02**	0.02	0.04	**0.08**	0.09	0.21	0.043	**1.8**	0.010	77
Chloromethane	74-87-3	**0.60**	0.59	0.88	**1.24**	1.22	1.82	0.56	**2.2**	0.012	100
Chloromethylbenzene	100-44-7	(0.0002)	0	0.009	(0.0008)	0	0.05	0.02	0.04	0.010	2
Crotonaldehyde	123-73-9	0.10	0.03	0.83	0.30	0.07	2.39			0.009	100
Dibromochloromethane	594-18-3	(0.0003)	0	0.009	(0.003)	0	0.09			0.010	4
1,2-Dibromoethane	106-93-4	(0.0002)	0	0.008	(0.001)	0	0.06	0.0017	0.8	0.008	4
m-Dichlorobenzene	541-73-1	(0.0002)	0	0.007	(0.0009)	0	0.04			0.024	4
o-Dichlorobenzene	95-50-1	(0.0001)	0	0.007	(0.0007)	0	0.04	200	0.000004	0.024	2
p-Dichlorobenzene	106-46-7	(0.002)	0	0.03	(0.01)	0	0.16	0.091	0.1	0.024	21
Dichlorodifluoromethane	75-71-8	0.57	0.56	0.73	2.80	2.77	3.61	200	0.01	0.020	100
1,1-Dichloroethane	75-34-3	(0.0003)	0	0.01	(0.001)	0	0.04	0.63	0.002	0.008	4
1,2-Dichloroethane	107-06-2	(0.004)	0	0.02	(0.02)	0	0.09	0.038	0.4	0.008	23
1,1-Dichloroethene	75-35-4	(0.0002)	0	0.007	(0.0009)	0	0.03	200	0.000005	0.012	4
cis-1,2-Dichloroethylene	156-59-2	(0.002)	0	0.14	(0.01)	0	0.56			0.067	2
trans-1,2-Dichloroethylene	156-60-5	(0.0001)	0	0.008	(0.0006)	0	0.03			0.012	2
Dichloromethane	75-09-2	0.12	0.09	0.56	0.41	0.32	1.94	2.1	0.2	0.028	100
Dichlorotetrafluoroethane	1320-37-2	0.02	0.02	0.03	0.12	0.13	0.17			0.007	100
Ethyl tert-Butyl Ether	637-92-3	(0.00009)	0	0.005	(0.0004)	0	0.02			0.029	2
Ethylbenzene	100-41-4	0.02	0.02	0.07	0.09	0.09	0.30	0.4	0.2	0.017	93
Formaldehyde	50-00-0	**1.33**	0.94	5.25	**1.63**	1.16	6.45	0.077	**21**	0.017	100
Hexachloro-1,3-butadiene	87-68-3	(0.0001)	0	0.006	(0.001)	0	0.06	0.045	0.02	0.128	2

Table 5 (Continued)
2010 Air Toxics Data for Chester, NJ

Analyte[a]	CAS No.	Annual Mean (ppbv)[b,c]	Annual Median (ppbv)[b]	24-Hour Max. (ppbv)	Annual Mean (μg/m³)[b,c]	Annual Median (μg/m³)[c]	24-hour Max. (μg/m³)	Health Benchmark (μg/m³)[d]	Annual Mean Risk Ratio[e]	Detection Limit (μg/m³)	% Above Minimum Detection Limit[f]
Hexaldehyde	66-25-1	0.02	0.02	0.05	0.08	0.07	0.22			0.008	100
Isovaleraldehyde	590-86-3	(0.0002)	0	0.01	(0.0007)	0	0.04			0.007	2
Methyl Ethyl Ketone	78-93-3	0.25	0.23	0.80	0.73	0.67	2.35	5000	0.0001	0.115	100
Methyl Isobutyl Ketone	108-10-1	0.01	0.01	0.04	0.05	0.04	0.17	3000	0.00002	0.020	56
Methyl Methacrylate	80-62-6	(0.0005)	0	0.03	(0.002)	0	0.11	700	0.000003	0.099	2
n-Octane	111-65-9	0.01	0.02	0.04	0.06	0.07	0.19			0.019	68
Propionaldehyde	123-38-6	0.10	0.08	0.25	0.23	0.19	0.60	8	0.03	0.012	100
Propylene	115-07-1	0.22	0.21	0.62	0.39	0.36	1.07	3000	0.0001	0.064	100
Styrene	100-42-5	0.01	0.01	0.07	0.04	0.04	0.31	1.8	0.02	0.013	61
1,1,2,2-Tetrachloroethane	79-34-5	(0.0001)	0	0.008	(0.001)	0	0.05	0.017	0.1	0.021	2
Tetrachloroethylene	127-18-4	0.01	0.01	0.05	0.07	0.07	0.31	0.17	0.4	0.020	67
Tolualdehydes		0.01	0.01	0.07	0.07	0.06	0.35			0.029	63
Toluene	108-88-3	0.15	0.13	1.01	0.58	0.49	3.81	5000	0.0001	0.030	100
1,2,4-Trichlorobenzene	102-82-1	(0.0002)	0	0.007	(0.002)	0	0.05	4	0.0004	0.052	4
1,1,1-Trichloroethane	71-55-6	0.008	0.01	0.02	0.04	0.05	0.10	1000	0.00004	0.005	68
1,1,2-Trichloroethane	79-00-5	(0.0002)	0	0.009	(0.0009)	0	0.05	0.063	0.01	0.016	2
Trichloroethylene	79-01-6	(0.0006)	0	0.01	(0.003)	0	0.08	0.5	0.01	0.011	7
Trichlorofluoromethane	75-69-4	0.28	0.27	0.36	1.55	1.53	2.04	700	0.002	0.011	100
Trichlorotrifluoroethane	76-131	0.09	0.09	0.12	0.71	0.69	0.93	30000	0.00002	0.023	100
1,2,4-Trimethylbenzene	95-63-6	0.01	0.02	0.04	0.07	0.08	0.19			0.025	88
1,3,5-Trimethylbenzene	108-67-8	0.007	0.007	0.02	0.03	0.03	0.08			0.020	72
Valeraldehyde	110-62-3	0.02	0.02	0.06	0.07	0.05	0.19			0.007	100
m,p-Xylene	1330-20-7	0.04	0.04	0.11	0.17	0.17	0.49	100	0.002	0.030	95
o-Xylene	95-47-6	0.02	0.02	0.04	0.08	0.08	0.19	100	0.001	0.013	86

[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 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.

[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 not calculated.

[f] There were 57 total VOC samples and 59 total carbonyl samples collected in 2010 in Chester.

[g] Acrolein concentrations are highly uncertain because of problems with collection and analysis methods.

Table 6
2010 Air Toxics Data for Elizabeth, NJ

Analyte[a]	CAS No.	Annual Mean (ppbv)[b,c]	Annual Median (ppbv)[b]	24-Hour Max. (ppbv)	Annual Mean (μg/m³)[b,c]	Annual Median (μg/m³)[c]	24-Hour Max. (μg/m³)	Long-Term Health Benchmark (μg/m³)[d]	Annual Mean Risk Ratio[e]	Detection Limit (μg/m³)	% Above Minimum Detection Limit[f]
Acetaldehyde	75-07-0	**1.51**	1.31	4.70	**2.72**	2.36	8.47	0.45	**6.1**	0.016	100
Acetone	67-64-1	1.48	1.23	6.26	3.52	2.92	14.87	31000	0.0001	0.019	100
Acetonitrile	75-05-8	0.85	0.80	2.20	1.43	1.35	3.69	60	0.02	0.097	100
Acetylene	74-86-2	1.05	0.91	3.05	1.12	0.97	3.25			0.013	100
Acrolein[g]	107-02-8	**0.47**	0.34	6.96	**1.08**	0.77	15.96	0.02	**54**	0.034	97
Acrylonitrile	107-13-1	**(0.009)**	0	0.09	**(0.02)**	0	0.20	0.015	**1.3**	0.033	17
Benzaldehyde	100-52-7	0.04	0.03	0.19	0.17	0.14	0.83			0.009	100
Benzene	71-43-2	**0.31**	0.29	0.89	**1.00**	0.93	2.83	0.13	**7.7**	0.019	100
Bromomethane	74-83-9	0.01	0.01	0.10	0.05	0.05	0.38	5	0.01	0.008	75
1,3-Butadiene	106-99-0	**0.05**	0.05	0.11	**0.12**	0.11	0.25	0.033	**3.6**	0.007	100
Butyraldehyde	123-72-8	0.16	0.14	0.78	0.48	0.40	2.30			0.009	100
Carbon Disulfide	75-15-0	0.92	0.93	1.64	2.85	2.90	5.11	700	0.004	0.006	100
Carbon Tetrachloride	56-23-5	**0.10**	0.10	0.13	**0.60**	0.60	0.83	0.067	**8.9**	0.013	98
Chloroethane	75-00-3	(0.006)	0	0.06	(0.02)	0	0.15	10000	0.000002	0.005	29
Chloroform	67-66-3	**0.03**	0.03	0.06	**0.13**	0.13	0.28	0.043	**2.9**	0.010	85
Chloromethane	74-87-3	**0.62**	0.61	0.85	**1.29**	1.26	1.76	0.56	**2.3**	0.012	100
Chloroprene	126-99-8	(0.0003)	0	0.02	(0.001)	0	0.07	7	0.0002	0.011	2
Crotonaldehyde	123-73-9	0.13	0.05	0.66	0.37	0.15	1.90			0.009	100
Dibromochloromethane	594-18-3	(0.0002)	0	0.007	(0.002)	0	0.07			0.010	5
1,2-Dibromoethane	106-93-4	(0.0002)	0	0.006	(0.002)	0	0.05	0.0017	0.9	0.008	3
o-Dichlorobenzene	95-50-1	(0.00008)	0	0.005	(0.0005)	0	0.03	200	0.000003	0.024	2
p-Dichlorobenzene	106-46-7	0.01	0.01	0.05	0.08	0.08	0.29	0.091	0.9	0.024	69
Dichlorodifluoromethane	75-71-8	0.57	0.57	0.84	2.84	2.79	4.16	200	0.01	0.020	100
1,1-Dichloroethane	75-34-3	(0.0001)	0	0.006	(0.0004)	0	0.02	0.63	0.001	0.008	2
1,2-Dichloroethane	107-06-2	(0.004)	0	0.03	(0.02)	0	0.11	0.038	0.4	0.008	19
1,1-Dichloroethene	75-35-4	(0.0006)	0	0.02	(0.002)	0	0.09	200	0.00001	0.012	5
cis-1,2-Dichloroethylene	156-59-2	(0.002)	0	0.14	(0.009)	0	0.56			0.067	2
trans-1,2-Dichloroethylene	156-60-5	(0.002)	0	0.09	(0.007)	0	0.35			0.012	5
Dichloromethane	75-09-2	0.17	0.15	0.46	0.61	0.54	1.60	2.1	0.3	0.028	100
Dichlorotetrafluoroethane	1320-37-2	0.02	0.02	0.03	0.13	0.13	0.17			0.007	100
Ethyl Acrylate	140-88-5	(0.0003)	0	0.02	(0.001)	0	0.08	2	0.001	0.025	2
Ethylbenzene	100-41-4	**0.10**	0.09	0.18	**0.42**	0.41	0.79	0.4	**1.0**	0.017	100
Formaldehyde	50-00-0	**3.62**	3.08	12.00	**4.44**	3.78	14.74	0.077	**58**	0.017	100
Hexaldehyde	66-25-1	0.08	0.05	0.89	0.33	0.18	3.63			0.008	100
Methyl Ethyl Ketone	78-93-3	0.44	0.38	1.33	1.30	1.11	3.92	5000	0.0003	0.115	100

Table 6 (Continued)
2010 Air Toxics Data for Elizabeth, NJ

Analyte[a]	CAS No.	Annual Mean (ppbv)[b,c]	Annual Median (ppbv)[b]	24-Hour Max. (ppbv)	Annual Mean (µg/m³)[b,c]	Annual Median (µg/m³)[c]	24-Hour Max. (µg/m³)	Long-Term Health Benchmark (µg/m³)[d]	Annual Mean Risk Ratio[e]	Detection Limit (µg/m³)	% Above Minimum Detection Limit[f]
Methyl Isobutyl Ketone	108-10-1	0.04	0.03	0.15	0.15	0.14	0.63	3000	0.0001	0.020	95
Methyl Methacrylate	80-62-6	0.01	0	0.25	0.04	0	0.89	700	0.0001	0.099	14
Methyl tert-Butyl Ether	1634-04-4	(0.0007)	0	0.03	(0.003)	0	0.11	3.8	0.001	0.050	3
n-Octane	111-65-9	0.07	0.06	0.17	0.31	0.28	0.80			0.019	97
Propionaldehyde	123-38-6	0.23	0.20	0.74	0.54	0.46	1.76	8	0.1	0.012	100
Propylene	115-07-1	2.54	0.88	66.00	4.37	1.52	113.59	3000	0.001	0.064	100
Styrene	100-42-5	0.07	0.06	0.25	0.29	0.26	1.05	1.8	0.2	0.013	100
1,1,2,2-Tetrachloroethane	79-34-5	(0.00008)	0	0.005	(0.0006)	0	0.03	0.017	0.03	0.021	2
Tetrachloroethylene	127-18-4	**0.03**	0.02	0.07	**0.20**	0.16	0.47	0.17	**1.2**	0.020	97
Tolualdehydes		0.03	0.03	0.14	0.16	0.14	0.68			0.029	86
Toluene	108-88-3	0.87	0.78	2.11	3.27	2.94	7.95	5000	0.001	0.030	100
1,1,1-Trichloroethane	71-55-6	0.01	0.01	0.02	0.06	0.06	0.11	1000	0.0001	0.005	81
Trichloroethylene	79-01-6	(0.005)	0	0.04	(0.03)	0	0.21	0.5	0.1	0.011	36
Trichlorofluoromethane	75-69-4	0.29	0.29	0.44	1.61	1.60	2.49	700	0.002	0.011	100
Trichlorotrifluoroethane	76-131	0.09	0.09	0.13	0.71	0.71	0.97	30000	0.00002	0.023	100
1,2,4-Trimethylbenzene	95-63-6	0.09	0.08	0.20	0.43	0.41	0.96			0.025	100
1,3,5-Trimethylbenzene	108-67-8	0.03	0.03	0.06	0.15	0.15	0.31			0.020	100
Valeraldehyde	110-62-3	0.07	0.05	0.57	0.25	0.17	1.99			0.007	100
Vinyl chloride	75-01-4	(0.00008)	0	0.005	(0.0002)	0	0.01	0.11	0.002	0.005	2
m,p-Xylene	1330-20-7	0.26	0.26	0.53	1.11	1.13	2.31	100	0.01	0.030	100

[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 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.

[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 not calculated.

[f] There were 59 total VOC samples and 59 total carbonyl samples collected in 2010 in Elizabeth.

[g] Acrolein concentrations are highly uncertain because of problems with collection and analysis methods.

Table 7
2010 Air Toxics Data for New Brunswick, NJ

Analyte[a]	CAS No.	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	**1.61**	1.47	3.77	**2.91**	2.64	6.79	0.45	**6.5**	0.016	100
Acetone	67-64-1	1.41	1.28	2.64	3.34	3.03	6.27	31000	0.0001	0.019	100
Acetonitrile	75-05-8	1.00	0.42	15.90	1.69	0.70	26.70	60	0.03	0.097	100
Acetylene	74-86-2	0.69	0.60	2.10	0.74	0.64	2.23			0.013	100
Acrolein[g]	107-02-8	**1.11**	0.30	41.60	**2.55**	0.69	95.39	0.02	**128**	0.034	100
Acrylonitrile	107-13-1	**(0.06)**	0	1.36	**(0.14)**	0	2.95	0.015	**9.4**	0.033	42
Benzaldehyde	100-52-7	0.01	0.01	0.07	0.05	0.05	0.28			0.009	76
Benzene	71-43-2	**0.20**	0.20	0.39	**0.65**	0.63	1.25	0.13	**5.0**	0.019	100
Bromodichloromethane	75-27-4	(0.0005)	0	0.01	(0.003)	0	0.08			0.013	5
Bromoform	75-25-2	(0.00005)	0	0.003	(0.0006)	0	0.03	0.91	0.001	0.021	2
Bromomethane	74-83-9	0.01	0.01	0.03	0.04	0.04	0.13	5	0.01	0.008	76
1,3-Butadiene	106-99-0	**0.02**	0.02	0.08	**0.05**	0.04	0.18	0.033	**1.5**	0.007	96
Butyraldehyde	123-72-8	0.08	0.06	0.60	0.23	0.19	1.78			0.009	100
Carbon Disulfide	75-15-0	0.40	0.33	2.35	1.24	1.01	7.32	700	0.002	0.006	100
Carbon Tetrachloride	56-23-5	0.09	0.09	0.15	**0.56**	0.57	0.92	0.067	**8.3**	0.013	98
Chlorobenzene	108-90-7	(0.0001)	0	0.008	(0.0007)	0	0.04	1000	0.000001	0.009	2
Chloroethane	75-00-3	(0.01)	0	0.15	(0.03)	0	0.40	10000	0.000003	0.005	33
Chloroform	67-66-3	**0.02**	0.02	0.08	**0.12**	0.12	0.39	0.043	**2.8**	0.010	87
Chloromethane	74-87-3	**0.62**	0.61	0.83	**1.28**	1.25	1.71	0.56	**2.3**	0.012	100
Crotonaldehyde	123-73-9	0.07	0.03	0.28	0.20	0.09	0.81			0.009	97
Dibromochloromethane	594-18-3	(0.0005)	0	0.01	(0.005)	0	0.10			0.010	11
1,2-Dibromoethane	106-93-4	(0.0001)	0	0.006	(0.0008)	0	0.05	0.0017	0.5	0.008	2
m-Dichlorobenzene	541-73-1	(0.0004)	0	0.007	(0.002)	0	0.04			0.024	7
o-Dichlorobenzene	95-50-1	(0.0003)	0	0.007	(0.002)	0	0.04	200	0.00001	0.024	7
p-Dichlorobenzene	106-46-7	0.008	0.009	0.02	0.05	0.05	0.14	0.091	0.5	0.024	58
Dichlorodifluoromethane	75-71-8	0.57	0.57	0.68	2.81	2.84	3.36	200	0.01	0.020	100
1,1-Dichloroethane	75-34-3	(0.0004)	0	0.01	(0.002)	0	0.04	0.63	0.003	0.008	5
1,2-Dichloroethane	107-06-2	(0.004)	0	0.02	(0.02)	0	0.10	0.038	0.4	0.008	20
1,1-Dichloroethene	75-35-4	(0.0001)	0	0.006	(0.0004)	0	0.02	200	0.000002	0.012	2
trans-1,2-Dichloroethylene	156-60-5	(0.004)	0	0.21	(0.01)	0	0.82			0.012	2
Dichloromethane	75-09-2	0.22	0.15	1.27	0.75	0.50	4.41	2.1	0.4	0.028	100
1,2-Dichloropropane	78-87-5	(0.0002)	0	0.01	(0.001)	0	0.06	0.1	0.01	0.014	2
Dichlorotetrafluoroethane	1320-37-2	0.02	0.02	0.03	0.13	0.13	0.17			0.007	100
Ethyl tert-Butyl Ether	637-92-3	(0.0001)	0	0.006	(0.0005)	0	0.03			0.029	2
Ethylbenzene	100-41-4	0.05	0.05	0.14	0.22	0.20	0.62	0.4	0.6	0.017	100

Table 7 (Continued)

2009 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/m³)[b,c]	Annual Median (μg/m³)[c]	24-Hour Max. (μg/m³)	Long-Term Health Benchmark (μg/m³)[d]	Annual Mean Risk Ratio[e]	Detection Limit (μg/m³)	% Above Minimum Detection Limit[f]
Formaldehyde	50-00-0	**1.33**	1.11	3.91	**1.63**	1.36	4.80	0.077	**21**	0.017	100
Hexachloro-1,3-butadiene	87-68-3	(0.0001)	0	0.008	(0.002)	0	0.09	0.045	0.03	0.128	2
Hexaldehyde	66-25-1	0.01	0.01	0.05	0.06	0.06	0.21			0.008	83
Isovaleraldehyde	590-86-3	(0.0002)	0	0.01	(0.0008)	0	0.05			0.007	2
Methyl Ethyl Ketone	78-93-3	0.43	0.37	1.41	1.25	1.09	4.15	5000	0.0003	0.115	100
Methyl Isobutyl Ketone	108-10-1	0.03	0.02	0.31	0.14	0.10	1.27	3000	0.00005	0.020	84
Methyl Methacrylate	80-62-6	(0.0004)	0	0.01	(0.001)	0	0.05	700	0.000002	0.099	4
Methyl tert-Butyl Ether	1634-04-4	(0.0005)	0	0.02	(0.002)	0	0.07	3.8	0.0005	0.050	4
n-Octane	111-65-9	0.03	0.03	0.06	0.14	0.14	0.28			0.019	87
Propionaldehyde	123-38-6	0.07	0.06	0.27	0.17	0.14	0.64	8	0.02	0.012	100
Propylene	115-07-1	0.41	0.39	1.09	0.71	0.67	1.88	3000	0.0002	0.064	100
Styrene	100-42-5	0.03	0.02	0.15	0.11	0.10	0.62	1.8	0.1	0.013	96
1,1,2,2-Tetrachloroethane	79-34-5	(0.0002)	0	0.009	(0.001)	0	0.06	0.017	0.1	0.021	2
Tetrachloroethylene	127-18-4	0.02	0.02	0.04	0.12	0.12	0.26	0.17	0.7	0.020	95
Tolualdehydes		0.01	0.004	0.06	0.05	0.02	0.30			0.029	50
Toluene	108-88-3	0.32	0.25	1.52	1.19	0.95	5.73	5000	0.0002	0.030	100
1,2,4-Trichlorobenzene	102-82-1	(0.0002)	0	0.007	(0.002)	0	0.05	4	0.0004	0.052	4
1,1,1-Trichloroethane	71-55-6	0.01	0.01	0.04	0.06	0.06	0.20	1000	0.0001	0.005	82
Trichloroethylene	79-01-6	(0.003)	0	0.02	(0.02)	0	0.09	0.5	0.03	0.011	33
Trichlorofluoromethane	75-69-4	0.28	0.28	0.36	1.58	1.58	2.01	700	0.002	0.011	100
Trichlorotrifluoroethane	76-131	0.09	0.09	0.12	0.71	0.70	0.90	30000	0.00002	0.023	100
1,2,4-Trimethylbenzene	95-63-6	0.04	0.04	0.08	0.20	0.19	0.41			0.025	100
1,3,5-Trimethylbenzene	108-67-8	0.02	0.02	0.03	0.08	0.07	0.15			0.020	98
Valeraldehyde	110-62-3	0.02	0.02	0.04	0.06	0.06	0.12			0.007	95
Vinyl chloride	75-01-4	(0.0007)	0	0.01	(0.002)	0	0.03	0.11	0.02	0.005	11
m,p-Xylene	1330-20-7	0.12	0.10	0.33	0.53	0.44	1.42	100	0.01	0.030	100
o-Xylene	95-47-6	0.05	0.04	0.12	0.21	0.17	0.51	100	0.002	0.013	100

[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 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.

[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 not calculated.

[f] There were 55 total VOC samples and 58 total carbonyl samples collected in 2010 in New Brunswick.

[g] Acrolein concentrations are highly uncertain because of problems with collection and analysis methods.

Table 8.
Analytes with 100 Percent Non-Detects in 2010

Analyte	CAS #	Detection Limit (µg/m³)	Location		
			Chester	Elizabeth	New Brunswick
tert-Amyl Methyl Ether	994-05-8	0.029	X	X	X
Bromochloromethane	74-97-5	0.026		X	X
Bromodichloromethane	75-27-4	0.013	X	X	
Bromoform	75-25-2	0.021	X	X	
Chlorobenzene	108-90-7	0.009	X	X	
Chloromethylbenzene	100-44-7	0.010		X	X
Chloroprene	126-99-8	0.011	X		X
m-Dichlorobenzene	541-73-1	0.024		X	
cis-1,2-Dichloroethylene	156-59-2	0.067			X
1,2-Dichloropropane	78-87-5	0.014	X	X	
cis-1,3-Dichloropropene	542-75-6	0.014	X	X	X
trans-1,3-Dichloropropene	542-75-6	0.014	X	X	X
2,5-Dimethylbenzaldehyde	5799-94-2	0.005	X	X	X
Ethyl Acrylate	140-88-5	0.025	X		X
Ethyl tert-Butyl Ether	637-92-3	0.029		X	
Hexachloro-1,3-butadiene	87-68-3	0.128		X	
Isovaleraldehyde	590-86-3	0.007		X	
Methyl tert-Butyl Ether	1634-04-4	0.050	X		
1,2,4-Trichlorobenzene	102-82-1	0.052		X	
1,1,2-Trichloroethane	79-00-5	0.016		X	X
Vinyl chloride	75-01-4	0.005	X		

In 2010, collected samples of these chemicals were never above the detection limits at the specific monitoring locations. However, they may be present in the air below the detection limit level.

REFERENCES

Air Pollution and Health Risk, EPA-450/3-90-022, USEPA Office of Air and Radiation, Technology Transfer Network, URL: http://www.epa.gov/ttn/atw/3_90_022.html

Air Toxics in New Jersey, NJDEP, Division of Air Quality (DAQ), URL: www.nj.gov/dep/airtoxics

Clean Air Act Amendments of 1990, Title III – Hazardous Air Pollutants, 101st Congress 2nd Session, Report 101-952, US Government Printing Office, Washington DC, October 1990.

Evaluating Exposures to Toxic Air Pollutants: A Citizen's Guide, EPA-450/3-90-023, USEPA, Office of Air and Radiation, USEPA Office of Air and Radiation, Technology Transfer Network , URL: http://www.epa.gov/ttn/atw/3_90_023.html

Taking Toxics Out of the Air, EPA-452/K-00-002, USEPA, Office of Air Quality Planning and Standards, Research Triangle Park, NC, August 2000, URL: http://www.epa.gov/oar/oaqps/takingtoxics/airtox.pdf

Risk Screening Tools, NJDEP, DAQ, Air Quality Permitting Program, URL: www.nj.gov/dep/aqpp/risk.html

Reference Concentrations for Inhalation, NJDEP, DAQ, Bureau of Technical Services, Air Quality Evaluation Section (AQEv), Trenton, NJ, August 2009, URL: http://www.nj.gov/dep/aqpp/downloads/risk/RfCs2009.pdf

Reference Concentrations for Short-Term Inhalation Exposure, NJDEP, DAQ/AQEv, Trenton, NJ, August 2009, URL: http://www.nj.gov/dep/aqpp/downloads/risk/Acute2009.pdf

Unit Risk Factors for Inhalation, NJDEP, DAQ/AQEv, Trenton, NJ, August 2009, URL: http://www.nj.gov/dep/aqpp/downloads/risk/URFs2009.pdf

Risk Assessment for Toxic Air Pollutants, USEPA Office of Air and Radiation, Technology Transfer Network, URL: http://www.epa.gov/ttn/atw/3_90_024.html

2005 National-Scale Air Toxics Assessment, USEPA Office of Air and Radiation, Technology Transfer Network, URL: http://www.epa.gov/ttn/atw/nata2005 .