

New Jersey's Air Toxics Program

Olga Boyko
NJ Dept. of Environmental Protection
Division of Air Quality

MARAMA Air Toxics Workshop
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**In developing an air toxics program,
NJ took a multi-pronged approach**

- ▶ Not just one rule
- ▶ Not just one program group

An evolution

Permit must incorporate control technology requirements

Originated within criteria pollutant program.

“State-of-the-Art (SOTA) required,
can include:

- ▶ air pollution control technology
- ▶ pollution prevention methods
- ▶ process modifications or substitutions

to provide the greatest emission reductions that are technologically and economically feasible

- ▶ expanded to air toxics beginning in **1979** with Sub. 17

“Control and Prohibition of Air Pollution by Toxic Substances” (N.J.A.C. 7:27-17)

- ▶ 1979
- ▶ Listed 11 “toxic volatile organic substances” (TVOS)
- ▶ Required permits and state-of-the-art controls for emissions of TVOS

Further evolution out of criteria pollutant program

- ▶ Air toxics focus added to permit review, enforcement, monitoring, stack testing
- ▶ Allowed for air toxics to be absorbed into routine activities, omitting need for separate allocation of resources
- ▶ Much coordination and cooperation needed across programs

Air Toxics Steering Committee

- ▶ Formed in 1987
- ▶ Representatives from air programs (Permitting, Planning, and Air Enforcement)
- ▶ Representatives from outside the air program: Science/Research, Pollution Prevention, Right-to-Know, NJ Dept. of Health
- ▶ Regular meetings, covering any/all issues related to air toxics
- ▶ Strategize, coordinate, evaluate

Air Toxics Permitting

- ▶ Hazardous Air Pollutants (HAPs)
- ▶ Linked to Clean Air Act HAP list
- ▶ Listed in our permit regulations (separately for minor sources and operating permits)
- ▶ **Reporting thresholds** (lb/year) determine whether a HAP needs to be included in a minor source or operating permit

Air Toxics Permitting

N.J.A.C. 7:27-8

- ▶ Permits and Certificates for Minor Facilities (and Major Facilities without an Operating Permit)

N.J.A.C. 7:27-22

- ▶ Operating Permits

Where does MACT fit in?

- ▶ Many of these have been incorporated into the New Jersey program
- ▶ In some cases New Jersey's requirements are more stringent
- ▶ For some source categories, NJ was the basis for the MACT floor

Are the SOTA emissions limits enough?

- ▶ After control is applied to a source, is there still a potential for detrimental impact to public health?
- ▶ To determine, must estimate air impact and health impact
- ▶ Need to model emissions and estimate cancer risk

How can this be done for thousands of permits without holding up their processing?

NJDEP Division of Air Quality Risk Screening

A short-cut for determining potential risk for the thousands of Air Pollution Control Permits processed every year.

- ▶ 1989: Implemented first risk assessment screening
- ▶ Developed method that used **dispersion factors** based on stack height and distance to property line that eliminated modeling for each source
- ▶ Used cancer potency data from EPA & other sources
- ▶ Conservative assumptions (downwash)
- ▶ If screening risk is low, pretty sure it's OK
- ▶ But if a source shows high risk it will be evaluated using a refined model using more source-specific inputs

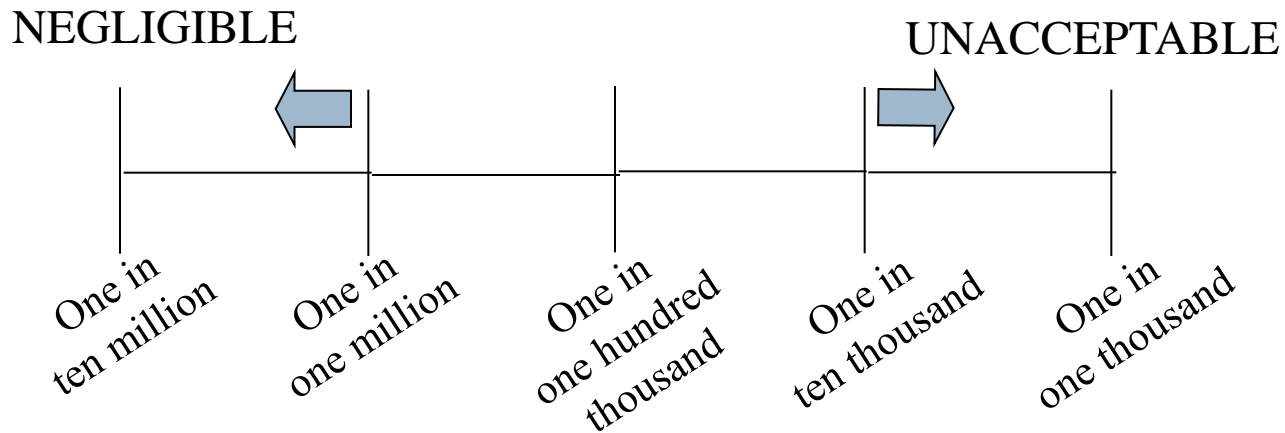
Risk Screening Worksheet Updates

- ▶ Added more carcinogens (now up to 168)
- ▶ Added noncarcinogens
 - ▶ Long-term effects (133)
 - ▶ Short-term effects (64)

Risk targets?

Cancer Risk Guidelines*

NJDEP Division of Air Quality



*For new and modified sources

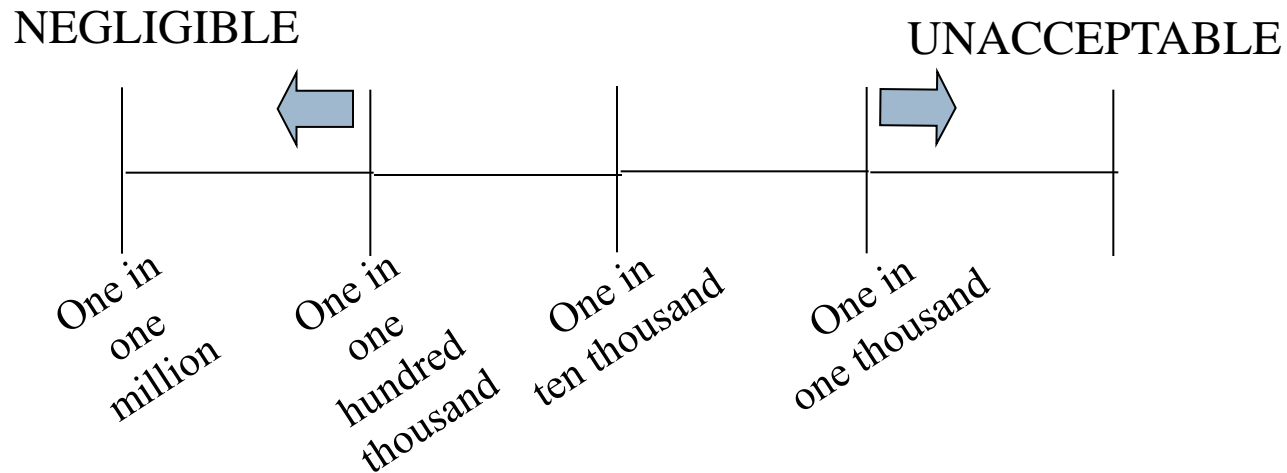
Cancer Risk Guidelines for New and Modified Sources

Risk \leq 1 in a million (1×10^{-6})	Negligible risk. OK to issue permit if meets state-of-the-art (SOTA).
1 in a million $<$ Risk $<$ 100 in a million	Case-by-case review by Risk Management Committee. Can permit if risk is minimized and permit meets SOTA.
Risk \geq 100 in a million (1×10^{-4})	Unacceptable risk; cannot issue Pre-Construction Permit. Deny proposed Pre-Construction Permit after set number of days if applicant does not agree to mitigate the risk.



Facility-Wide Cancer Risk Guidelines

NJDEP Division of Air Quality

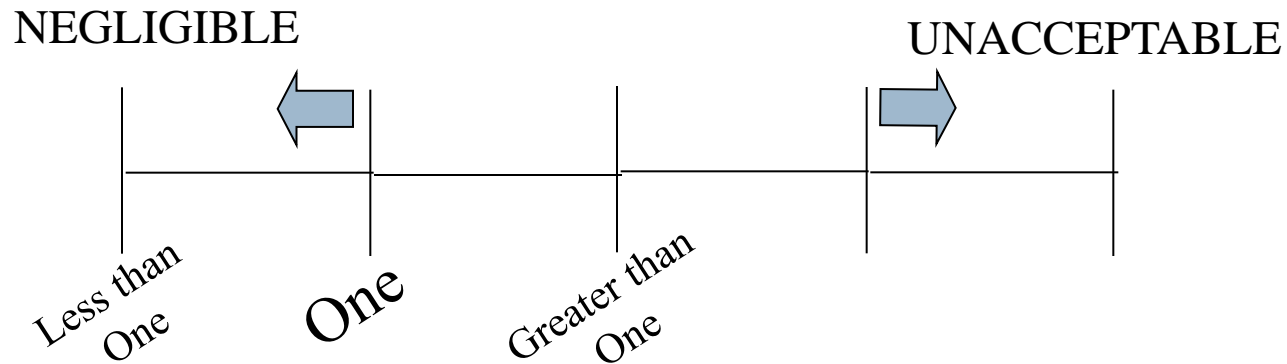


Facility-Wide Cancer Risk Guidelines

Risk \leq 10 in a million (1×10^{-5})	Negligible risk
10 in a million $<$ Risk $<$ 100 in a million	Pursue long-term (5-year) risk minimization strategy.
100 in a million $<$ Risk $<$ 1000 in a million	Pursue short-term (\leq 1 year) and long-term risk minimization strategy.
Risk \geq 1000 in a million (1×10^{-3})	Unacceptable risk. Pursue N.J.A.C. 7:27-5 enforcement action.

Noncancer Risk Guidelines for All Sources

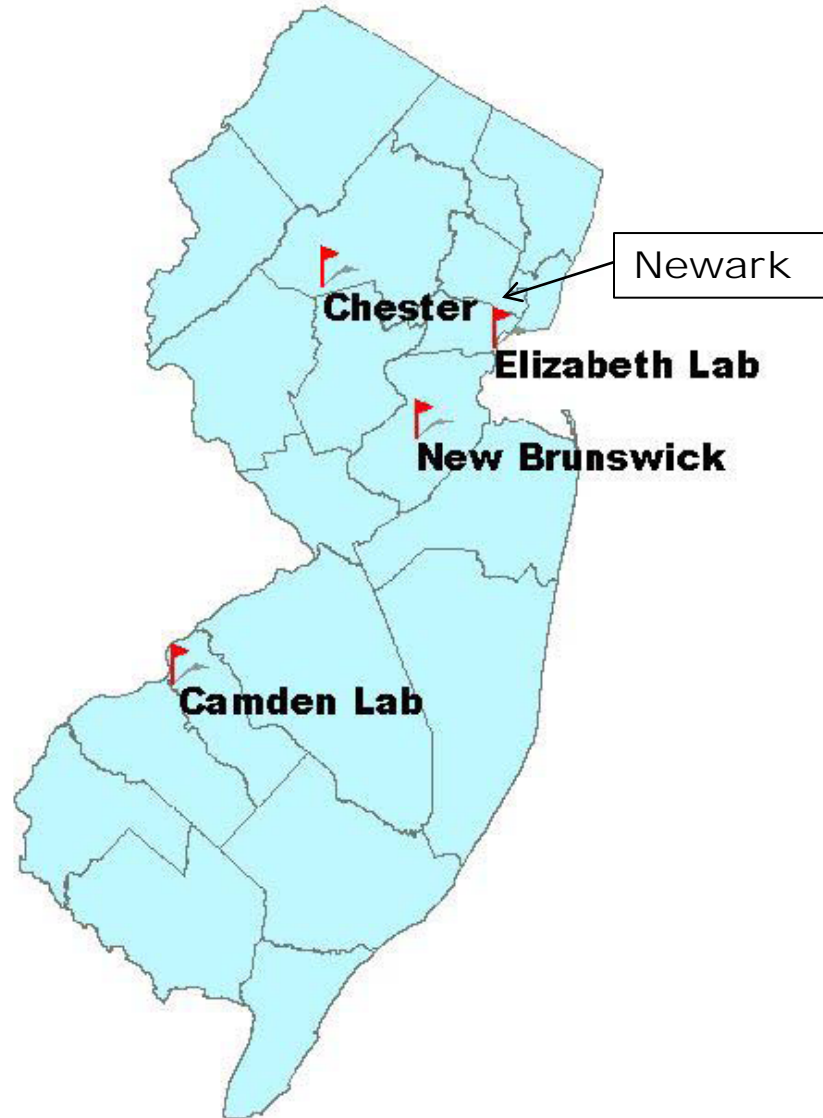
NJDEP Division of Air Quality



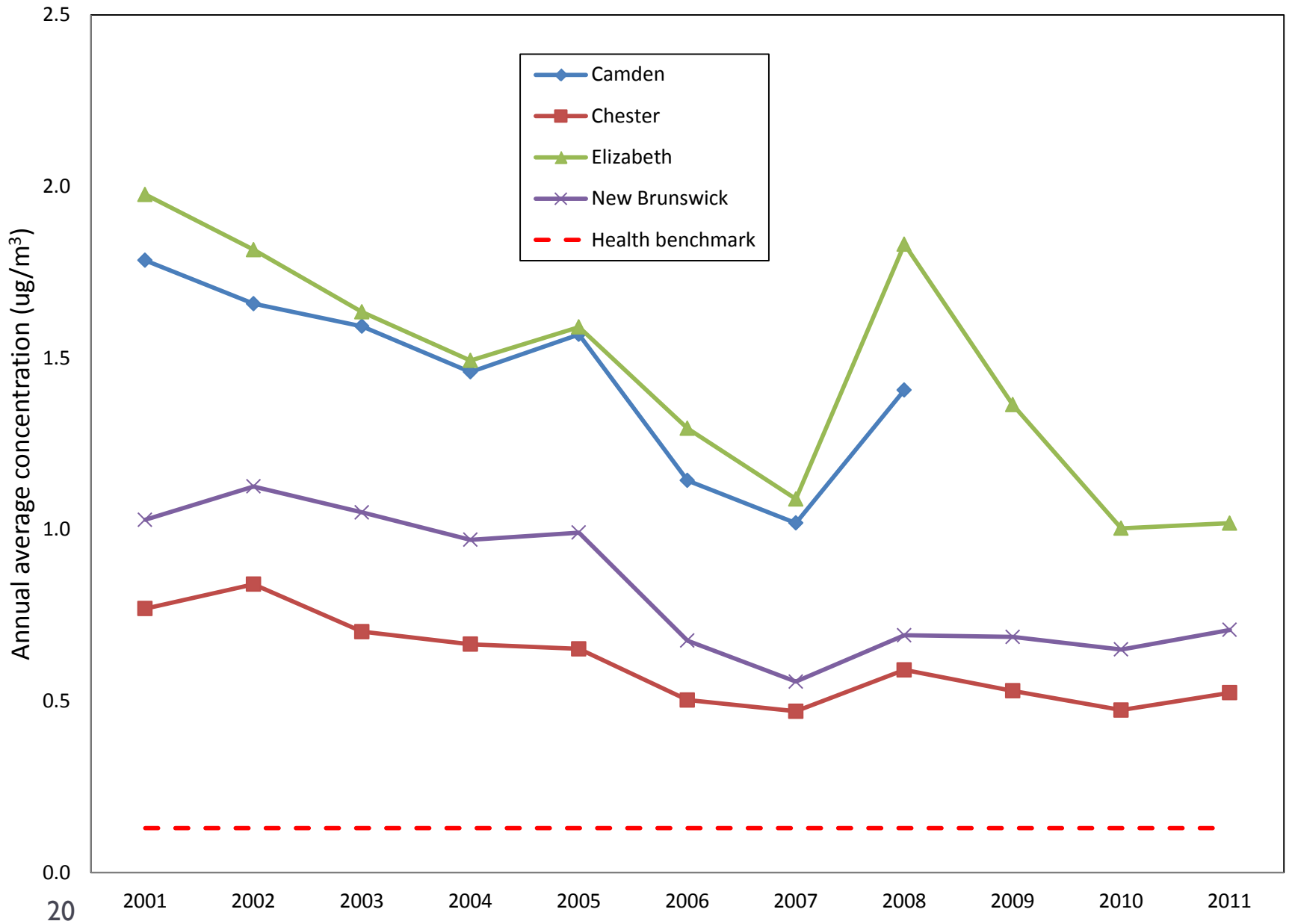
NJDEP Air Toxics Monitoring

- ▶ **3 - 5 locations**
- ▶ **Volatiles, metals, and semi-volatiles**
- ▶ **Sampling every 3 or 6 days**

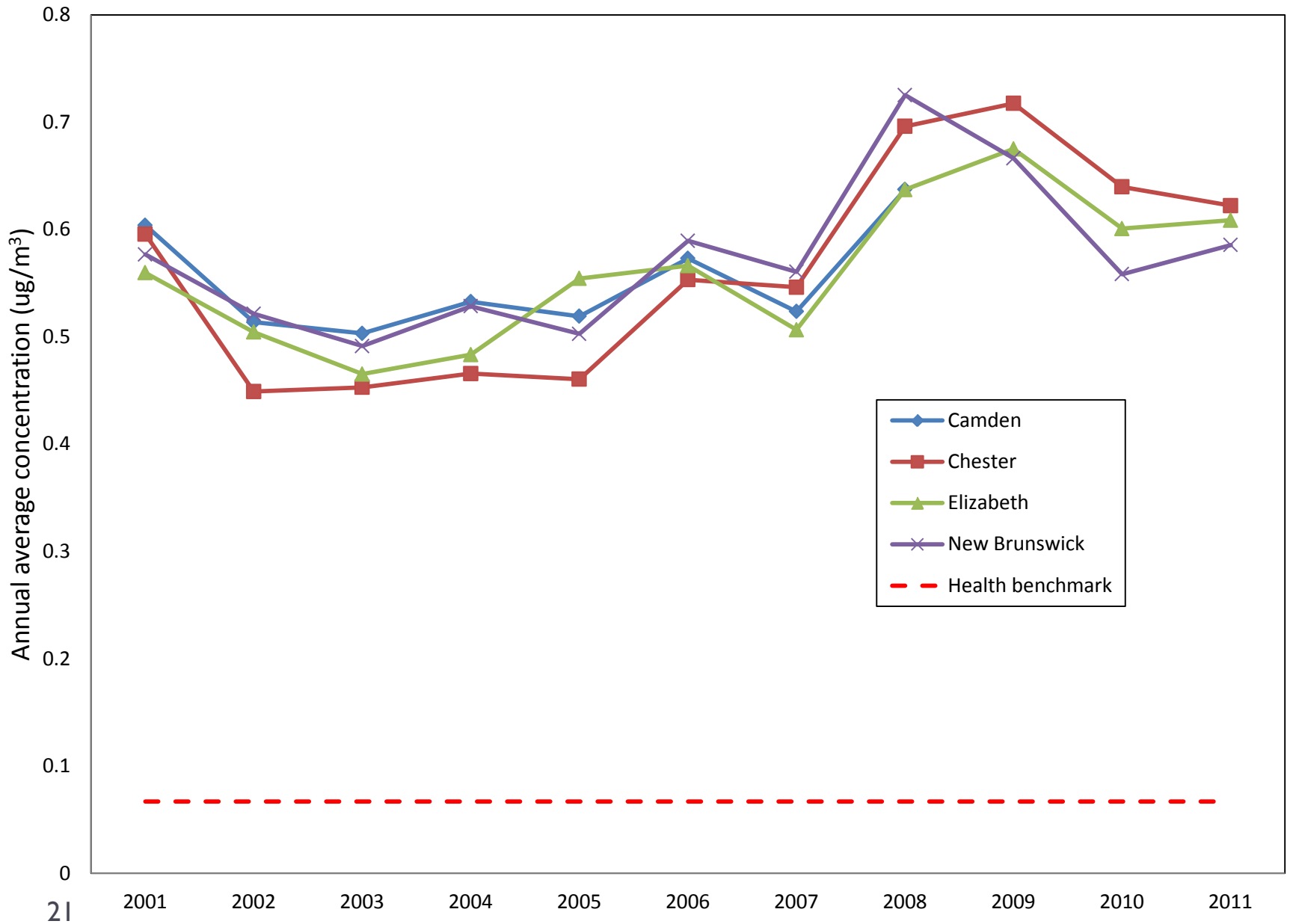
NJDEP Air Toxics Monitoring Network



BENZENE - NJ Air Monitoring Data



CARBON TETRACHLORIDE - NJ Air Monitoring Data



NJDEP Air Toxics Monitoring

Annual Air Quality Report

can be found at

www.njaqinow.net/Default.ltr.aspx

Under “Publications,” then “Annual Reports,”
then pick a year.

Look for

- ▶ Air Toxics Summary
- ▶ Fine Particle Speciation Summary (Appendix B)

Special Air Toxics Projects

- ▶ Camden Waterfront South Air Toxics Pilot Project
www.nj.gov/dep/ej/camden/index.html
- ▶ Urban Community Air Toxics Monitoring Project, Paterson (UCAMPP)
- ▶ More in the works

Camden Waterfront South Air Toxics Pilot Project

- ▶ Fall 2002 – August 2005
- ▶ Emissions inventory
- ▶ Site visits
- ▶ Dispersion modeling
- ▶ Air monitoring (toxics, PM_{2.5})
- ▶ Community Advisory Committee meetings
- ▶ Risk reduction strategies

Camden Waterfront South Air Toxics Pilot Project

Risk reduction strategies:

- ▶ Stationary source emission reductions
- ▶ Truck emissions reductions
- ▶ Environmental health education
- ▶ Vegetation for dust suppression

Urban Community Air Toxics Monitoring Project, *Paterson* (UCAMPP)

Identification of risk reduction strategies for air toxics in an urban community through:

- ▶ Emissions inventory
- ▶ Site visits
- ▶ Outreach & education
- ▶ Dispersion modeling
- ▶ Air monitoring

NJDEP Web Site:

Air Toxics in New Jersey

www.nj.gov/dep/airtoxics/





What are Air Toxics

NJDEP Air Toxics Program

Federal Air Toxics Program

Overview of USEPA's NATA

2005 Risk Results for NJ

Monitoring Data Comparisons

Sources of Air Toxics

Diesel Emissions

Estimating Risk from Air Toxics

Analysis of the 2002 NATA Results

Analysis of the 1999 NATA Results

Analysis of the 1996 NATA Results

Analysis of the 1990 CEP Results

What You Can Do

Contact Form & Additional Links

Glossary: Acronyms & Definitions

WELCOME! THIS SITE HAS INFORMATION ABOUT A LARGE GROUP OF POLLUTANTS KNOWN AS "AIR TOXICS" OR "HAZARDOUS AIR POLLUTANTS"

The New Jersey Department of Environmental Protection (NJDEP) has been working to reduce outdoor exposure to air toxics in our state since 1979. At this web site you can learn about air toxics and what we've been doing about them.



2005 NATIONAL-SCALE AIR TOXICS ASSESSMENT (NATA)

In March of 2011, the U.S. Environmental Protection Agency (USEPA) released its latest version of the National-Scale Air Toxics Assessment (NATA), for 2005. NATA is an ongoing comprehensive evaluation of air toxics in the U.S. NATA uses a nationwide inventory of emissions of air toxics from point, area, and mobile sources to estimate outdoor air concentrations, and the resulting potential exposure and health risks across the country. NJDEP has analyzed USEPA's 2005 NATA data for New Jersey, and has updated this air toxics web site with the 2005 information. To view NJDEP's analysis, use the buttons on the left of the screen to navigate through this web site.

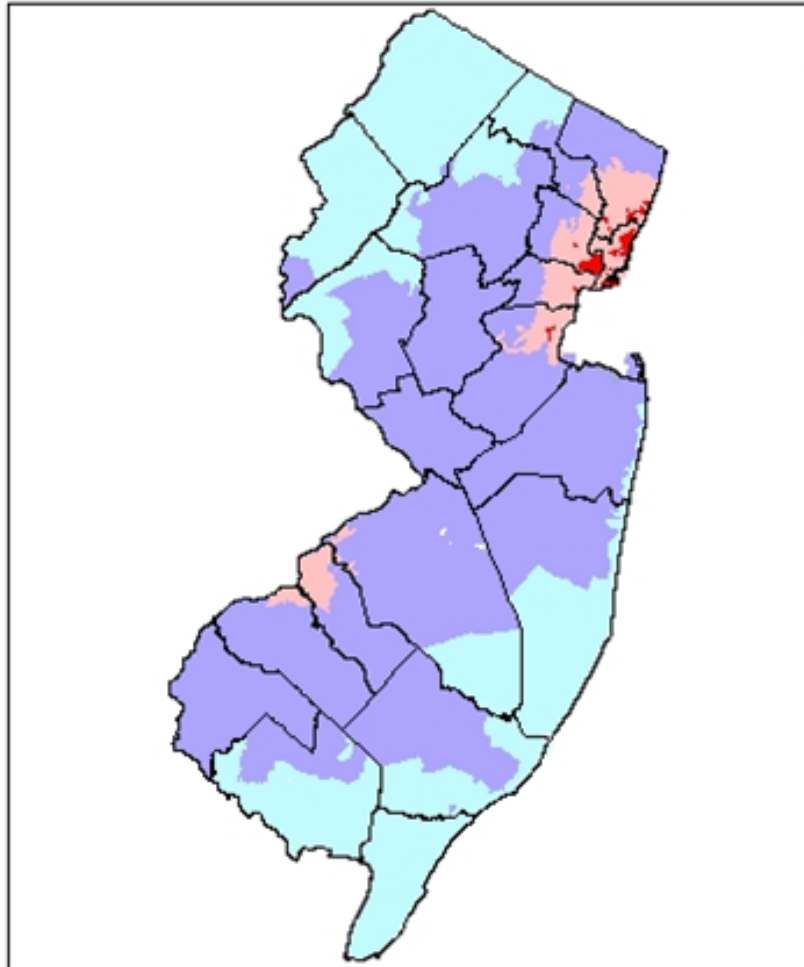
For USEPA's webpage on the 2005 National-Scale Air Toxics Assessment, click [here](#).

Some files on this site require adobe acrobat pdf reader to view. [Download the free pdf reader.](#)

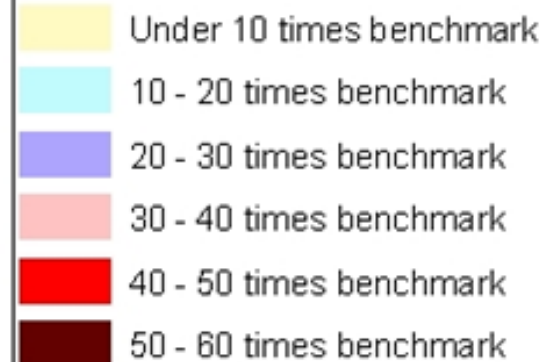
STATEWIDE

New Jersey Statewide Average 2005 NATA Modeled Air Concentrations Compared to Health Benchmarks								
Pollutant	Modeled Air Concentration (ug/m ³)	Health Benchmark (ug/m ³)	Risk Ratio	% Contribution by Source Category				
				Point Sources	Nonpoint Sources	Onroad Mobile	Nonroad Mobile	Background & Secondary
Acetaldehyde	1.9	0.45	4.3	<1%	4%	6%	3%	87%*
Acrolein	0.062	0.020	3.1	<1%	22%	14%	9%	55%*
Arsenic Compounds	0.0005	0.00023	2.3	3%	13%	5%	5%	74%
Benzene	1.3	0.13	10	<1%	13%	30%	13%	44%
1,3-Butadiene	0.095	0.033	2.9	<1%	<1%	40%	17%	43%
Cadmium Compounds	0.00011	0.00024	0.5	12%	44%	0%	1%	43%
Carbon Tetrachloride	0.61	0.067	9.1	0%	<1%	0%	0%	100%
Chloroform	0.13	0.043	3.1	<1%	54%	0%	0%	46%
Chromium (hexavalent form)	0.00024	0.000083	2.9	29%	10%	4%	1%	56%
Cobalt Compounds	0.000093	0.00011	0.8	93%	7%	0%	0%	0%
1,4-Dichlorobenzene	0.12	0.091	1.3	<1%	58%	0%	0%	42%
1,3-Dichloropropene	0.14	0.25	0.5	0%	100%	0%	0%	0%
Diesel Particulate Matter	1.1	0.0033	327	0%	0%	47%	53%	0%
Ethylbenzene	0.34	0.40	0.9	1%	30%	45%	24%	0%
Ethylene Oxide	0.011	0.011	1	12%	18%	0%	0%	70%
Formaldehyde	2.2	0.077	28	<1%	3%	9%	6%	82%*
Methyl Chloride	1.2	0.56	2.2	<1%	1%	0%	0%	99%
Naphthalene	0.13	0.029	4.6	1%	48%	26%	4%	21%
Nickel Compounds	0.0012	0.029	0.6	36%	37%	2%	10%	15%
PAH/POM	0.012	0.0072**	1.6	1%	79%	8%	12%	0%
Perchloroethylene	0.25	0.17	1.4	<1%	61%	0%	0%	39%
1,1,2-Trichloroethane	0.0066	0.063	0.1	<1%	100%	0%	0%	0%

2005 NATA Predicted Concentrations in New Jersey




Formaldehyde Risk



Maximum average census tract concentration is 3.9 ug/m^3 , or 50 times the health benchmark
Health benchmark = 0.077 ug/m^3

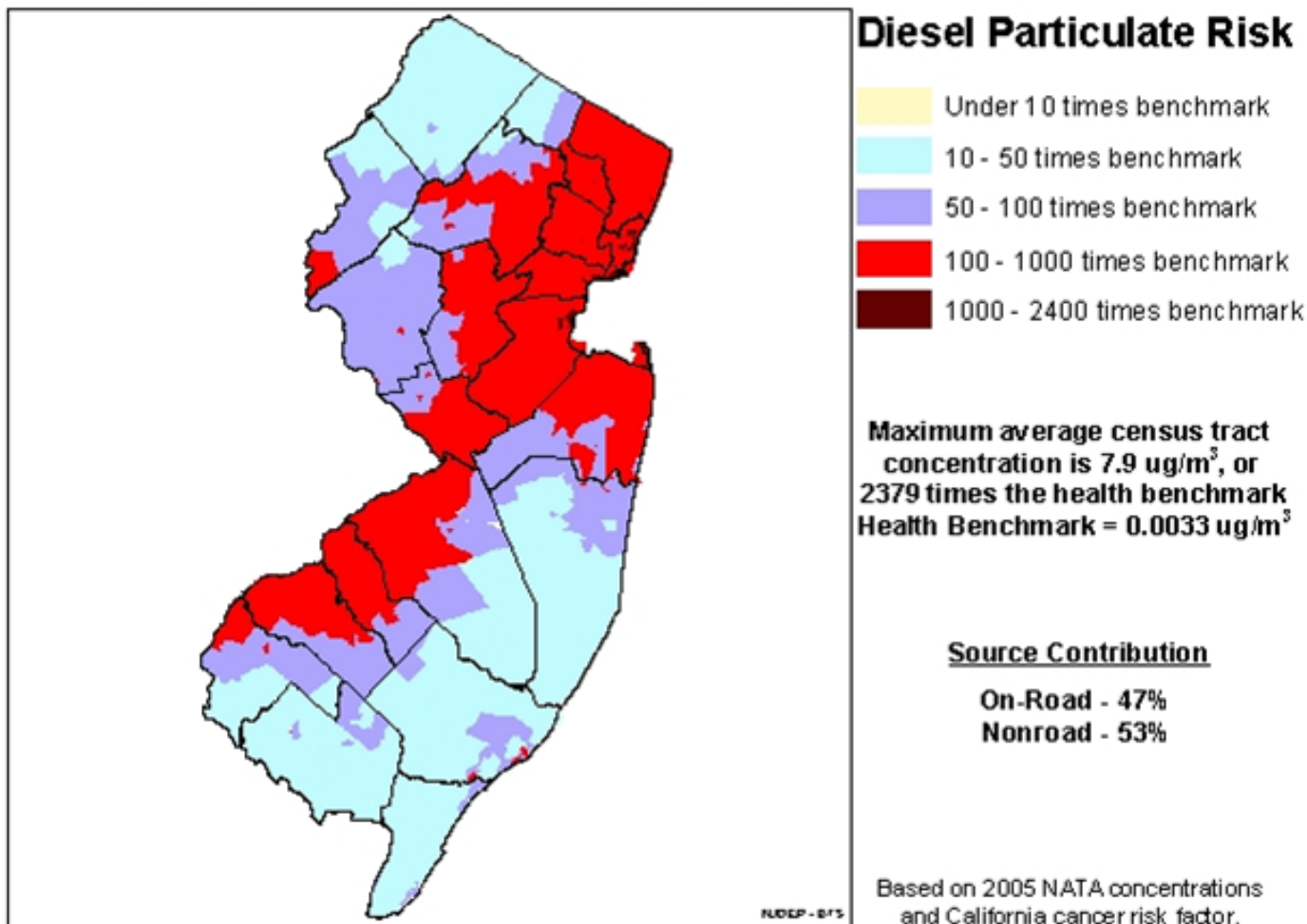
Source Contribution

Point - <1%
Nonpoint - 3%
On-Road - 9%
Nonroad - 6%
Background - 0%
Secondary - 82%

 for more information, [click here](#)

DIESEL PARTICULATE MATTER

2005 Predicted Diesel Particulate Risk in New Jersey from Mobile Sources



[i for more information, click here](#)

Diesel Initiatives

- ▶ Mandatory Diesel Retrofit Program
- ▶ Idling restrictions
- ▶ Idling alternatives and demonstration projects
- ▶ School buses
- ▶ Heavy Duty Diesel Vehicle Inspection Program
- ▶ Reducing soot at the ports

www.nj.gov/dep/stopthesoot

NO

**IDLING
ZONE**



IT'S THE LAW

TO REPORT VIOLATIONS
CALL 1-877-WARN DEP
www.StopTheSeat.org

N.J.A.C. 7:27-14, 15

What next for NJ's Air Toxics Program?

Future Initiatives

- ▶ Update of reporting thresholds (to incorporate new toxicity data)
- ▶ Addition of chemicals to the list of regulated air toxics
- ▶ Expansion of air toxics emissions statements reporting
- ▶ Facility-wide risk assessment

Olga Boyko
New Jersey Dept. of Environmental Protection
Division of Air Quality
Bureau of Technical Services
Air Quality Evaluation Section

Olga.Boyko@dep.state.nj.us

609-633-1108

609-633-1110

Olga Boyko
Mail Code 401-02
DEP Air Quality Program
P.O. Box 420
Trenton, NJ 08625-0420

