Air Monitoring Trends in New Jersey

Trends in Criteria Air Pollutants and Air Toxics Pollutants

Bureau of Air Monitoring, Bureau of Air Quality Planning & Evaluation
New Jersey Department of Environmental Protection

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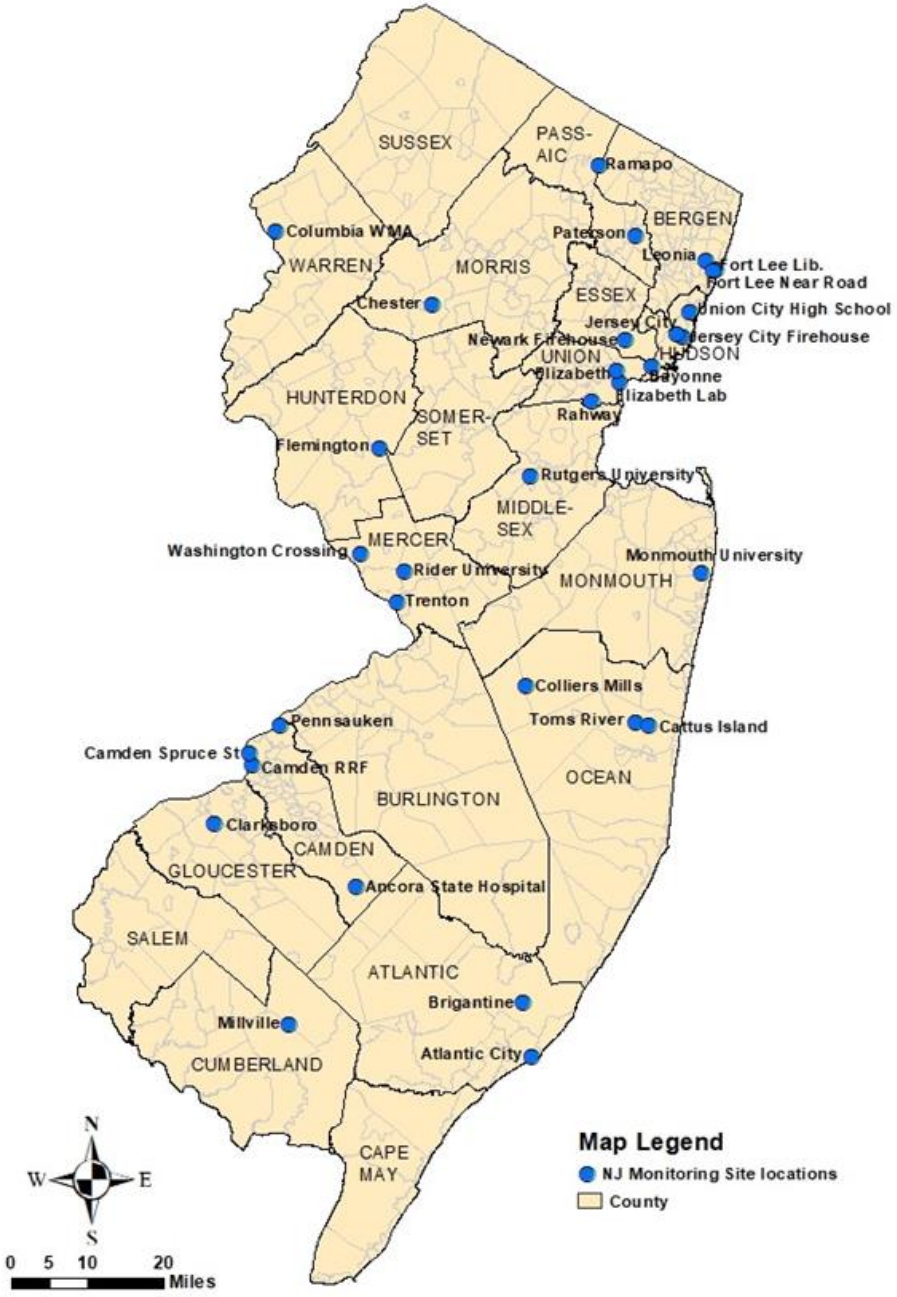
Air Monitoring Networks in New Jersey

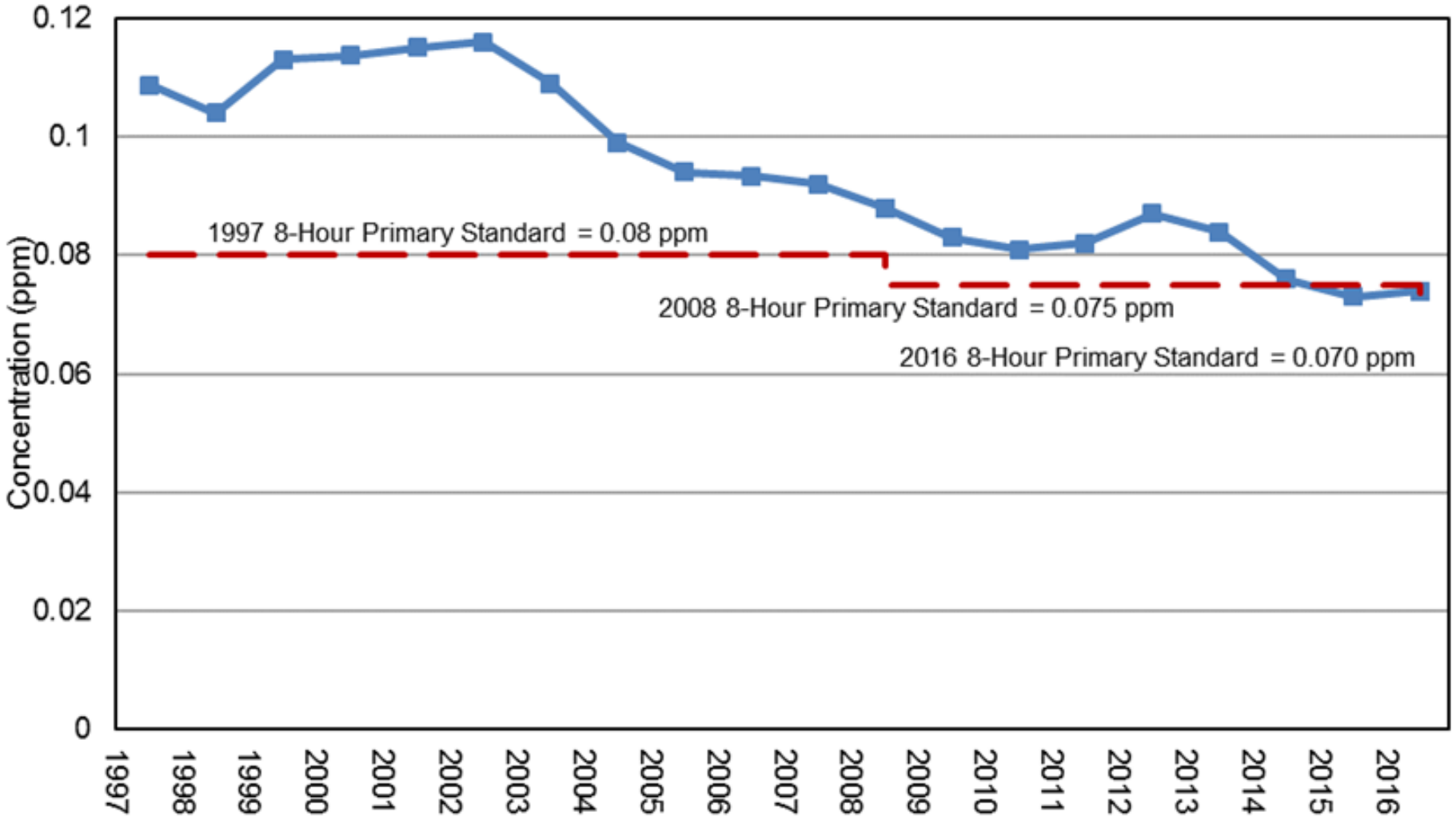
- Criteria air pollutants - CO, SO_2, O_3, NO_2, Particulate Matter (PM10 & PM2.5), and Pb
- PAMS - O_3 Precursors (VOCs)
- Air Toxics - VOCs, Elements, Cations, Anions, Carbon Species
- Acid Precipitation
- Meteorological Measurements
- >100 monitors in 32 locations



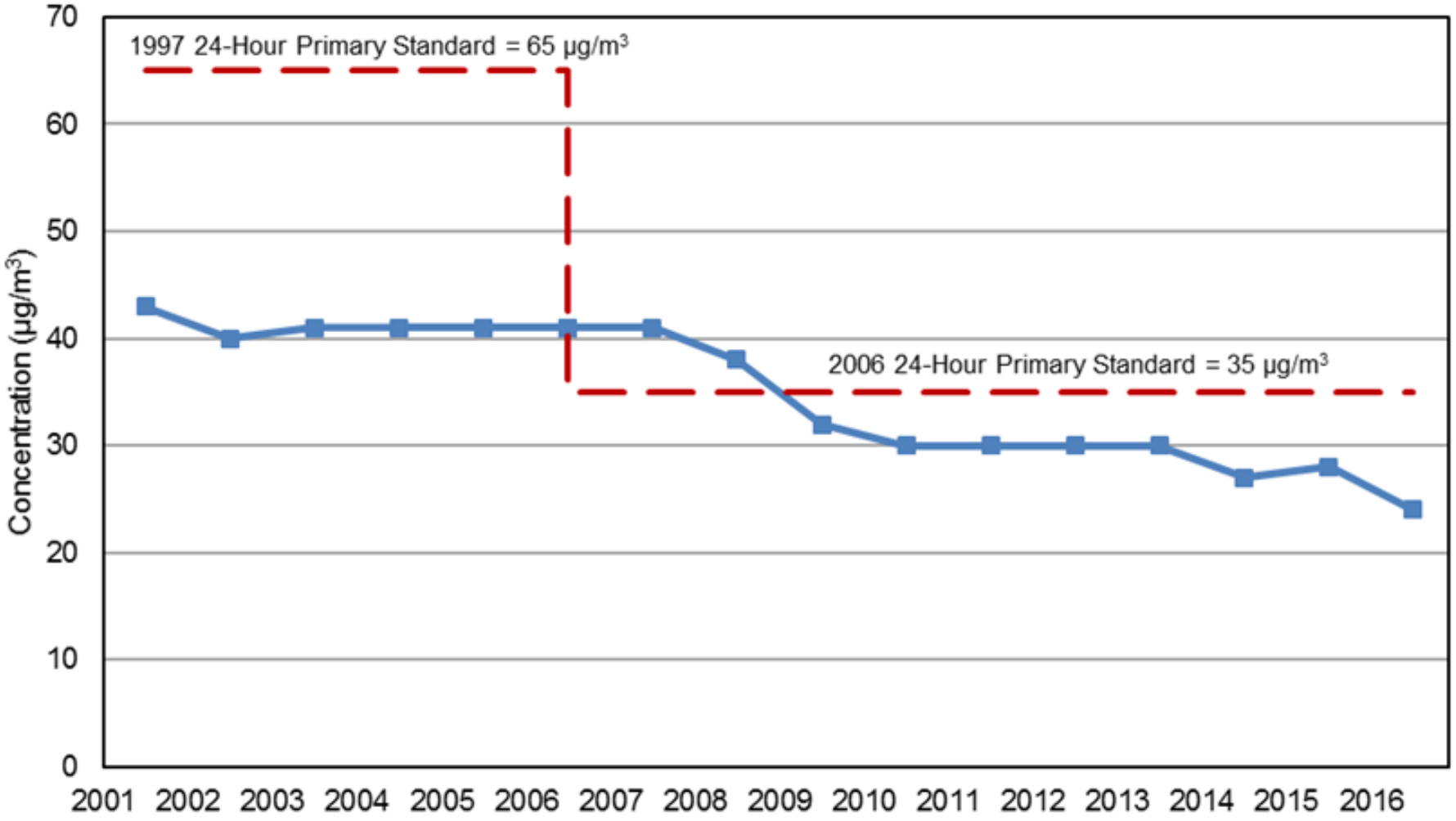
National Ambient Air Quality Standards (NAAQS)

Pollutant		Primary/ Secondary	Averaging time	Level	Form
Carbon Monoxide (CO)		Primary	8 Hour	9 ppm	Not to be exceeded more than once per year
			1 hour	35 ppm	
Lead (Pb)		Primary and Secondary	Rolling 3 month period	0.15 µg/m^3	Not to be exceeded
Nitrogen Dioxide (NO_2)		Primary	1 Hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		Secondary	1 Year	53 ppb	Annual Mean
Ozone (O_3)		Primary and Secondary	8 Hour	0.070 ppm	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particulates (PM)	PM2.5	Primary	1 Year	12.0 µg/m^3	Annual Mean Averaged Over 3 Years
		Secondary	1 Year	15.0 µg/m^3	Annual Mean Averaged Over 3 Years
		Primary and Secondary	24 Hours	35 µg/m^3	98th percentile, Averaged Over 3 Years
	PM10	Primary and Secondary	24 Hours	150 µg/m^3	Not To Be Exceeded More Than Once Per Year On Average Over Three Years
Sulfur Dioxide (SO_2)		Primary	1 hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		Secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year

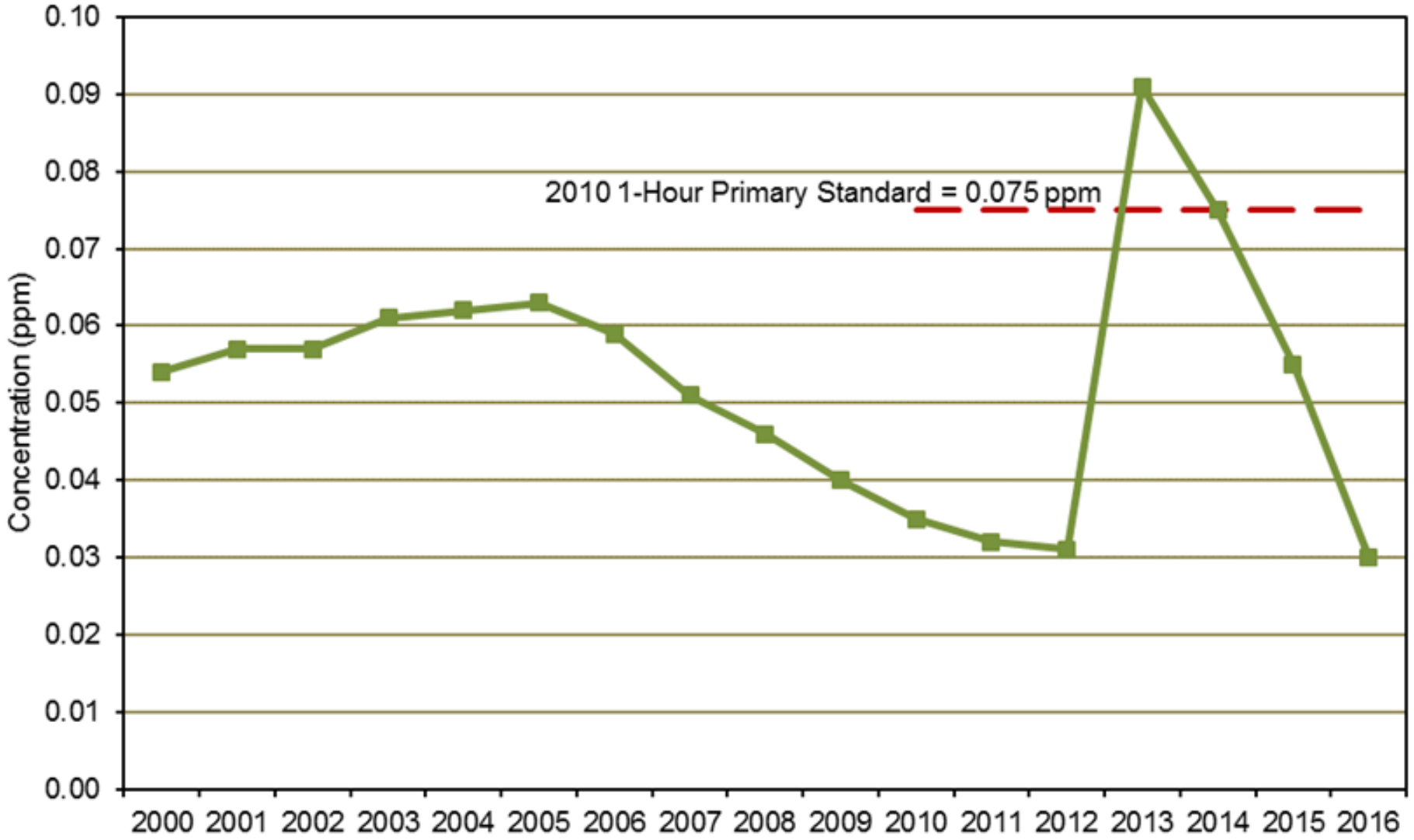
Ozone Trend, 1997-2016



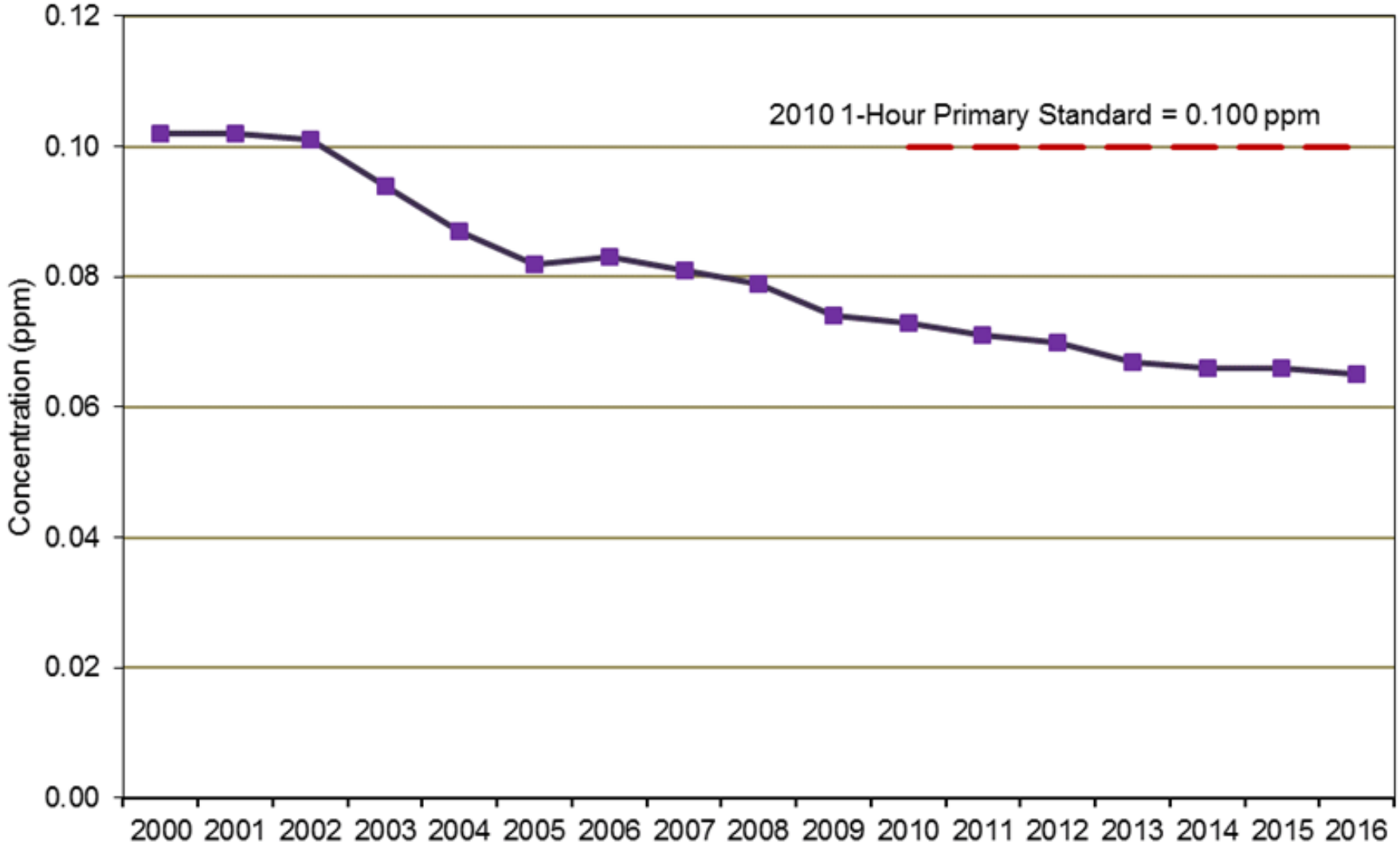
Fine Particle (PM2.5) Trend, 2001-2016



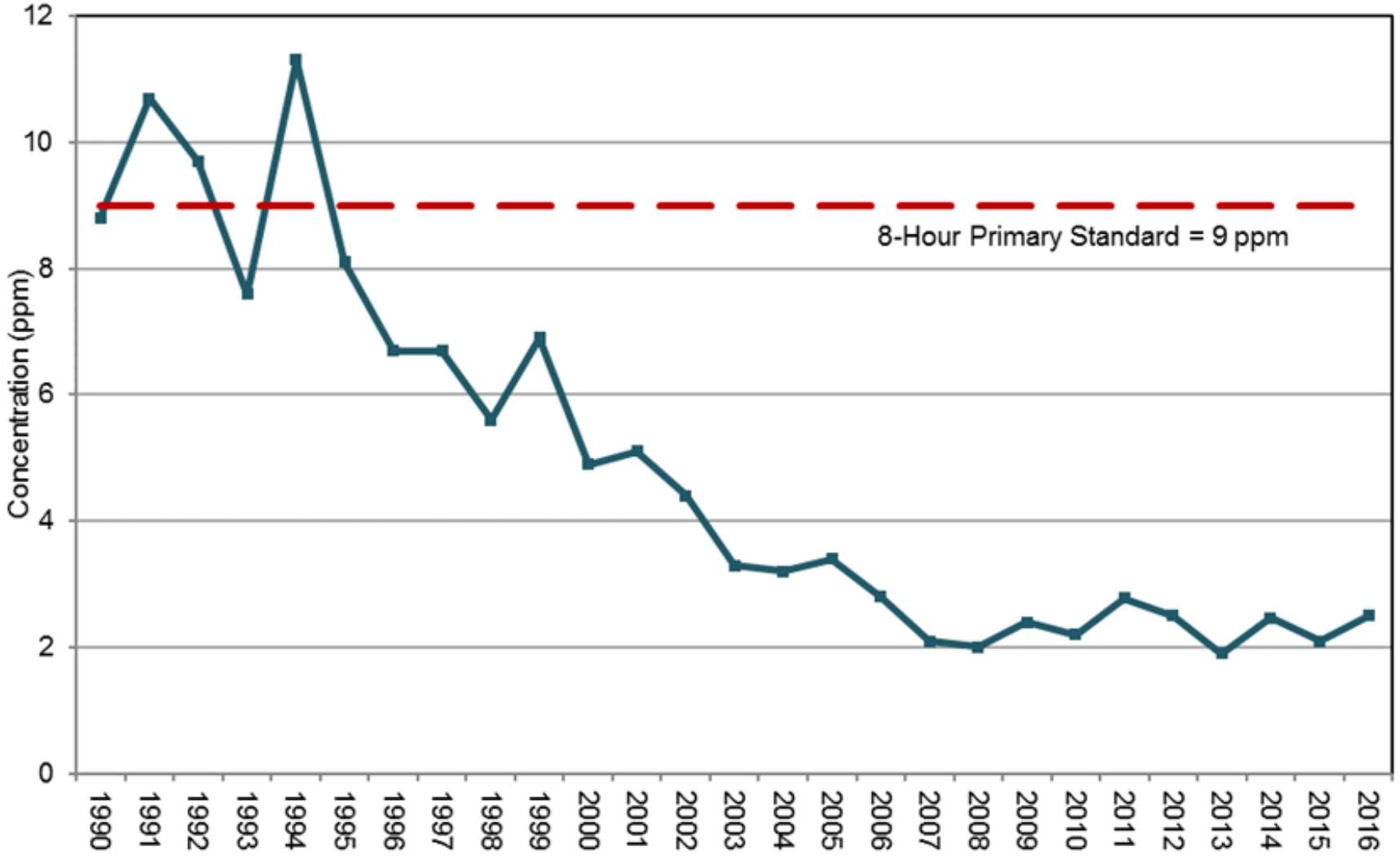
Sulfur Dioxide Trend, 2000-2016



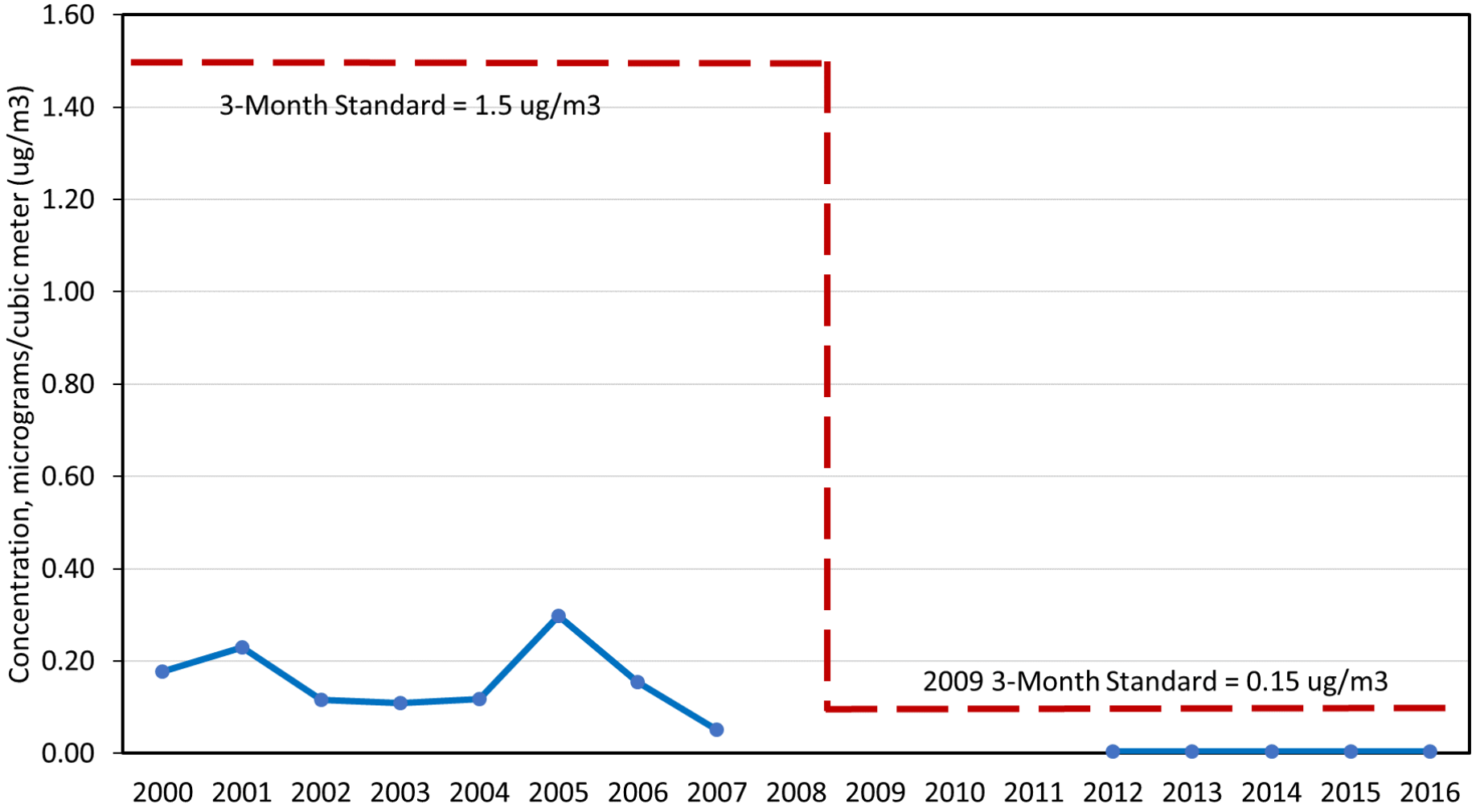
Nitrogen Dioxide Trend, 2000-2016



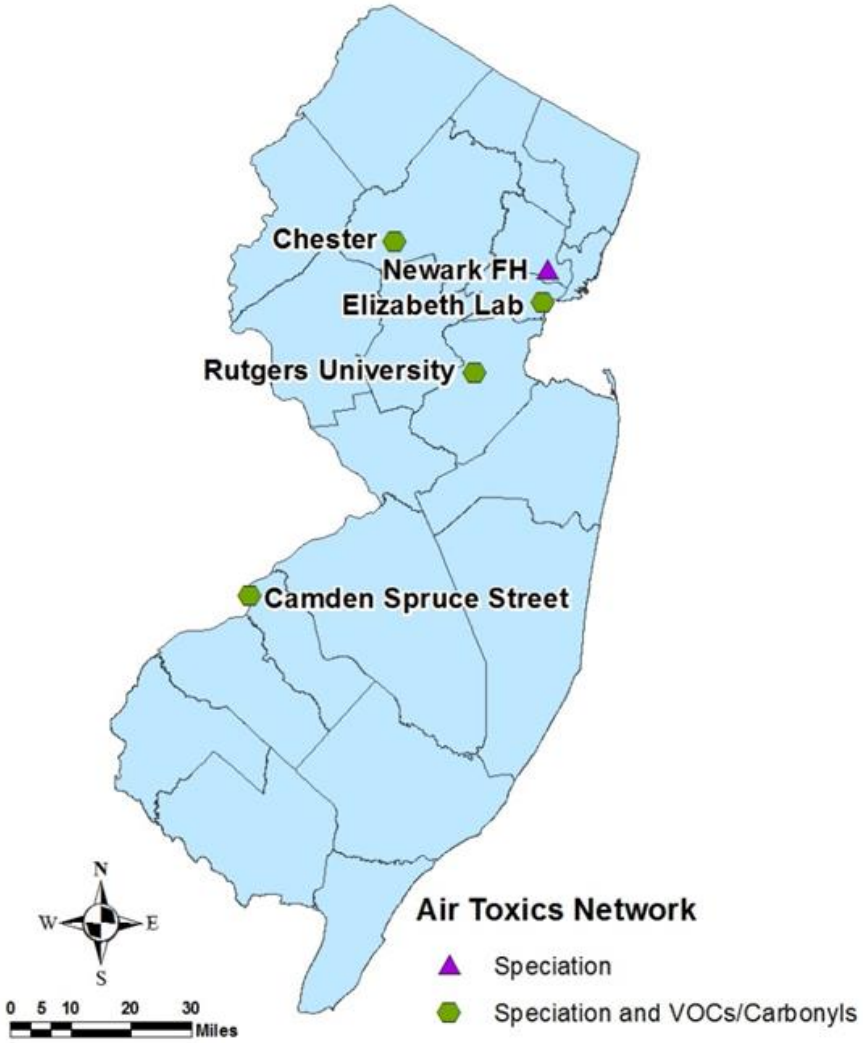
Carbon Monoxide Trend, 1990-2016



Lead Trend, 2000-2016



Air Toxics Monitoring Stations in NJ

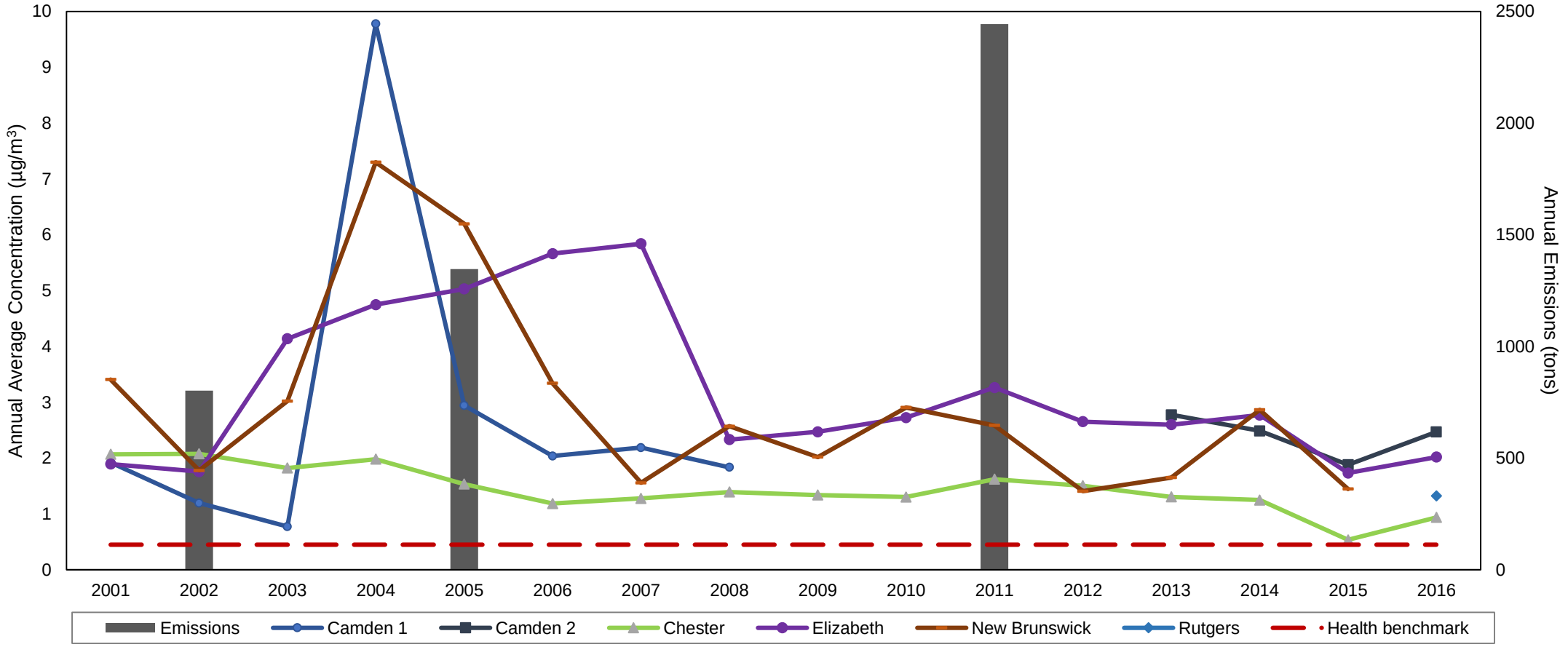


- Camden Spruce Street
  - Urban station in southern NJ
- Chester
  - Background station
- Elizabeth Lab
  - Urban station in northern NJ
- Rutgers University
  - Suburban station

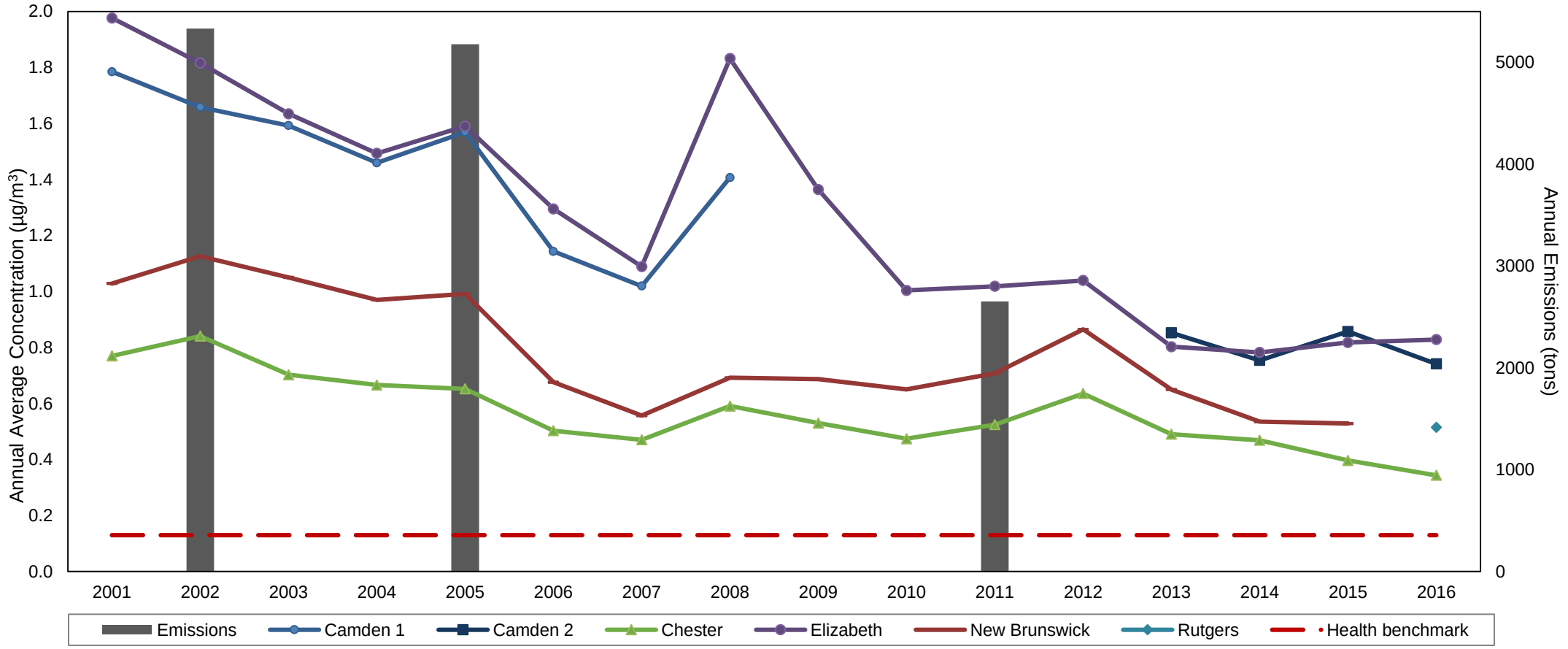
Air Toxic Pollutants: Gaseous VOCs

- 71 Volatile Organic Compounds (VOC) analyzed in each sample
- 43 VOCs are Hazardous Air Pollutants (HAPs) listed in the Clean Air Act
- 24-hour samples are taken every 6 days
- Samples sent to EPA's contract laboratory for analysis
- Not all VOCs are detected in each sample
- Analysis technology has improved over the years
- Analysis costs about $1000/sample

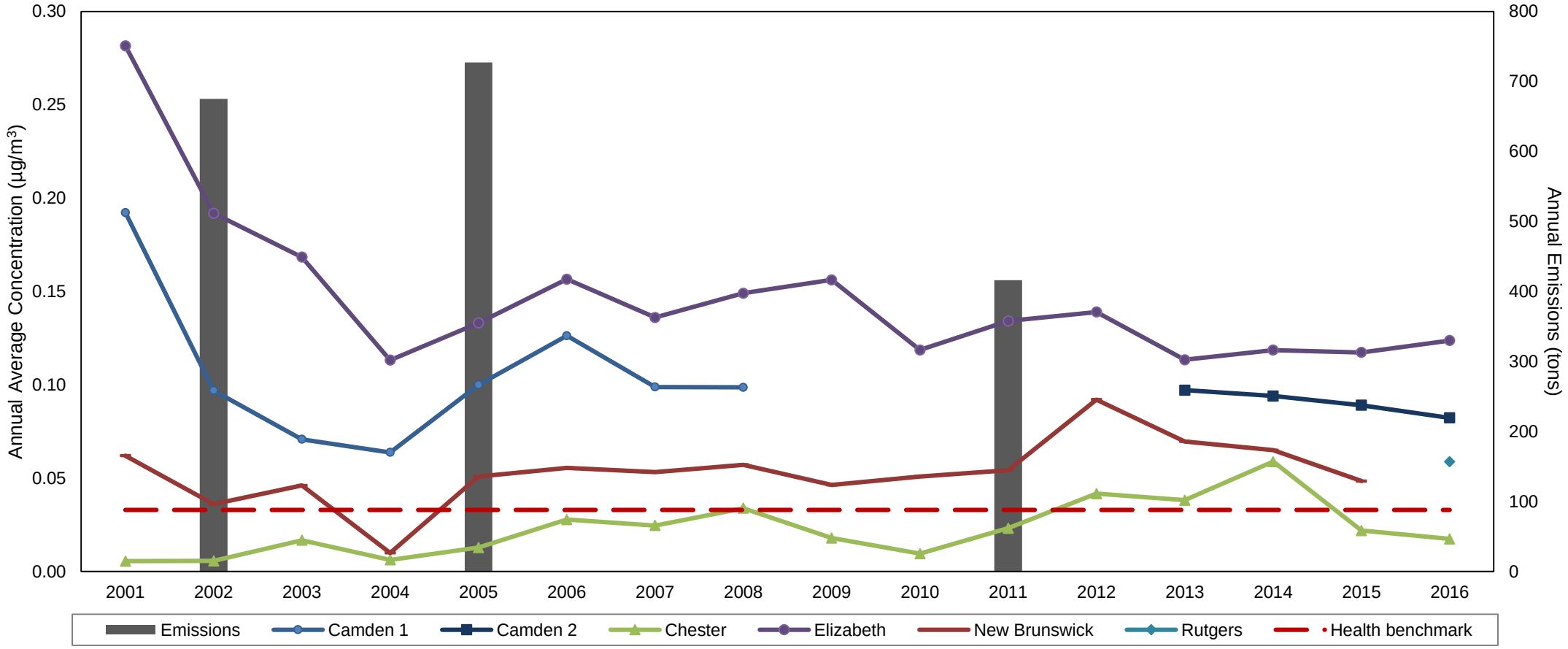
Acetaldehyde – NJ Emissions and Monitored Concentrations



Benzene - NJ Emissions and Monitored Concentrations

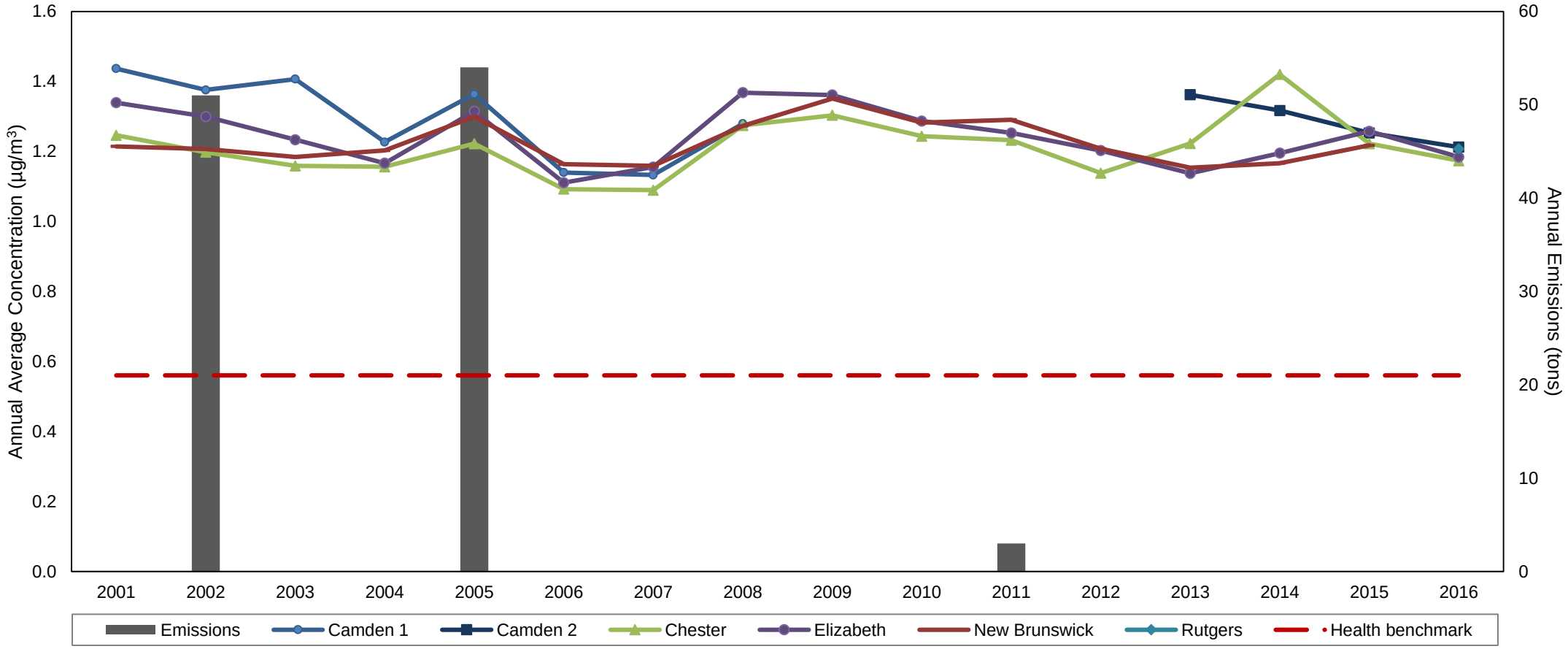


1,3-Butadiene - NJ Emissions and Monitored Concentrations

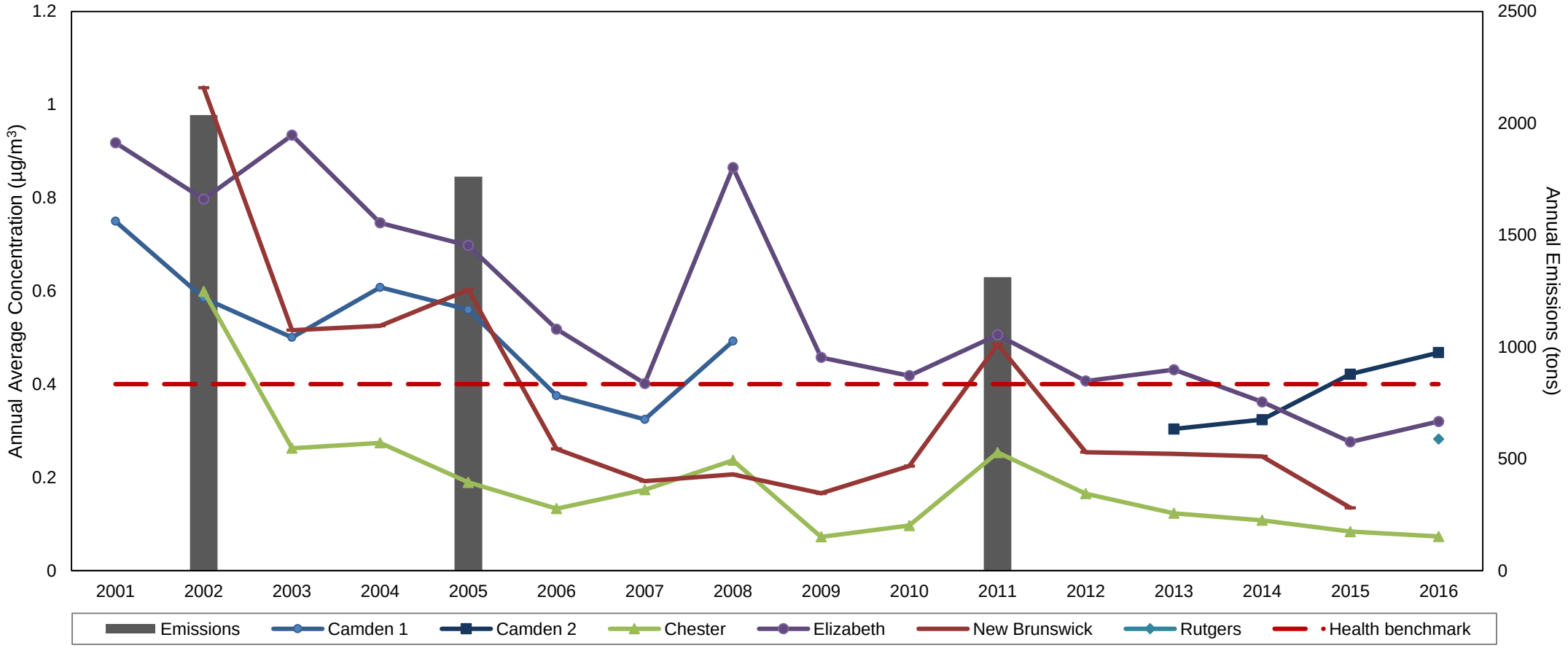


Carbon Tetrachloride – NJ Monitored Concentrations

Chloromethane - NJ Emissions and Monitored Concentrations



Ethylbenzene - NJ Emissions and Monitored Concentrations



Formaldehyde - NJ Emissions and Monitored Concentrations