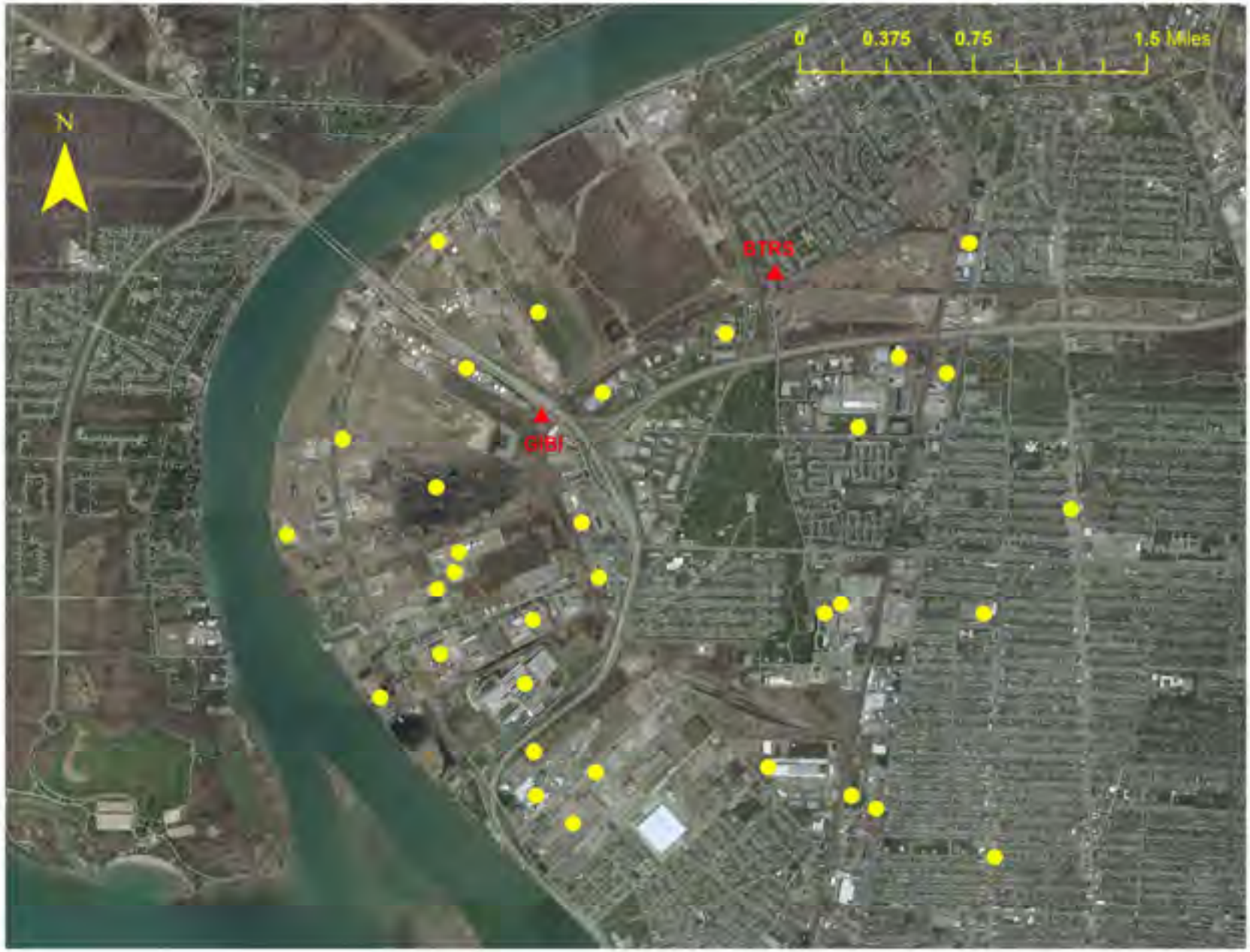
# Tonawanda Community Air Quality Study Update: An Evaluation of Three Years of Post-Study Air Toxics Results

Division of Air Resources

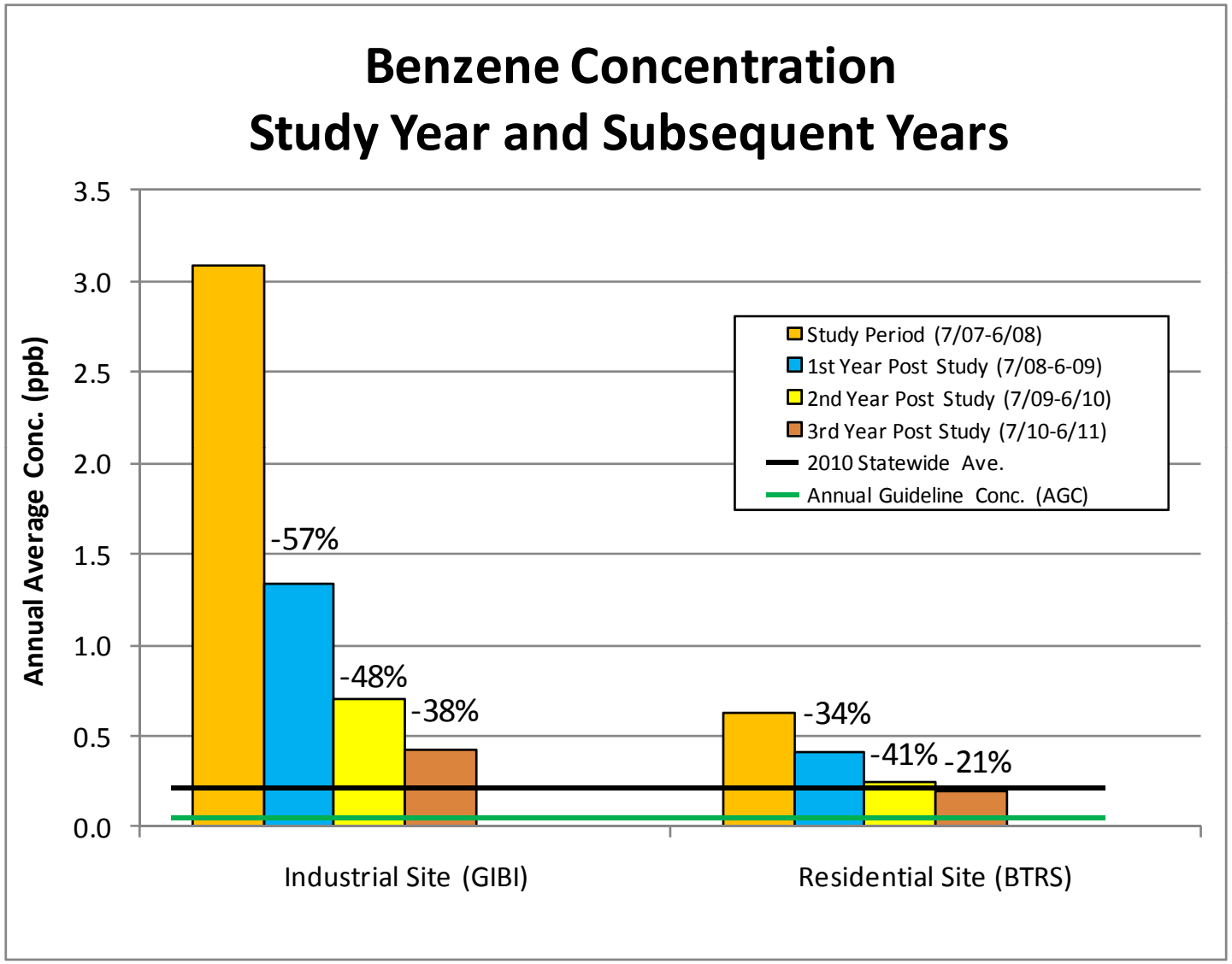
October 19, 2011

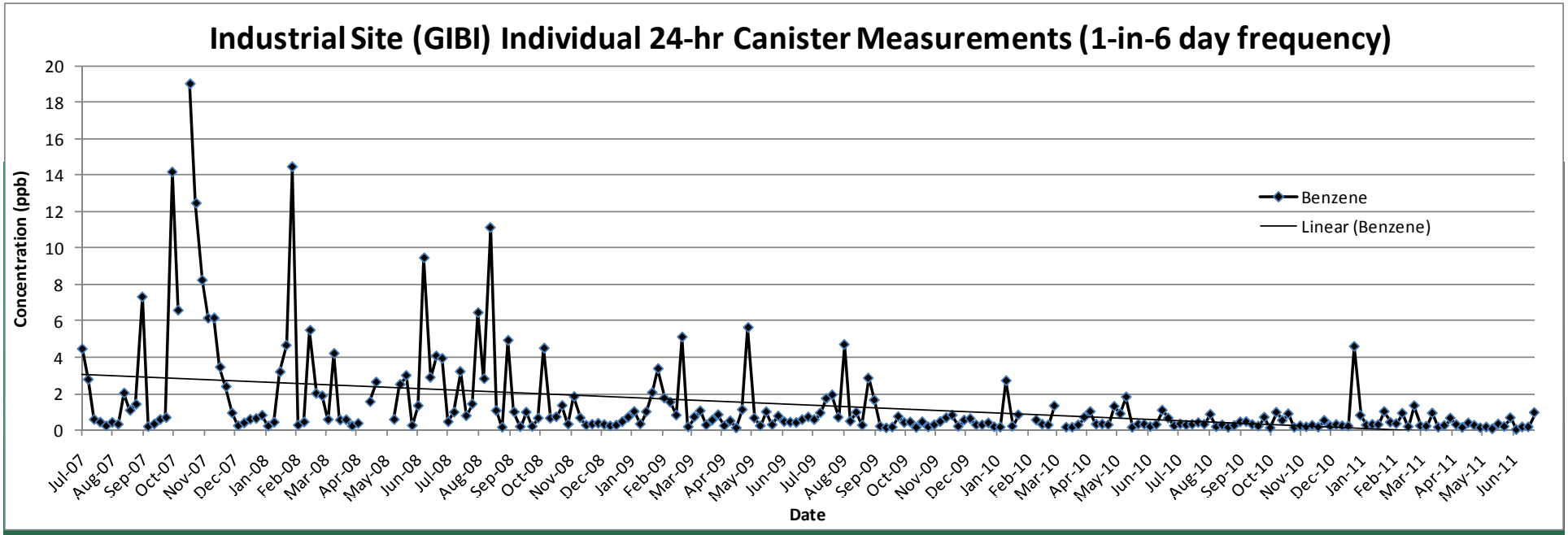
Tonawanda, NY

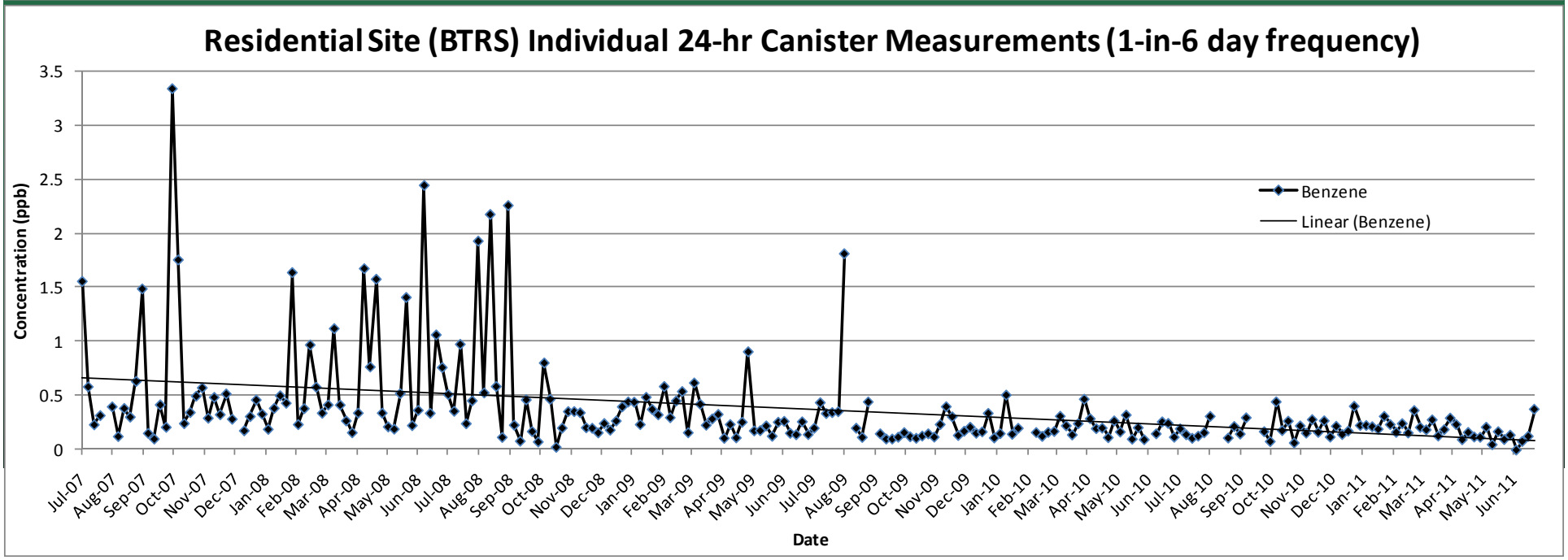

0
0.375
0.75
1.5 Miles
N
BTRS
GIBI

# Air Toxics Monitoring Data Update

- Volatile Organic Compounds
  - Benzene
  - Acrolein
  - 1,3 - Butadiene
- Carbonyls
  - Formaldehyde
  - Acetaldehyde


Benzene Concentration
Study Year and Subsequent Years
Annual Average Conc. (ppb)
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Study Period (7/07-6/08)
1st Year Post Study (7/08-6-09)
2nd Year Post Study (7/09-6/10)
3rd Year Post Study (7/10-6/11)
2010 Statewide Ave.
Annual Guideline Conc. (AGC)
-57%
-48%
-38%
-34%
-41%
-21%
Industrial Site (GIBI)
Residential Site (BTRS)

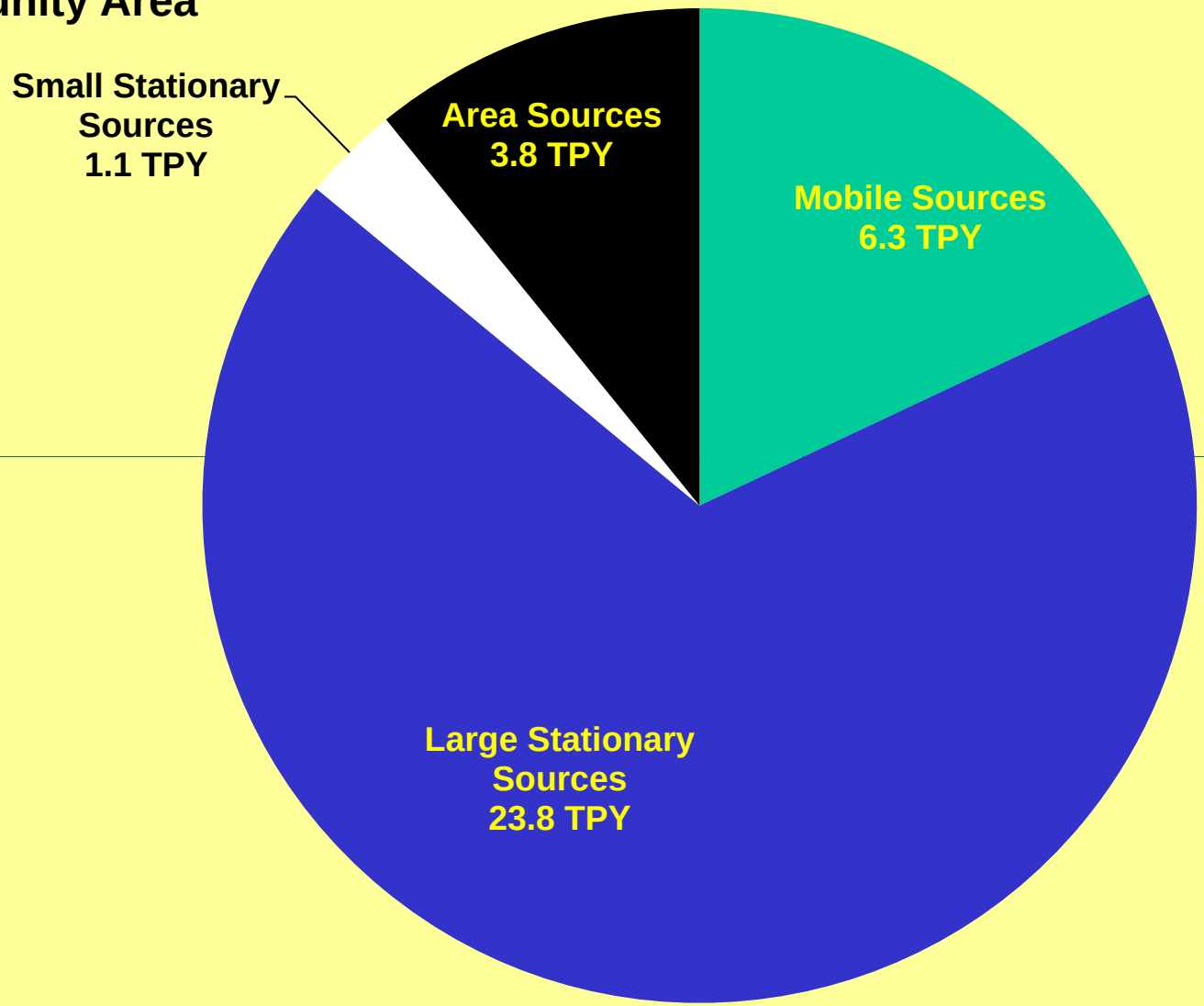

Industrial Site (GIBI) Individual 24-hr Canister Measurements (1-in-6 day frequency)
Concentration (ppb)
Date
Benzene
Linear (Benzene)


Residential Site (BTRS) Individual 24-hr Canister Measurements (1-in-6 day frequency)
Concentration (ppb)
Date
Benzene
Linear (Benzene)

# Benzene Sources in Tonawanda

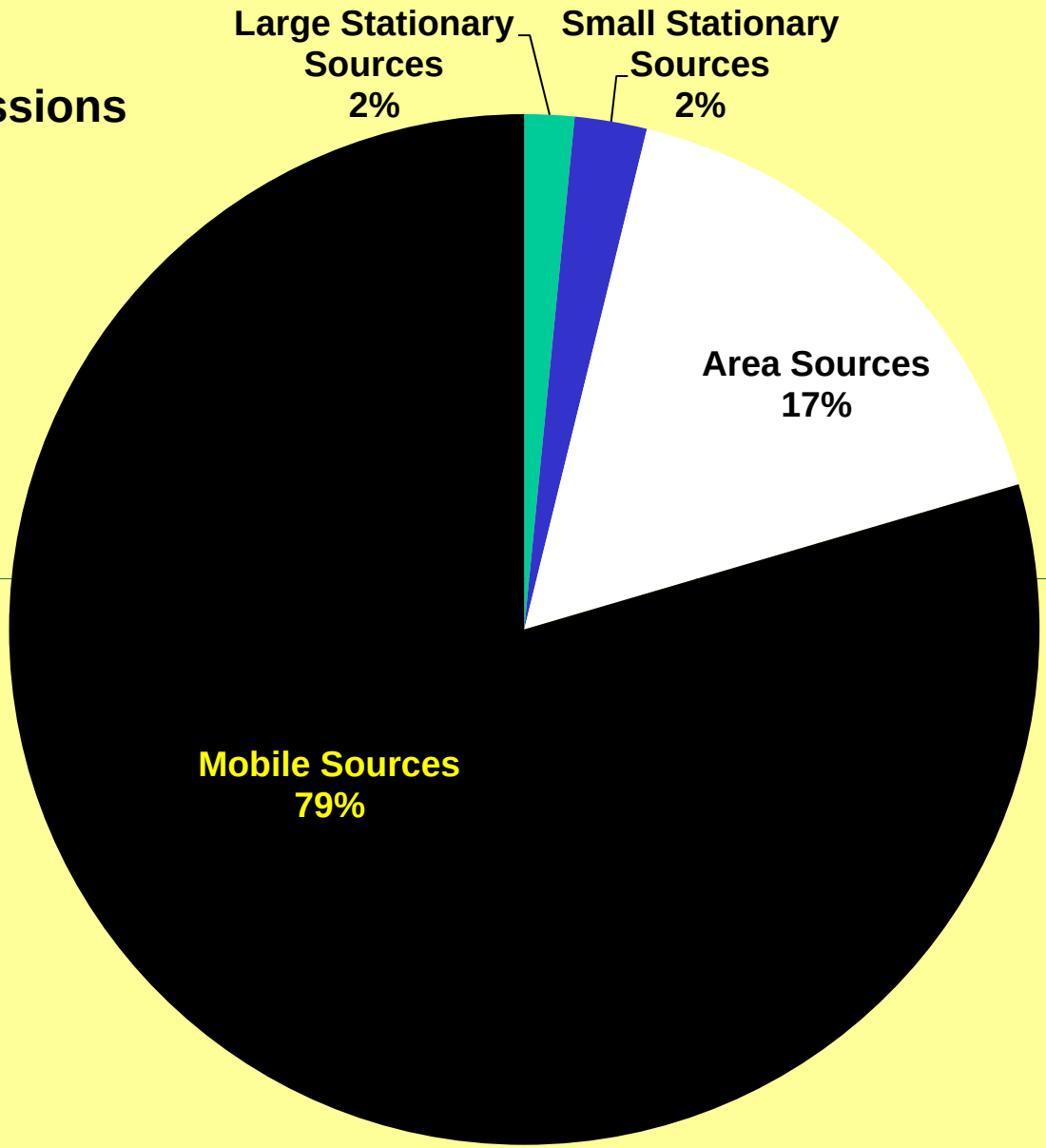
- Point Sources
  - Indeck Yerkes Energy Services
  - Goodyear Dunlop Tires
  - NOCO Energy Corp.
  - NRG Huntley Electric Generating
  - Sunoco Tonawanda Terminal
  - Tonawanda Coke Corp.
- Area Sources
  - Gasoline stations, truck terminals
  - Commercial and Industrial Boilers
- Mobile Sources
  - Car and truck exhaust/evaporative

# Benzene - Tons per year
# Tonawanda Community Area




Mobile emissions calculated from air pollution model, Mobile6
Major Includes Title V permitted point sources
Minor Includes State Facility and Registered point sources
Area Includes landfills, sewage treatment plants and gas stations

# Benzene
# 2005 Erie County Emissions

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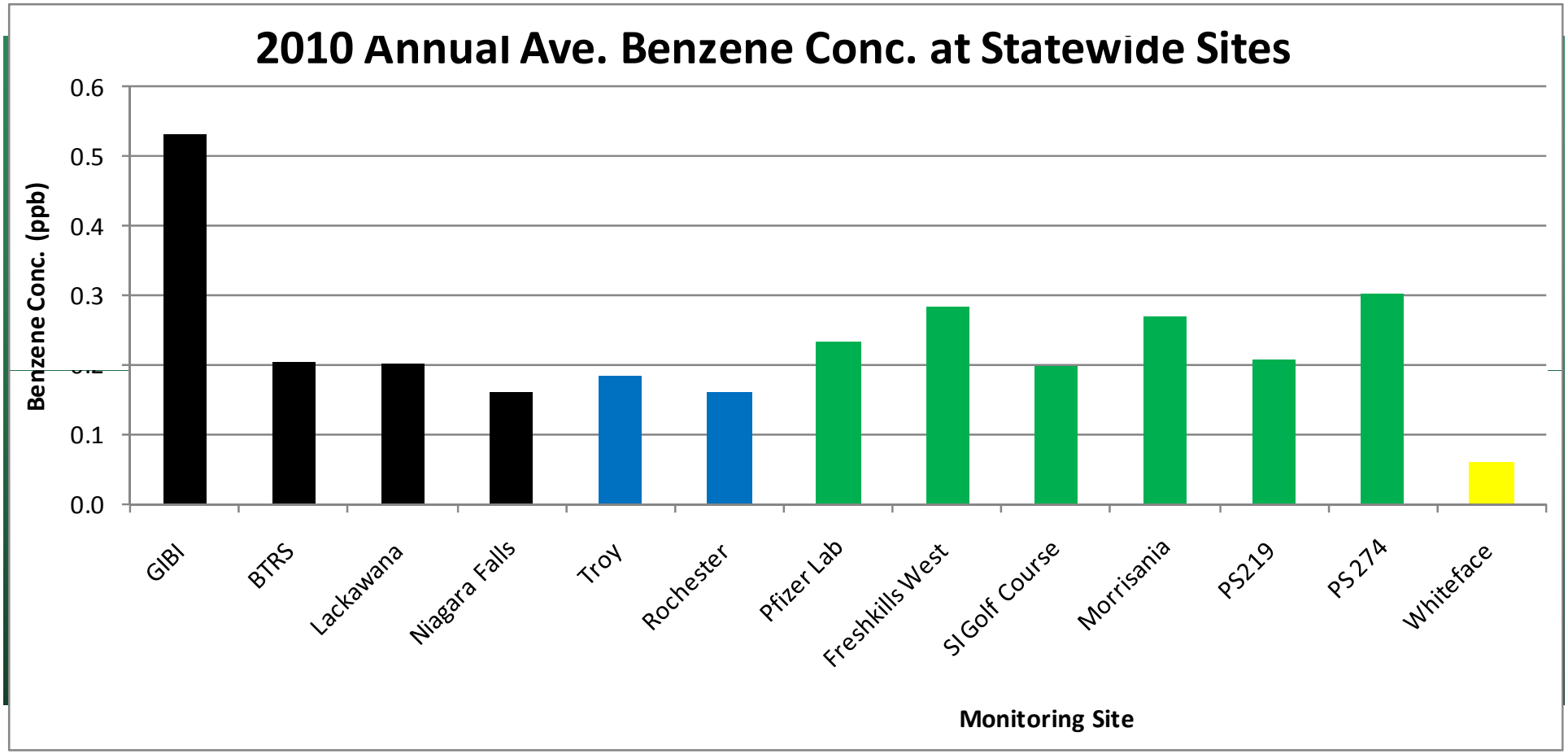
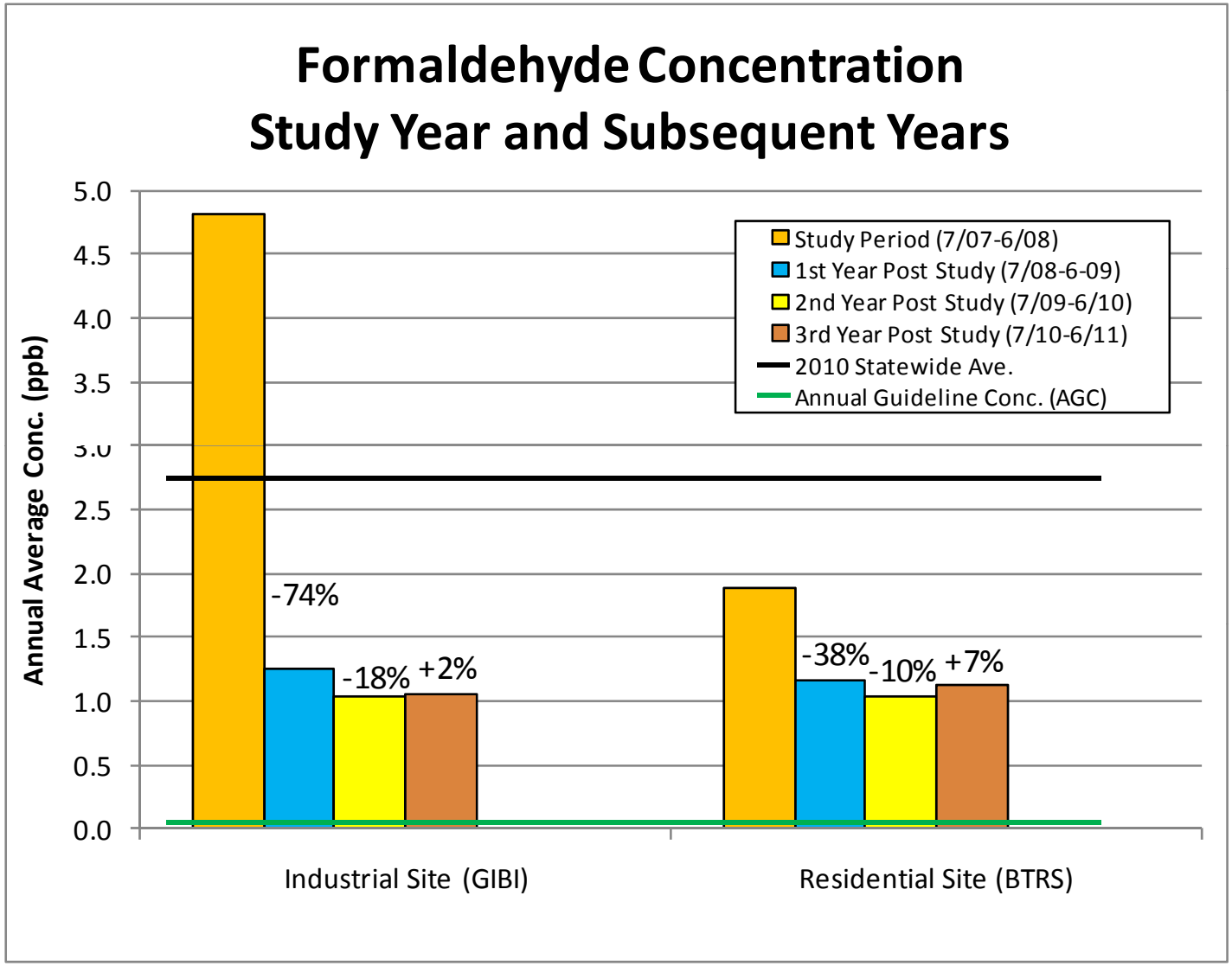
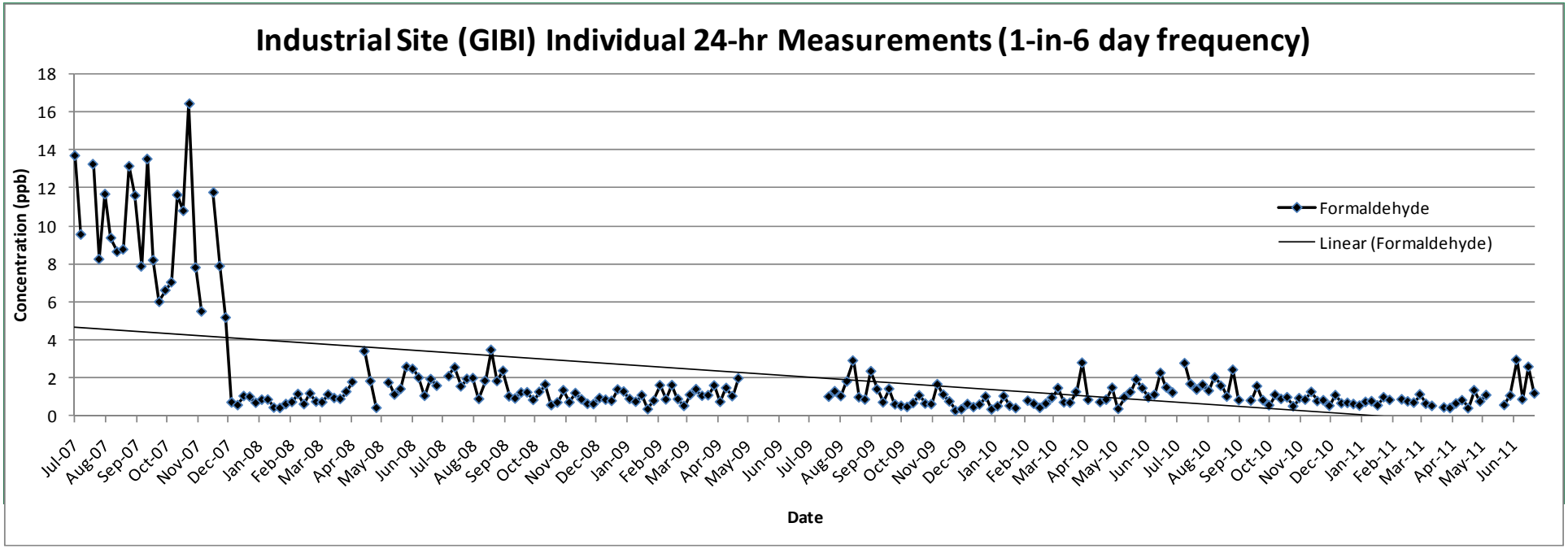
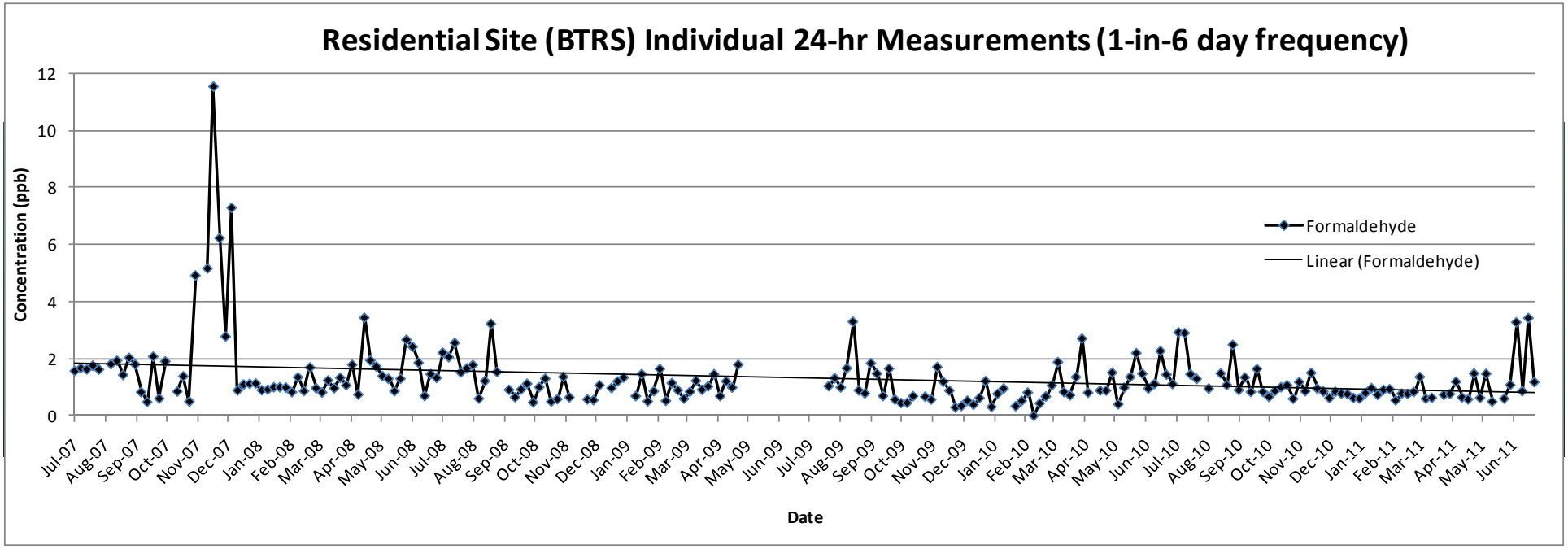
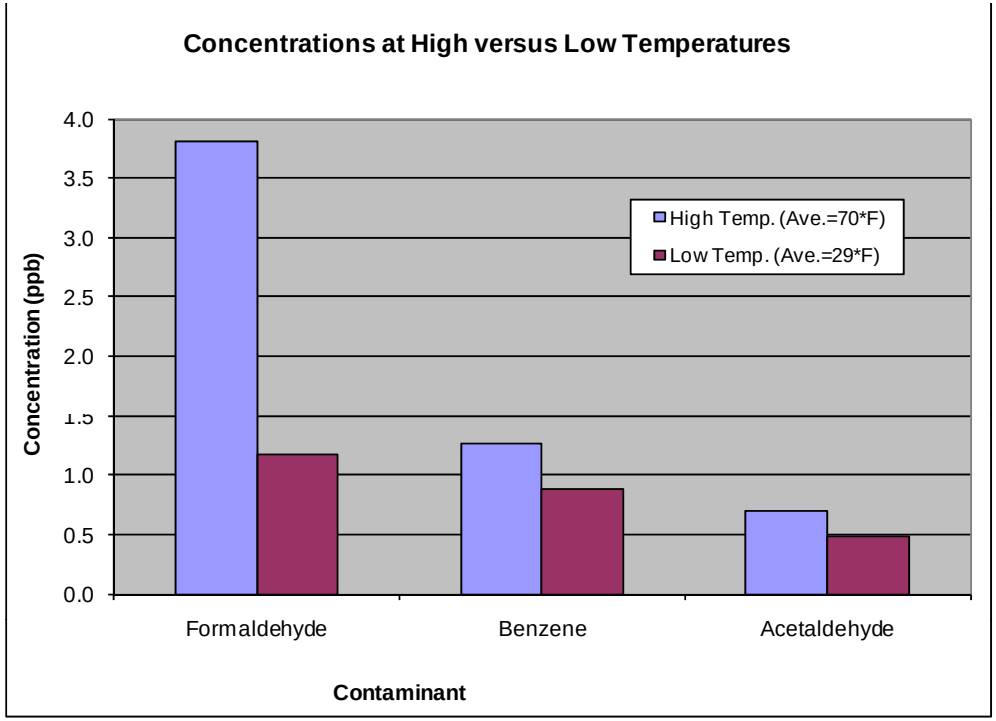
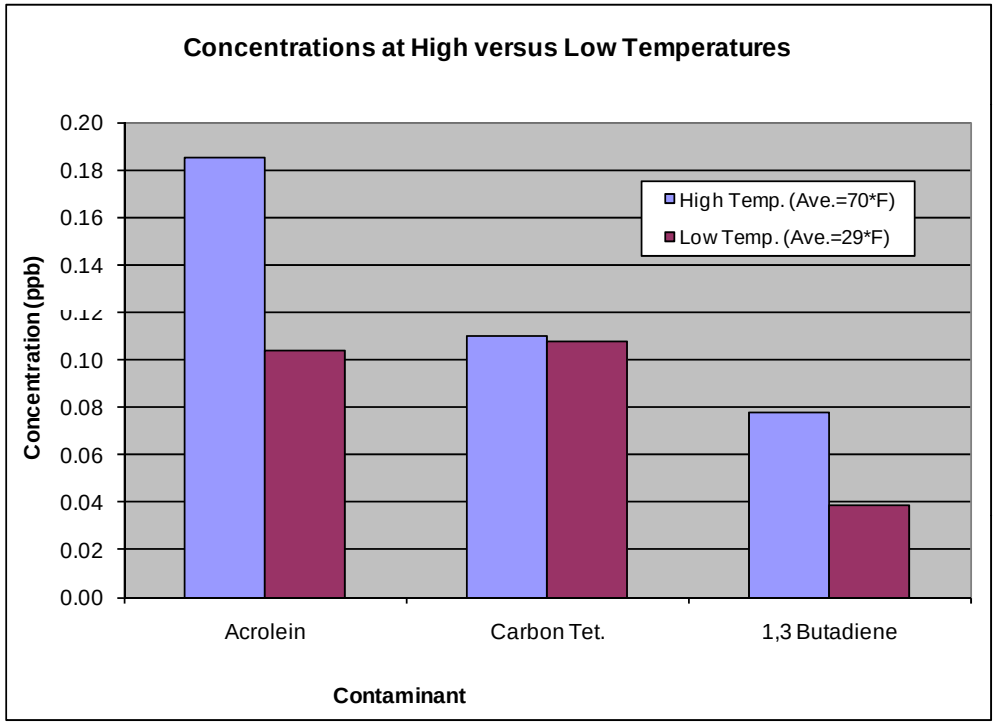

2010 Annual Ave. Benzene Conc. at Statewide Sites
Benzene Conc. (ppb)
0.6
0.5
0.4
0.3
0.1
0.0
GIBI
BTRS
Lackawana
Niagara Falls
Troy
Rochester
Pfizer Lab
Freshkills West
SI Golf Course
Morrisania
PS219
PS 274
Whiteface
Monitoring Site


Formaldehyde Concentration
Study Year and Subsequent Years
Annual Average Conc. (ppb)
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Study Period (7/07-6/08)
1st Year Post Study (7/08-6-09)
2nd Year Post Study (7/09-6/10)
3rd Year Post Study (7/10-6/11)
2010 Statewide Ave.
Annual Guideline Conc. (AGC)
-74%
-18%
+2%
-38%
-10%
+7%
Industrial Site (GIBI)
Residential Site (BTRS)


Industrial Site (GIBI) Individual 24-hr Measurements (1-in-6 day frequency)
Concentration (ppb)
Date
Formaldehyde
Linear (Formaldehyde)


Residential Site (BTRS) Individual 24-hr Measurements (1-in-6 day frequency)
Concentration (ppb)
Date
Formaldehyde
Linear (Formaldehyde)

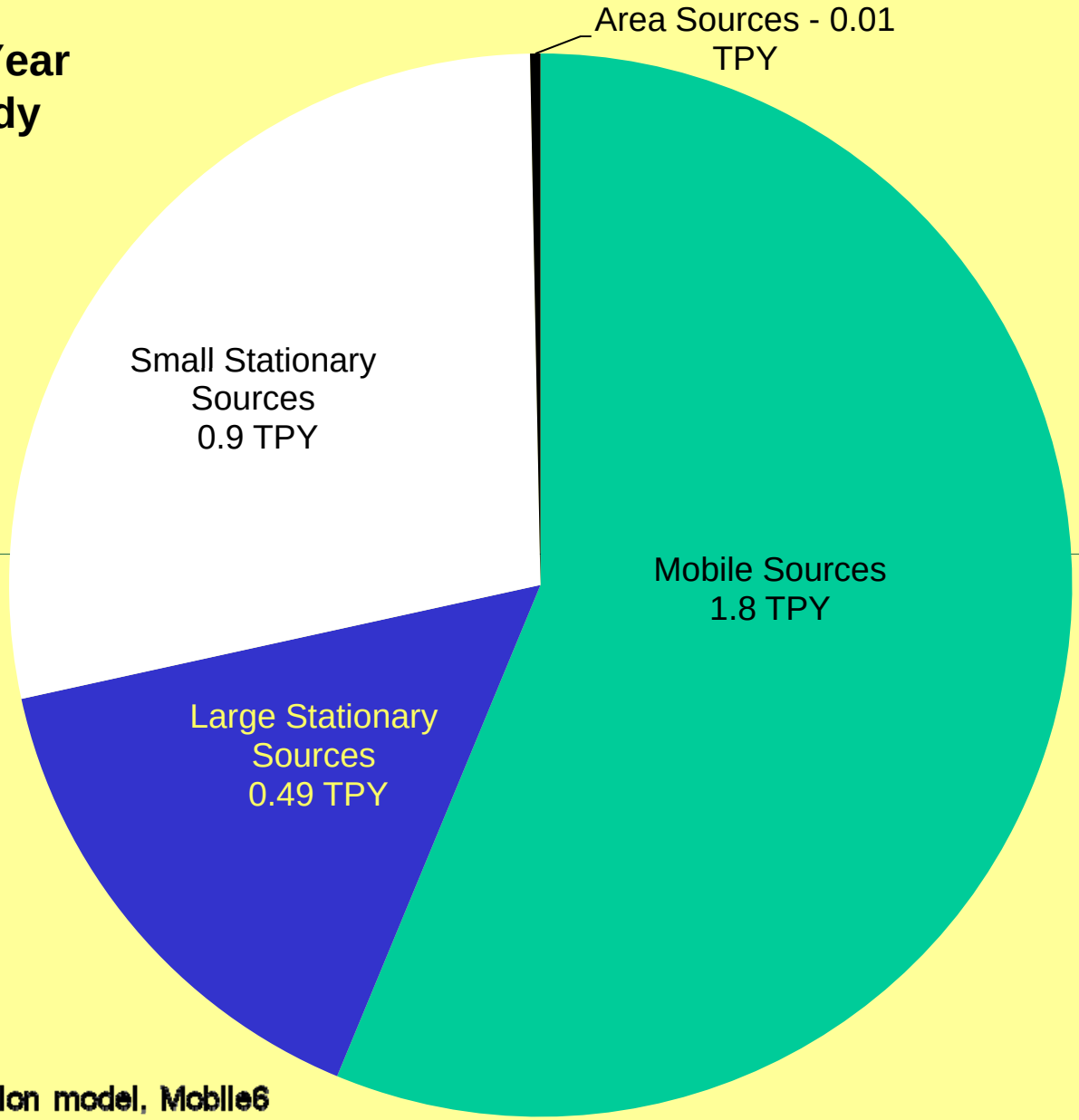

Concentrations at High versus Low Temperatures
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Concentration (ppb)
High Temp. (Ave.=70*F)
Low Temp. (Ave.=29*F)
Formaldehyde
Benzene
Acetaldehyde
Contaminant


Concentrations at High versus Low Temperatures
0.20
0.18
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
Concentration (ppb)
High Temp. (Ave.=70*F)
Low Temp. (Ave.=29*F)
Acrolein
Carbon Tet.
1,3 Butadiene
Contaminant

# Formaldehyde Sources in Tonawanda

- Point Sources
  - Indeck Yerkes Energy Services
  - NRG Huntley Electric Generating
  - Tonawanda Coke
- Area Sources
- Residential Space Heating
  - Industrial Boilers
    - 3M Tonawanda
    - FMC Corp.
    - Goodyear Dunlop Tires
- Mobile Sources
  - Car and truck exhaust
- Secondary Atmospheric Formation

**Formaldehyde - Tons Per Year**
**Tonawanda Community Study Area**

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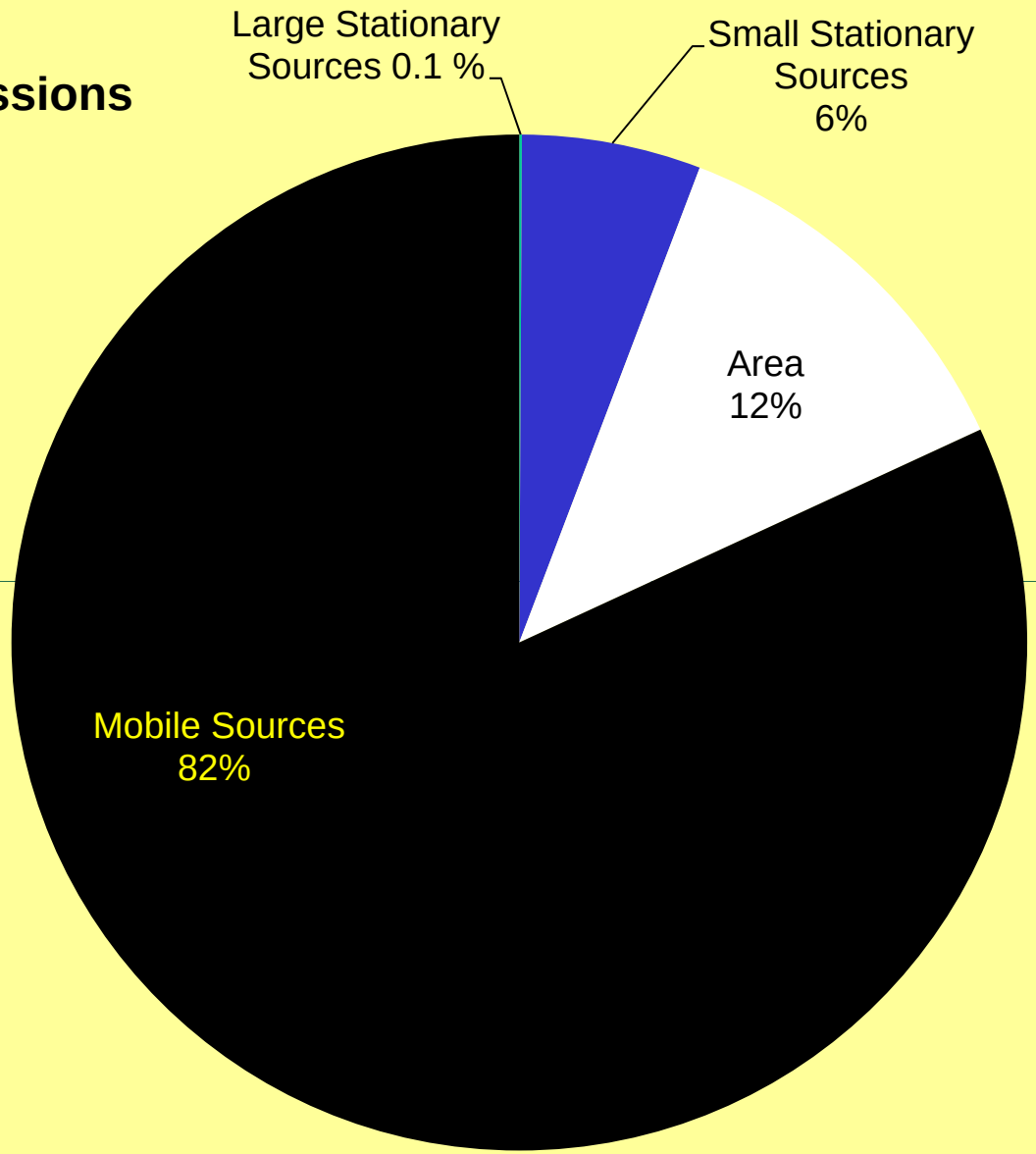
Major includes Title V permitted point sources
Minor includes State Facility and Registered point sources
Area includes landfills, sewage treatment plants and gas stations

# Formaldehyde
# Erie County 2005 Emissions




Mobile emissions calculated from air pollution model, Mobile6
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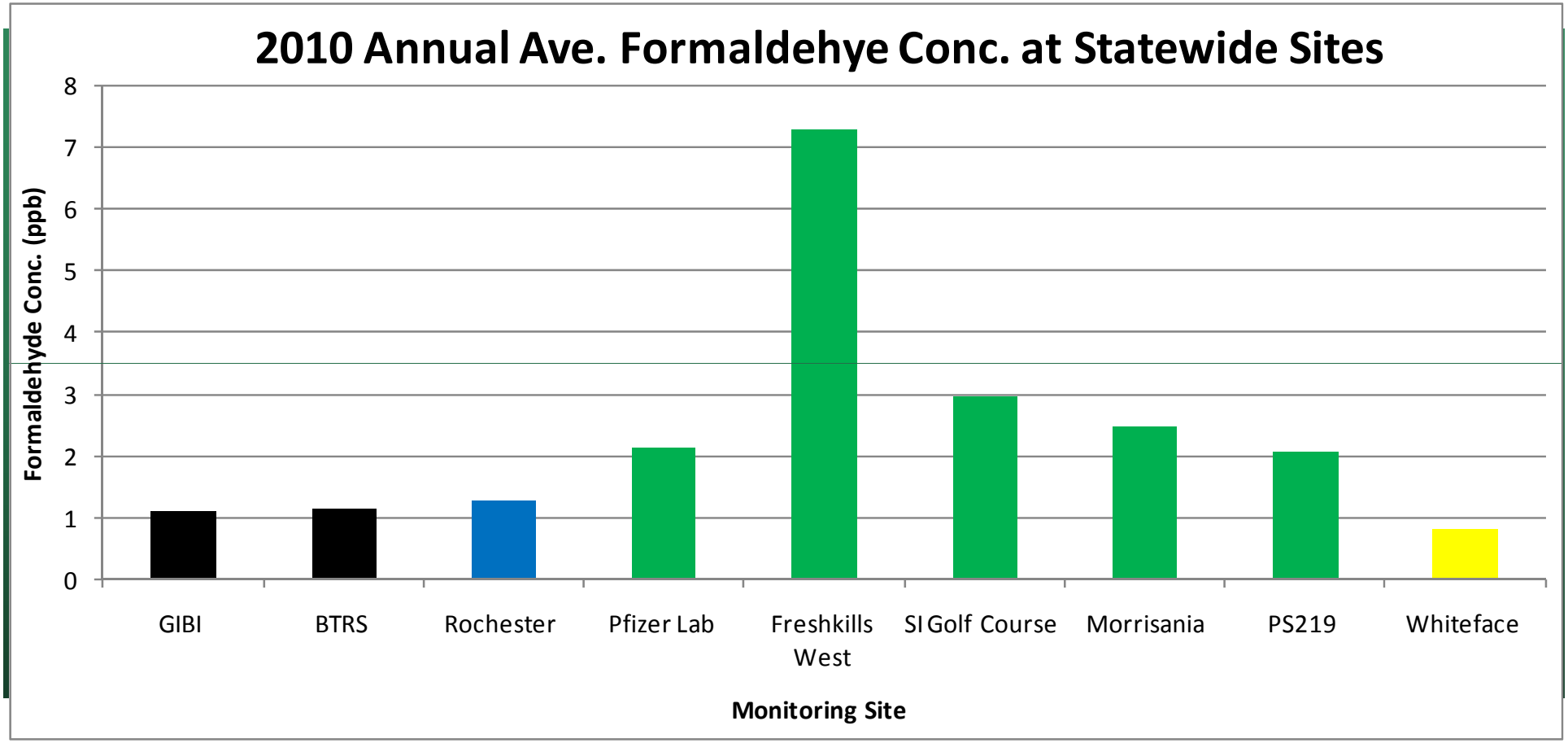
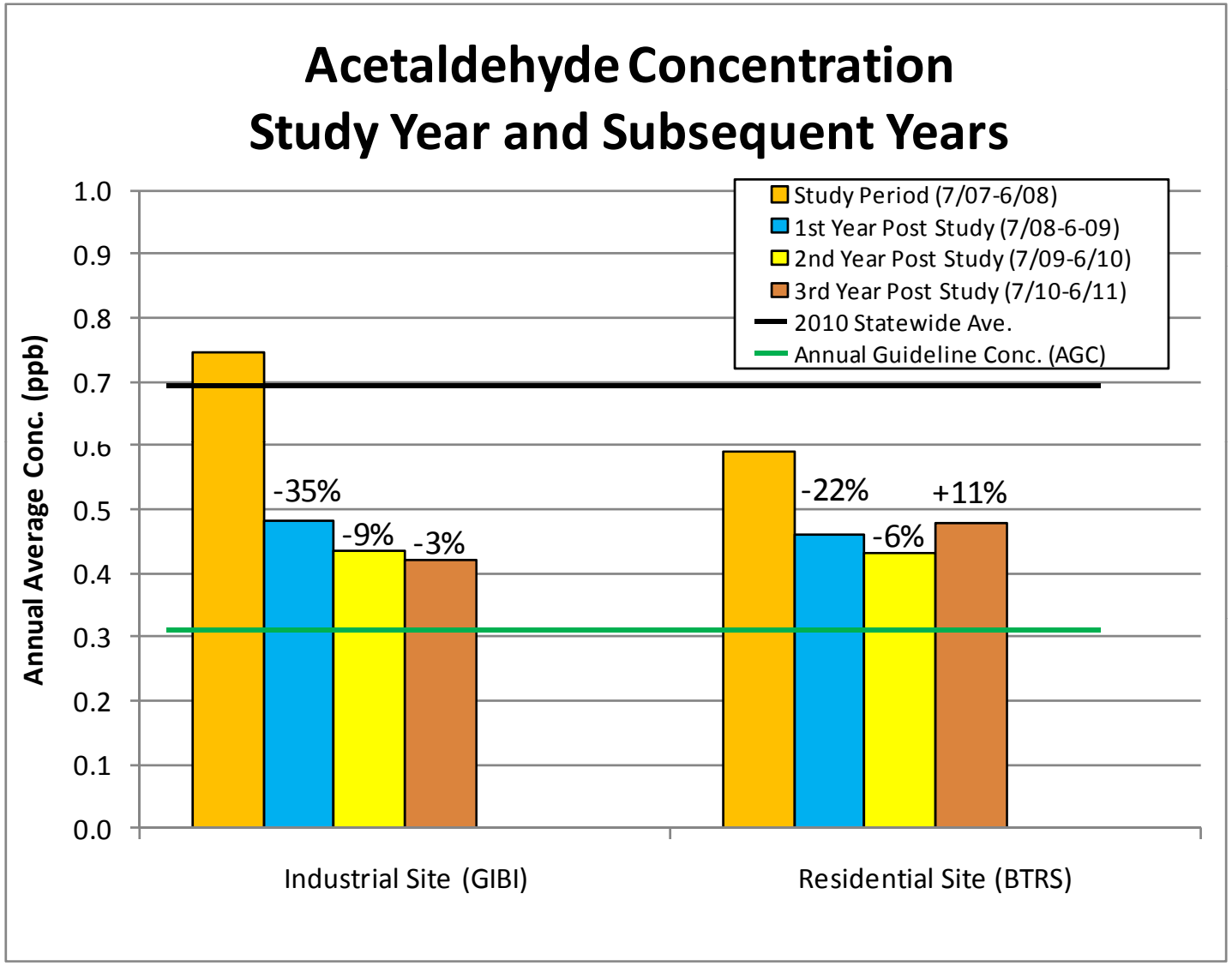
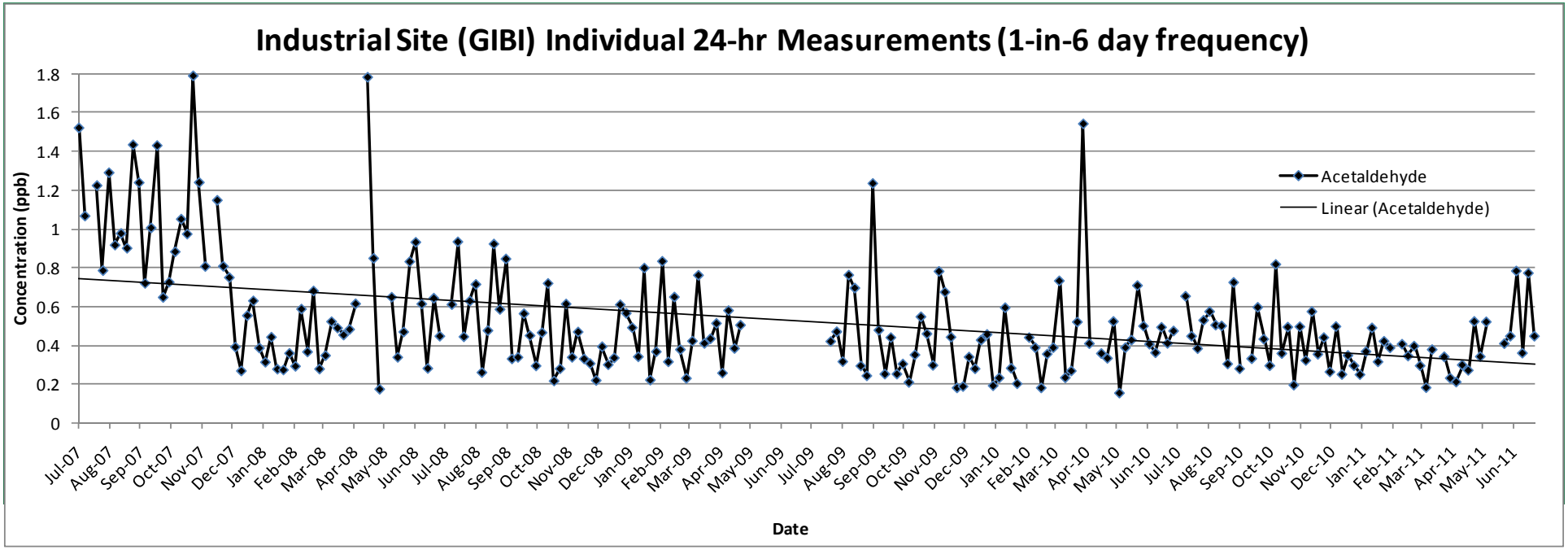
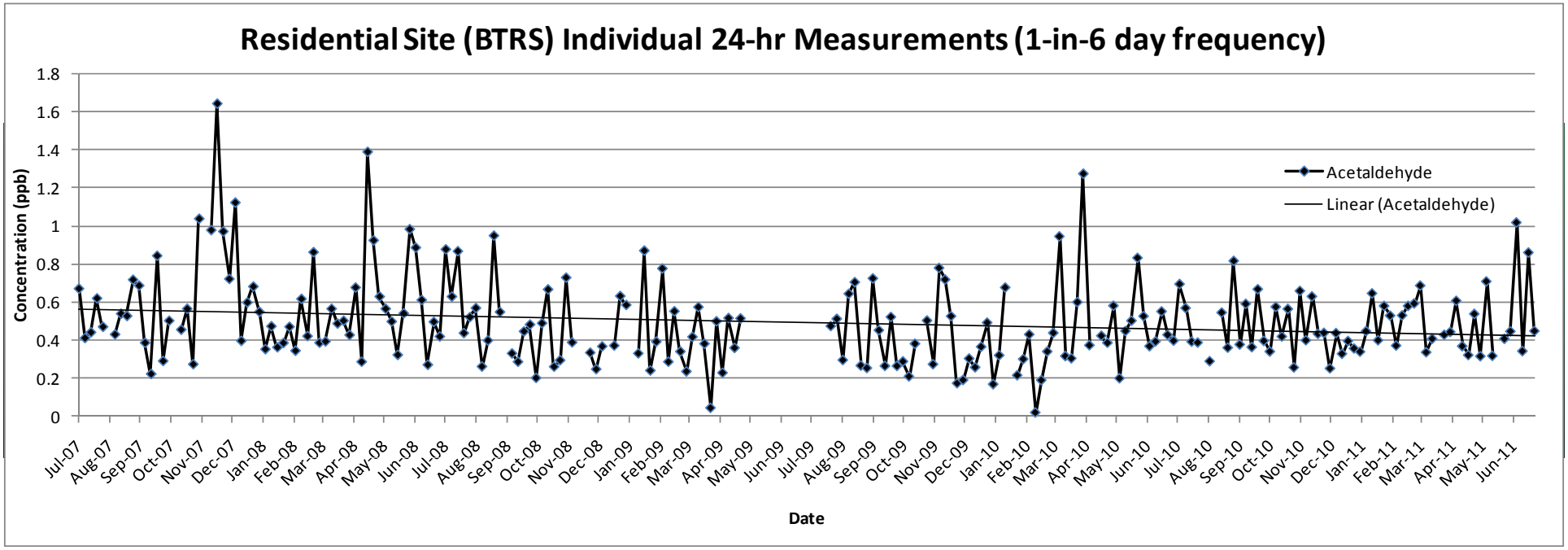

2010 Annual Ave. Formaldehye Conc. at Statewide Sites
Formaldehyde Conc. (ppb)
0
1
2
3
4
5
6
7
8
GIBI
BTRS
Rochester
Pfizer Lab
Freshkills West
SI Golf Course
Morrisania
PS219
Whiteface
Monitoring Site


Acetaldehyde Concentration
Study Year and Subsequent Years
Annual Average Conc. (ppb)
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Study Period (7/07-6/08)
1st Year Post Study (7/08-6-09)
2nd Year Post Study (7/09-6/10)
3rd Year Post Study (7/10-6/11)
2010 Statewide Ave.
Annual Guideline Conc. (AGC)
-35%
-9%
-3%
-22%
-6%
+11%
Industrial Site (GIBI)
Residential Site (BTRS)


Industrial Site (GIBI) Individual 24-hr Measurements (1-in-6 day frequency)
Concentration (ppb)
Date
Acetaldehyde
Linear (Acetaldehyde)


Residential Site (BTRS) Individual 24-hr Measurements (1-in-6 day frequency)
Concentration (ppb)
Date
Acetaldehyde
Linear (Acetaldehyde)

# Acetaldehyde Sources in Tonawanda

- Point Sources
  - 3M Tonawanda
  - Goodyear Dunlop
  - Indeck Yerkes Energy Services
- Area Sources
  - Commercial and Industrial Boilers
  - Residential Space Heating
- Mobile Sources
  - Car and truck exhaust