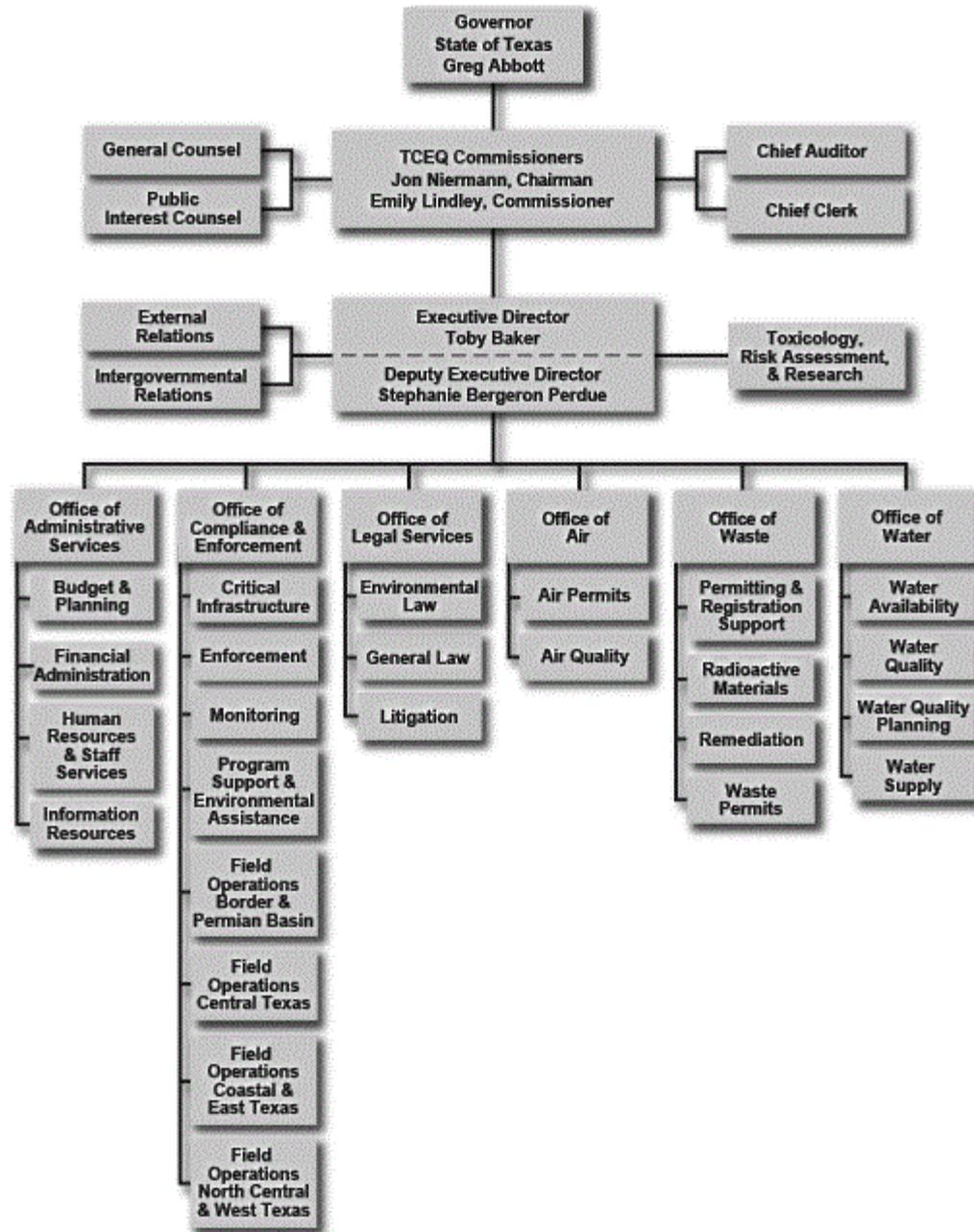




Environmental Regulatory Update

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Director, Toxicology, Risk Assessment,
and Research Division





Toxicology, Risk Assessment, and Research Division

- 13 Ph.D., 4 M.S. or M.P.H., 2 Librarians, 2 Admin support
- 5 main areas – air monitoring, air permitting, remediation risk assessment, toxicity factor development (chemical risk assessment), research (3/4)
- Other – emergency response, expert witnessing (legislative, judicial, administrative), risk communication (legislature, public, management, media), rule development and review, etc. (1/4)
- **Characterize and communicate human health risk**
- **Provide objective data analysis for policymakers**



86th Legislative Session

- Over 1,000 bills filed this session passed by Legislature and signed by Governor that impact TCEQ
- TCEQ Air Permitting
 - Expedite and streamline while not impacting public health or public input
 - Readily Available Permits
 - SB 698 - Authorizes TCEQ to collect fees for expedited permits and use the money to pay for FTEs that do not count against FTE cap and authorizes TCEQ to be appropriated these fees



Other Key Bills

- TERP funding - HBs 813, 1043, 1746, 2093, 2094, 2581, 3745
 - Ozone
- Concrete Batch Plants, Aggregate production
 - HBs 907, 908, 909, 999, 1280, 1309, 1310; SBs 208, 694, 1247
 - Increases required inspection frequency, increases fee
- Contested Case Hearings - HBs 654, 1804, 1963; SBs 573, 1242
- Remediation, Carcinogenic risk level for TRRP - HB 893
- Drinking Water, lead in schools - HB 997

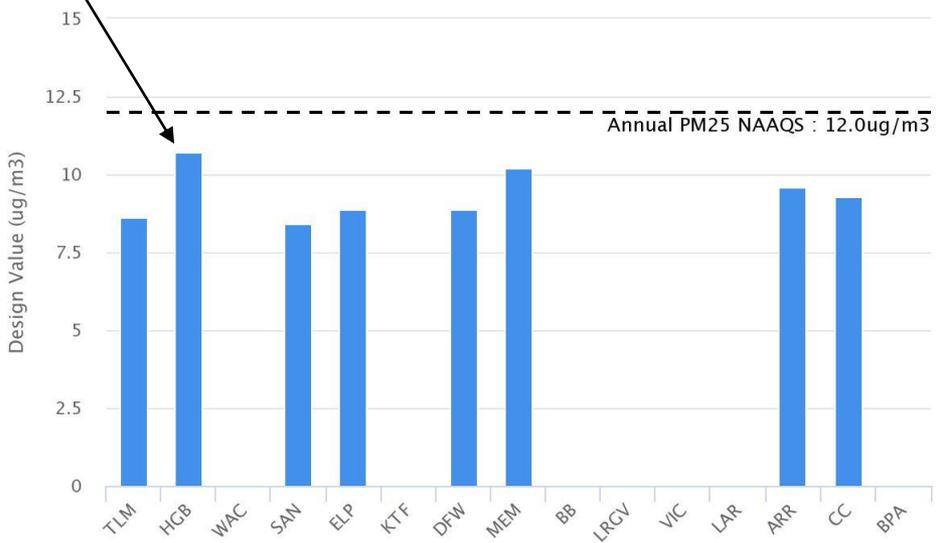


EPA NAAQS Reviews

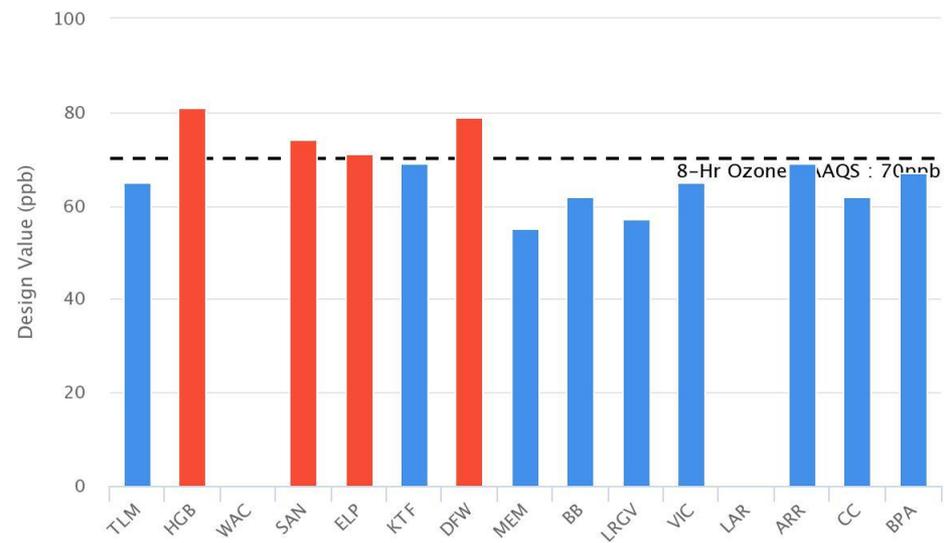
- Ozone (2015) and particulate matter (2012) standards under review
- Expect to finalize standards for ozone in 2020 and PM in 2022

HGB DV = 10.7 ug/m³

2017 Annual PM_{2.5} Design Value by Area



2017 8-Hr Ozone Design Value by Area





EPA: Per- and Polyfluoroalkyl Substances (PFASs)

- Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA) – Fire-fighting foams and non-stick products
- Hundreds of PFAS chemicals, PFOS and PFOA largely no longer manufactured in or imported into US
- Drinking water standard process
 - 6 PSAS were included in UCMR3 (2013-2015)
 - Texas results
 - 7 detections/17,748 samples
 - 2 out of 387 systems sampled (City of Abilene - 6 detections; City of Port Lavaca - 1 detection)
 - Included again in UCMR5

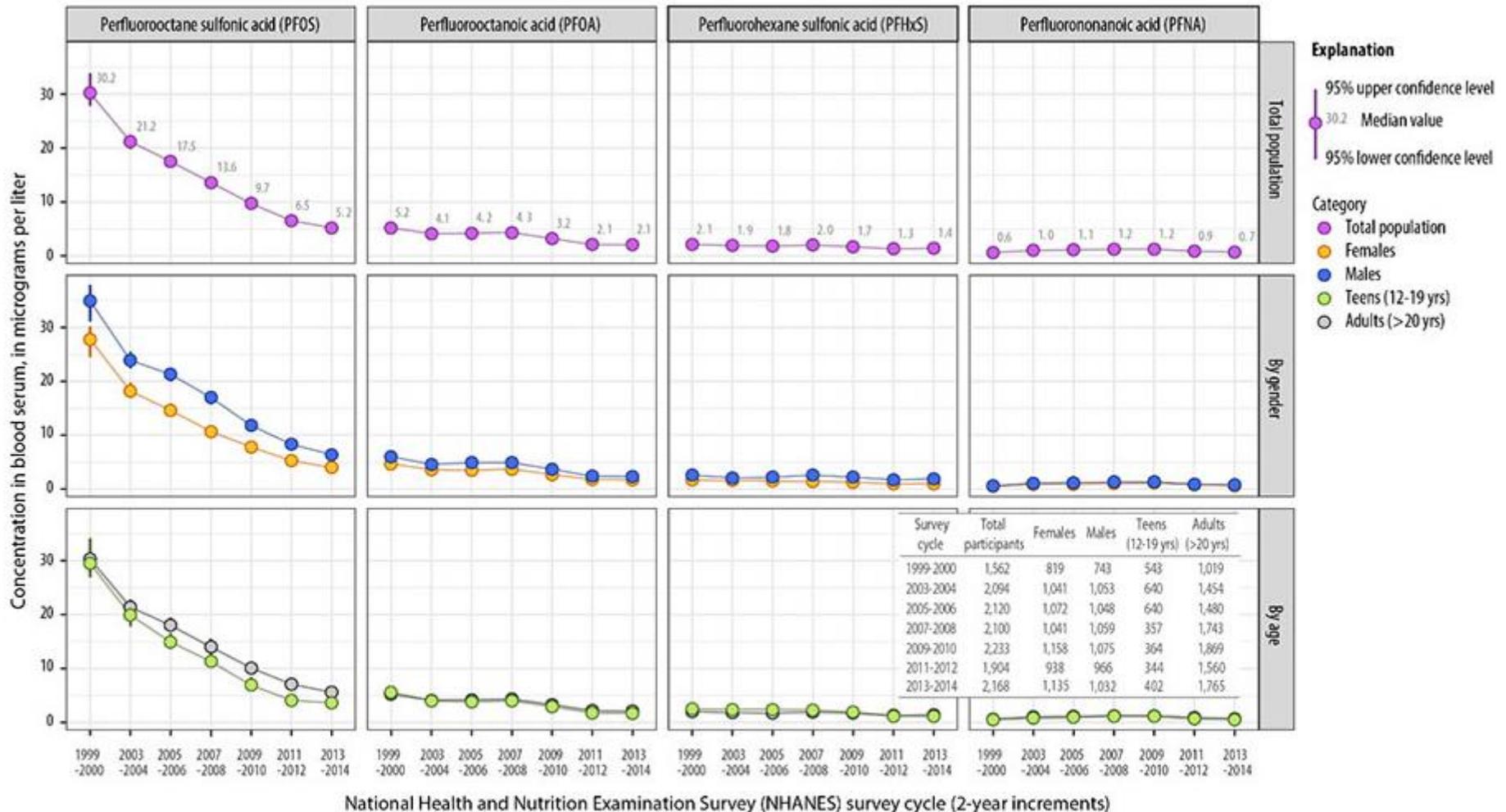


EPA: Per- and Polyfluoroalkyl Substances (PFASs)

- Remediation
 - Designating PFOS and PFOA as hazardous substances and developing interim groundwater cleanup standards
 - TCEQ – Have groundwater and soil cleanup standards for 16 PFASs
- Toxics
 - Addition of PFASs to Toxics Release Inventory
 - Evaluate under TSCA (could lead to prohibition of uses)



Median concentration of selected per- and polyfluoroalkyl substances (PFAS) in blood serum (1999-2014) in the United States



Data source: Centers for Disease Control and Prevention. Fourth Report on Human Exposure to Environmental Chemicals, Updated Tables, (January 2017). Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. <https://www.cdc.gov/exposurereport/>.

Note: In January 2006, the eight major PFAS manufacturing companies in the U.S. voluntarily committed to a 95% reduction of emissions and product content for PFOA and selected related PFAS species by 2010 and a complete elimination of these chemicals from emissions and products by 2015 (USEPA. 2010/2015 PFOA Stewardship Program). The major US producer of PFOS phased out production of PFOS precursors by 2002 (Prevedouros et al. ES&T 2006, 40:32-44).



EPA Risk & Technology Reviews (RTRs)

- FCAA requires EPA to review both the risk and technology after application of maximum achievable control technology (MACT) standards; aka residual risk
- Dozens of MACT standards, EPA got behind, was sued, now on court-ordered or consent decreed deadline
- 2010 - SAB reviewed RTR methods for 2 MACTs (Petroleum Refining Sources and Portland Cement Manufacturing)
- Sept. 2018 – SAB reviewed screening process for RTRs



EPA Risk & Technology Reviews (RTRs)

| # RTRs Due | Year |
|------------|------|
| 26 | 2020 |
| 9 | 2021 |

The results of the RTRs could result in additional permitting, monitoring, or other types of requirements, e.g. benzene fence-line air monitoring for Refinery MACT



Ethylene Oxide

- Medical sterilant, chemical intermediate
- 2016 – New IRIS URF
 - 10⁻⁴ concentration = 10 ppt
 - 10⁻⁵ concentration = 1 ppt
 - 10⁻⁶ concentration = 0.1 ppt
- 2016 NATA – new national risk driver
- Sterigenics – Willowbrook, IL
 - 24-hour samples up to 14,520 ppt
 - Background = 55-165 ppt
 - Shut down by state



Ethylene Oxide

- Viant Medical – Grand Rapids, MI
 - 24-hour samples up to 42,000 ppt
 - Background = 55-165 ppt
 - Closing “voluntarily”
- Terumo BCT – Lakewood, CO
 - Pre-Control = 24-hour samples up to 1716 ppt
 - Post-Control = 24-hour samples up to 551 ppt
 - Background = 140 ppt
 - Risk Assessment – No actual increase in breast, lymphoid cancers in neighborhood



TCEQ Ethylene Oxide Assessment

| Risk | TCEQ (ppt) | EPA (ppt) |
|-------------|-------------------|------------------|
| 10-4 | 40,000 | 10 |
| 10-5 | 4,000 | 1 |
| 10-6 | 400 | 0.1 |

- https://www.tceq.texas.gov/toxicology/dsd/dsds_about
 - Public comment period ends August 12
- Ambient background ~140 ppt
- Endogenous levels – Equivalent to 1900 ppt; EPA's value predicts population wide lymphoid cancer rate of 3.8% from endogenous levels alone, actual rate is 3%; TCEQ value more biologically plausible

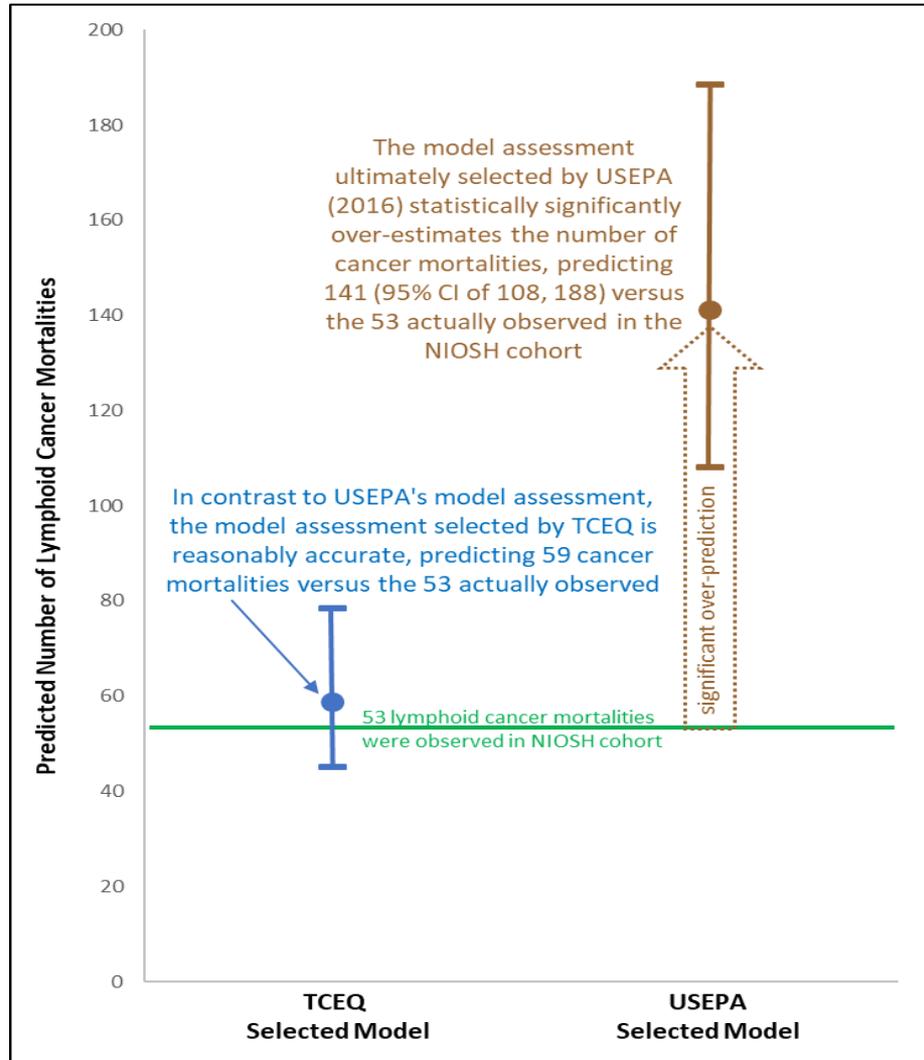


Ethylene Oxide

- Both agencies used same NIOSH cohort, 17,500+ workers, 53 lymphoid cancer cases, split into 5 quintiles (9 cases for control and 11 cases each for 4 exposure categories), same 15 year lag
- Chose different model
 - Linear Two-Piece Spline Model – EPA
 - Supralinear – not biologically plausible based on mode of action
 - Cox Proportional Hazards Model – TCEQ
 - Linear – more biologically plausible, but expect sublinear based on mode of action
- Model selection criteria – EPA miscalculated AIC
- Visual Fit

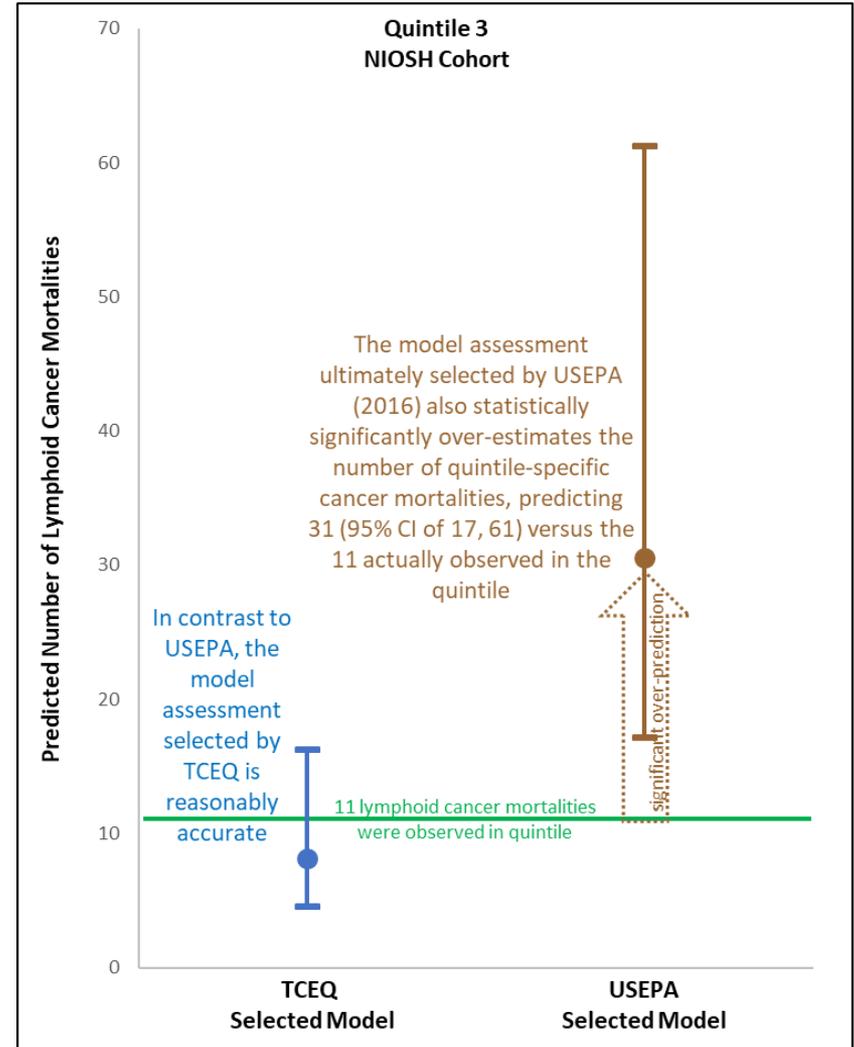
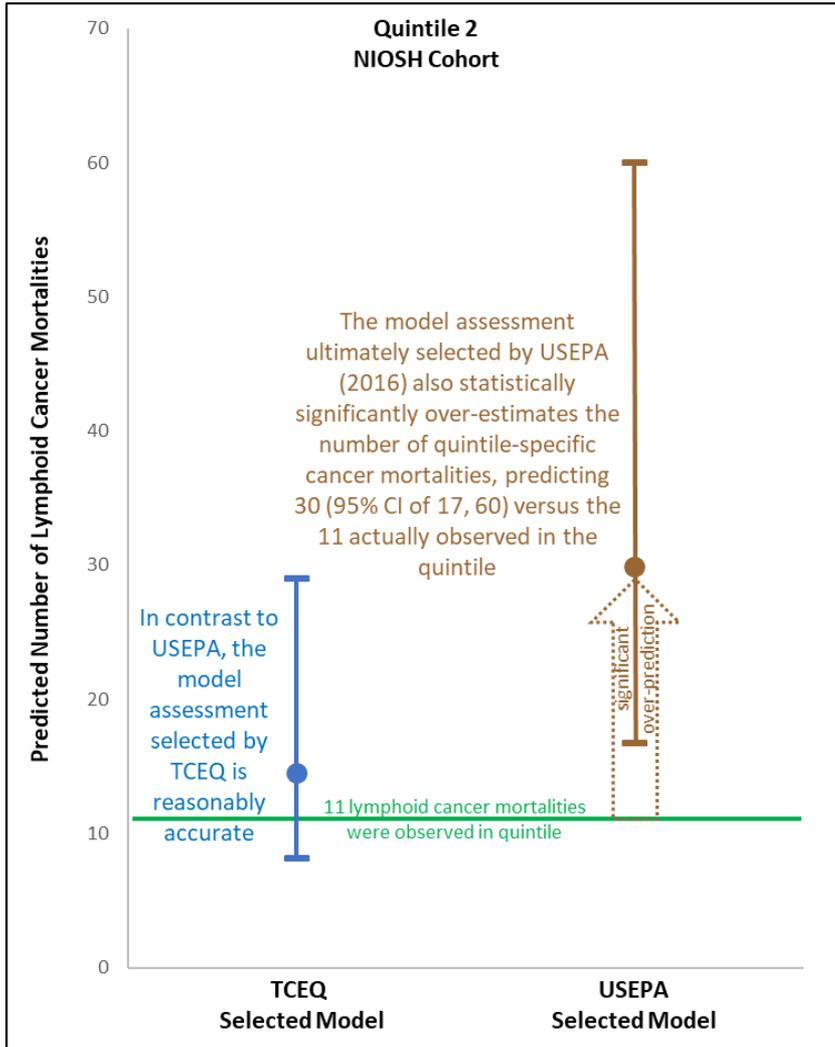


Overall Model Prediction



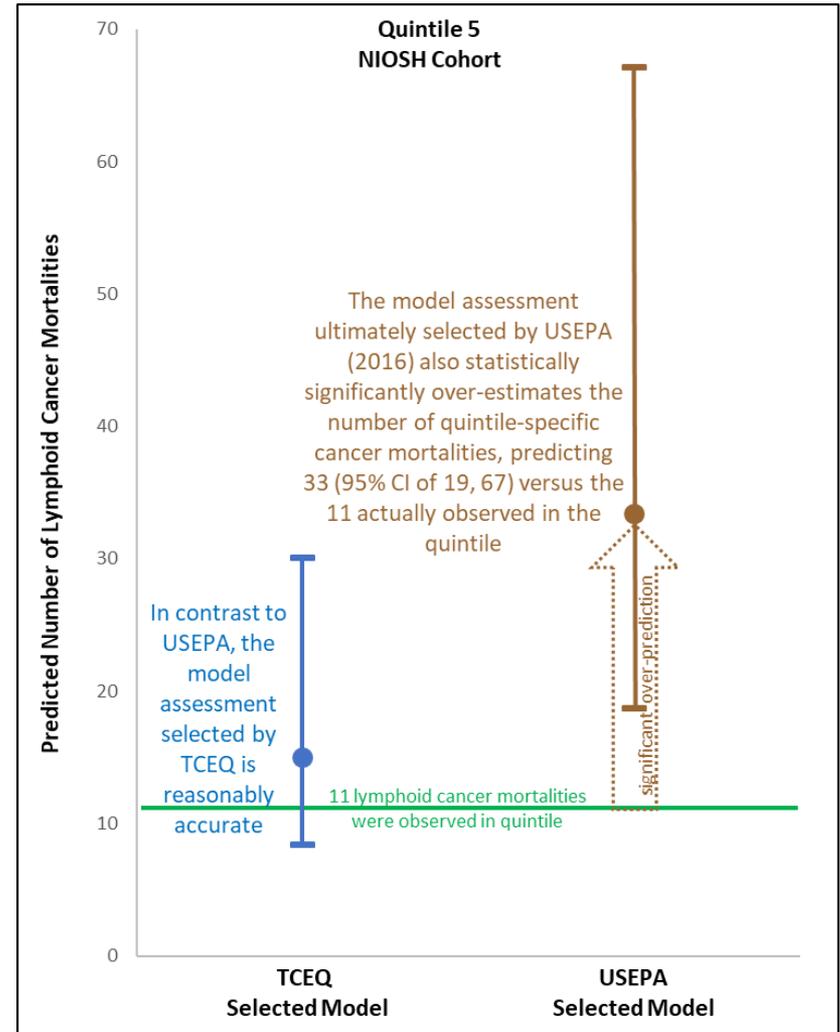
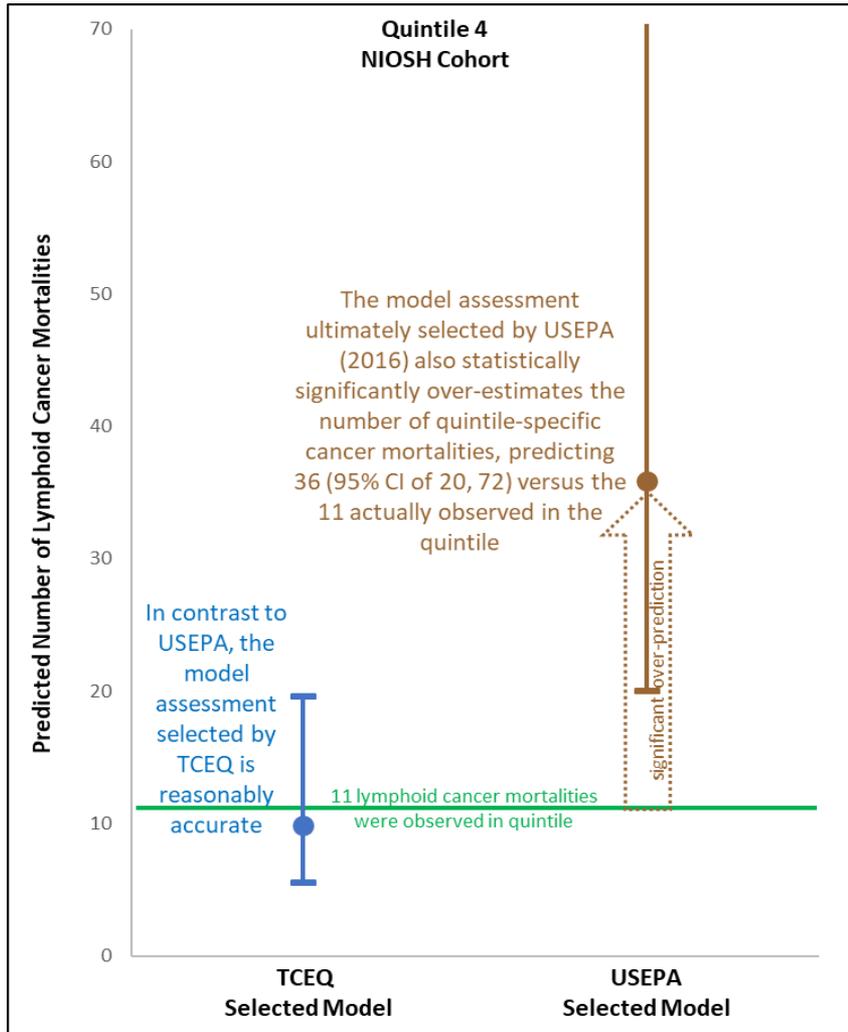


Model Prediction of Quintiles





Model Prediction of Quintiles



Disaster Response

- TDEM – Moving from TDPS to TAMU
- Incident Command System

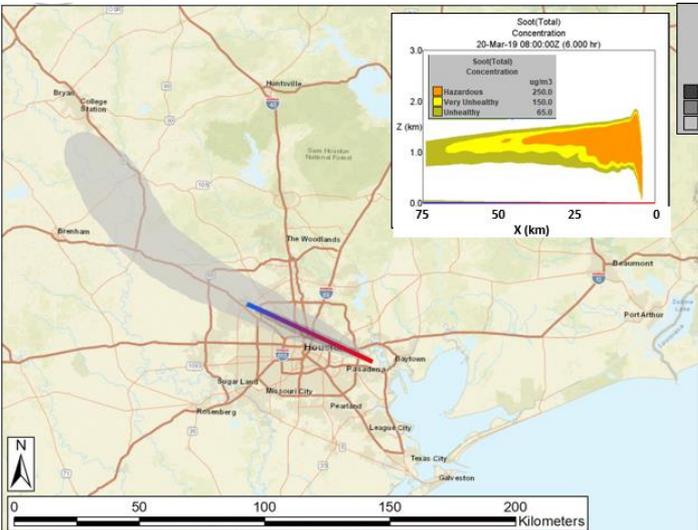
Unified Command

- Enables all agencies with responsibility to manage an incident together by establishing a common set of incident objectives and strategies.
- Allows Incident Commanders to make joint decisions by establishing a single command structure.
- Maintains unity of command. Each employee reports to only one supervisor.





ITC Fire



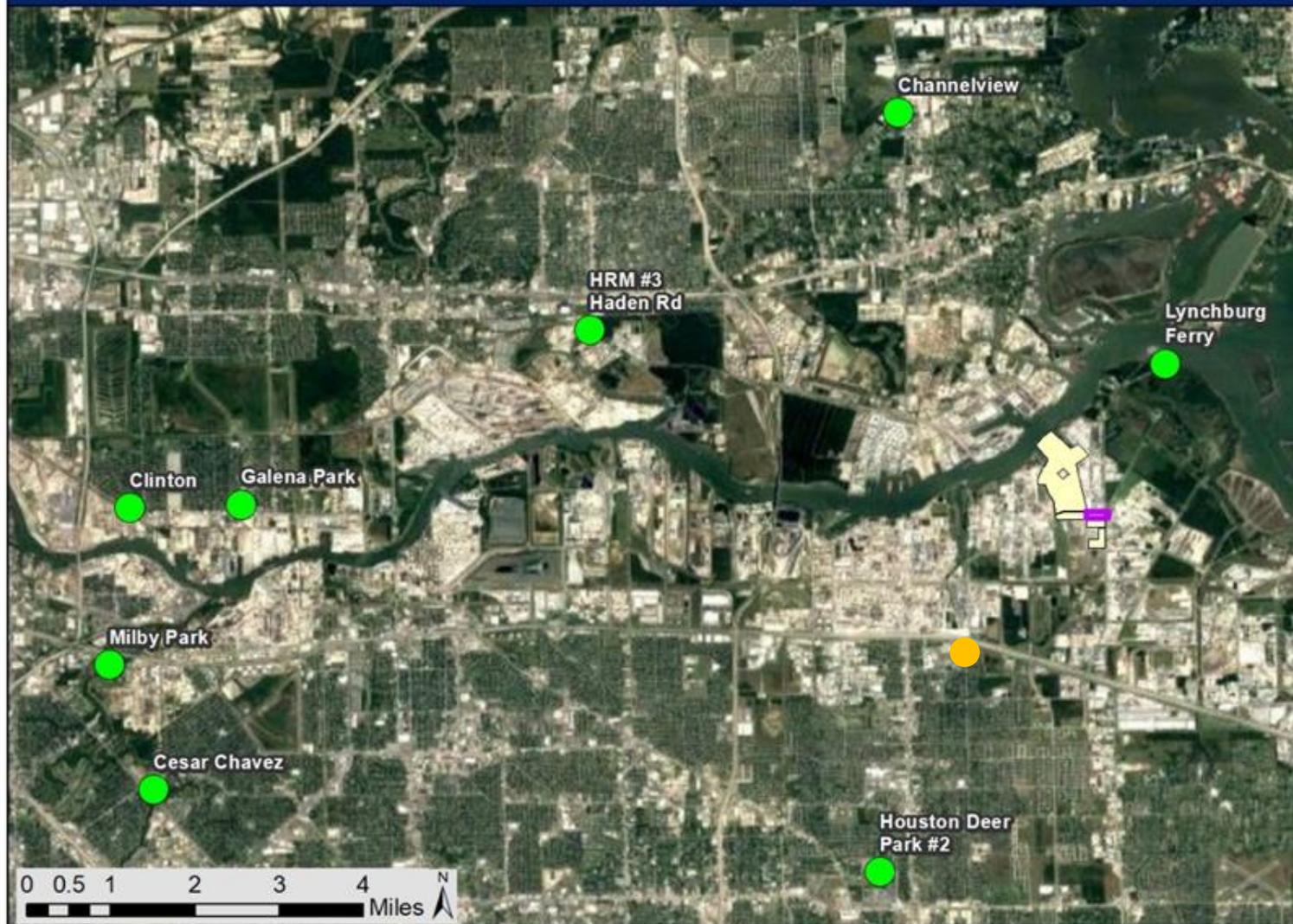
Soot - Integrated Concentration
20-Mar-19 08:00:00Z (6,000 hr)

| Mean Area | kg/m2 |
|-------------------|-----------|
| 0.1 Transmittance | 2.908E-04 |
| 0.5 Transmittance | 8.453E-05 |
| 0.9 Transmittance | 1.285E-05 |

FACTS
 Deer Park, TX
 Location: 29.732437° N / 95.091517° W
 Event Time: 2300 CDT, 19MAR2019
 Type: Oil fire
 Amount: 984 kg/s
 Weather: 12 km NAM
 Model: HPAC 6.5
 Static Population Estimates:
 LandScan 2017

<https://www.tceq.texas.gov/response/itc-terminal-fire-update>

AutoGC Monitoring Sites Near the Intercontinental Terminals Company (ITC) Deer Park Facility Region 12 - Houston, Harris County



-  AutoGC Sites
-  Industry Boundary
-  Tank Farm Fire Location



Texas Commission on Environmental Quality

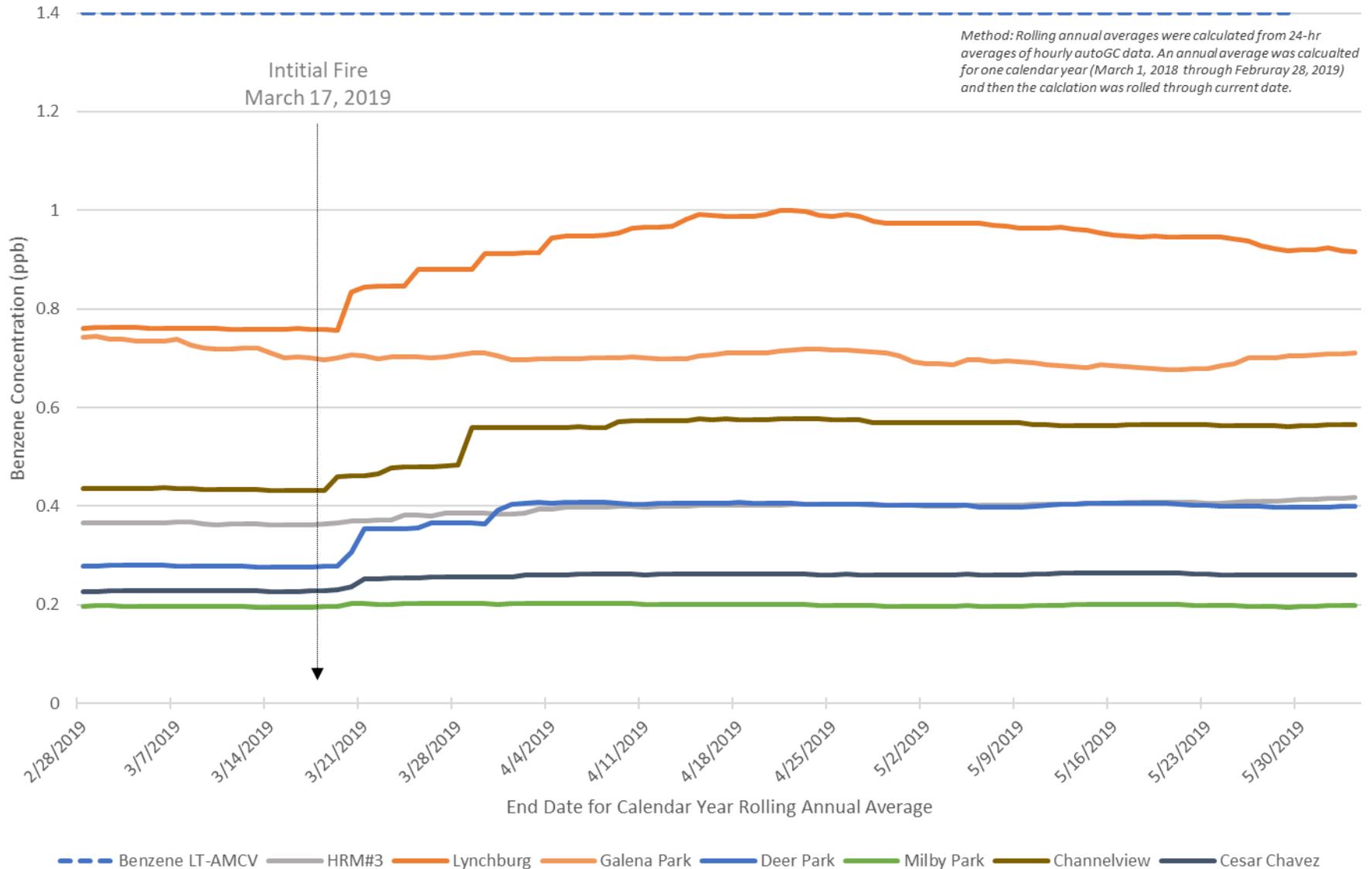
This map was generated by the Toxicology Division (TD). No claims are made to the accuracy or completeness of the data, or to the suitability of the map for a particular use. This area may contain facilities other than those identified. For more information regarding this map, please contact the TD at (512) 239-3900.

Date: 5/20/2019

Benzene Rolling Annual Averages for AutoGC Data in Harris County

March 1, 2018 through June 3, 2019

(Data not yet validated and subject to change)





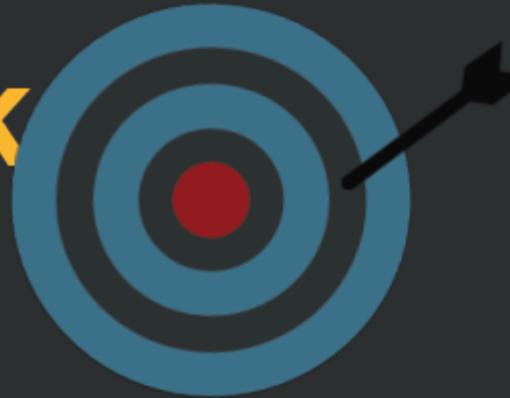
Tucker Bayou

Buffalo Bayou



TCE Report

MISSING THE MARK



How Texas Pollution Cleanup
Benchmarks Fail to Protect
Human Health and the
Environment

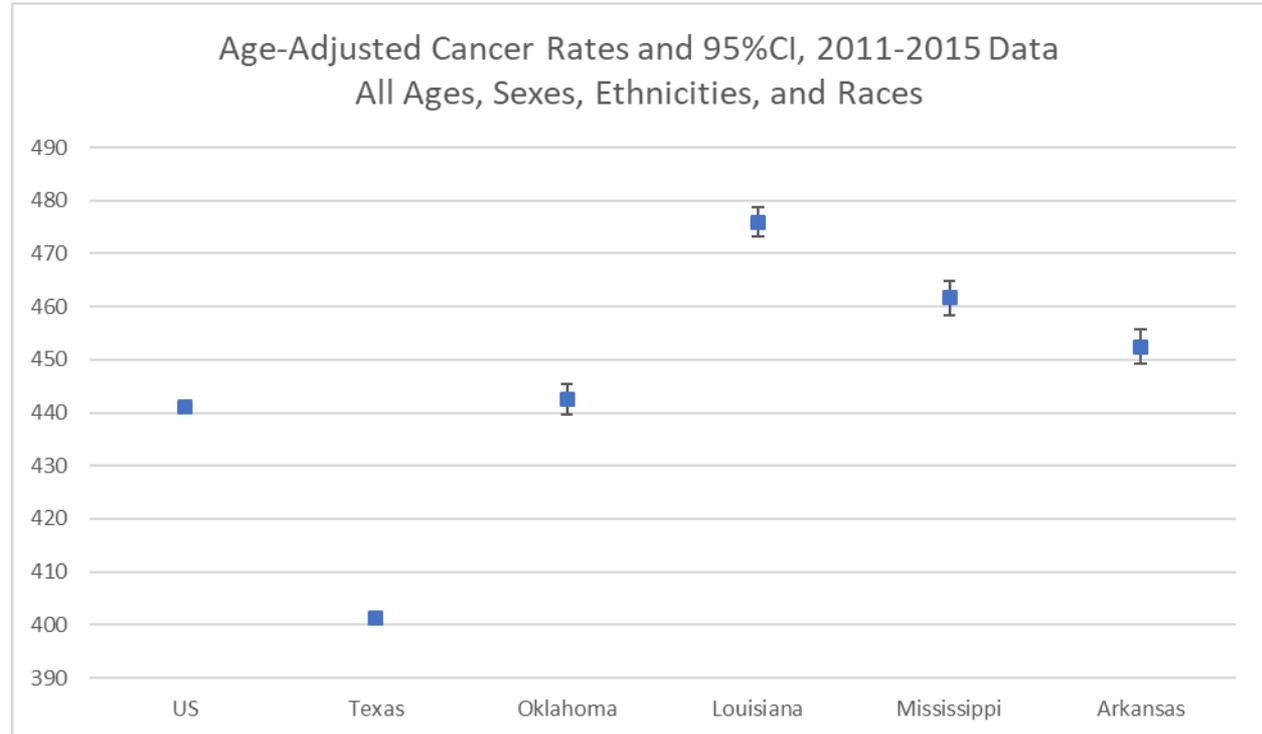


TEXAS CAMPAIGN FOR THE
ENVIRONMENT FUND

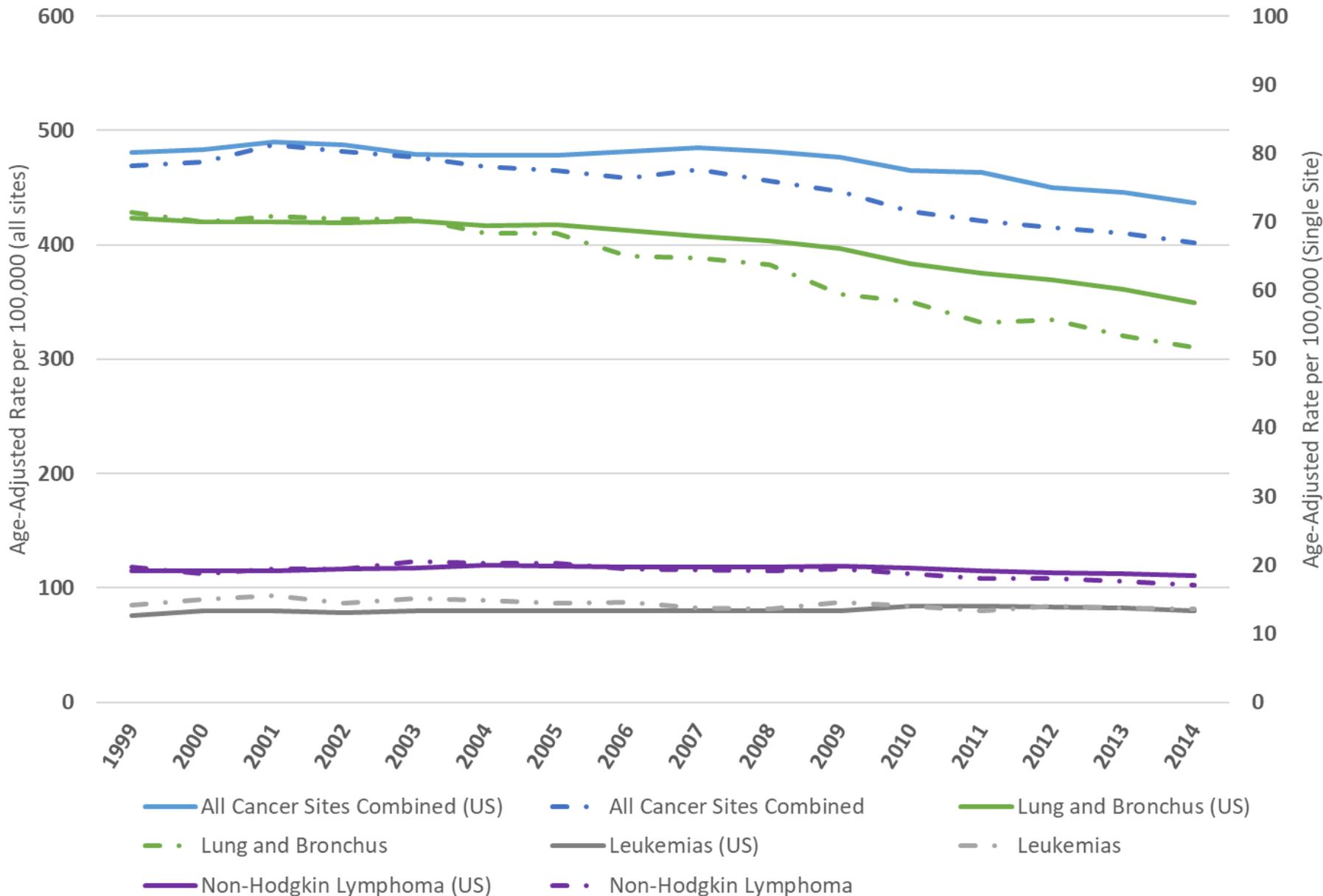


Cancer Incidence

| State/County | Cancer Incidence #/100,000 (95% CI) 2011-2015 Data |
|---------------|--|
| United States | 441.2 (440.9-441.5) |
| Texas | 401.3 (400.2-402.4) |
| Oklahoma | 442.6 (439.7-445.4) |
| Louisiana | 475.9 (473.2-478.7) |
| Mississippi | 461.6 (458.3-465.0) |
| Arkansas | 452.4 (449.2-455.6) |
| Harris | 402.6 (399.6-405.6) |
| Dallas | 416.6 (412.7-420.6) |
| Tarrant | 431.9 (427.4-436.5) |
| Bexar | 385.0 (380.8-389.2) |
| Travis | 381.1 (375.2-387.2) |
| Collin | 397.1 (390.5-403.8) |
| Nueces | 377.7 (368.7-386.8) |
| Galveston | 403.0 (393.2-413.1) |
| Denton | 402.9 (395.2-410.6) |
| Fort Bend | 367.6 (360.3-375.0) |



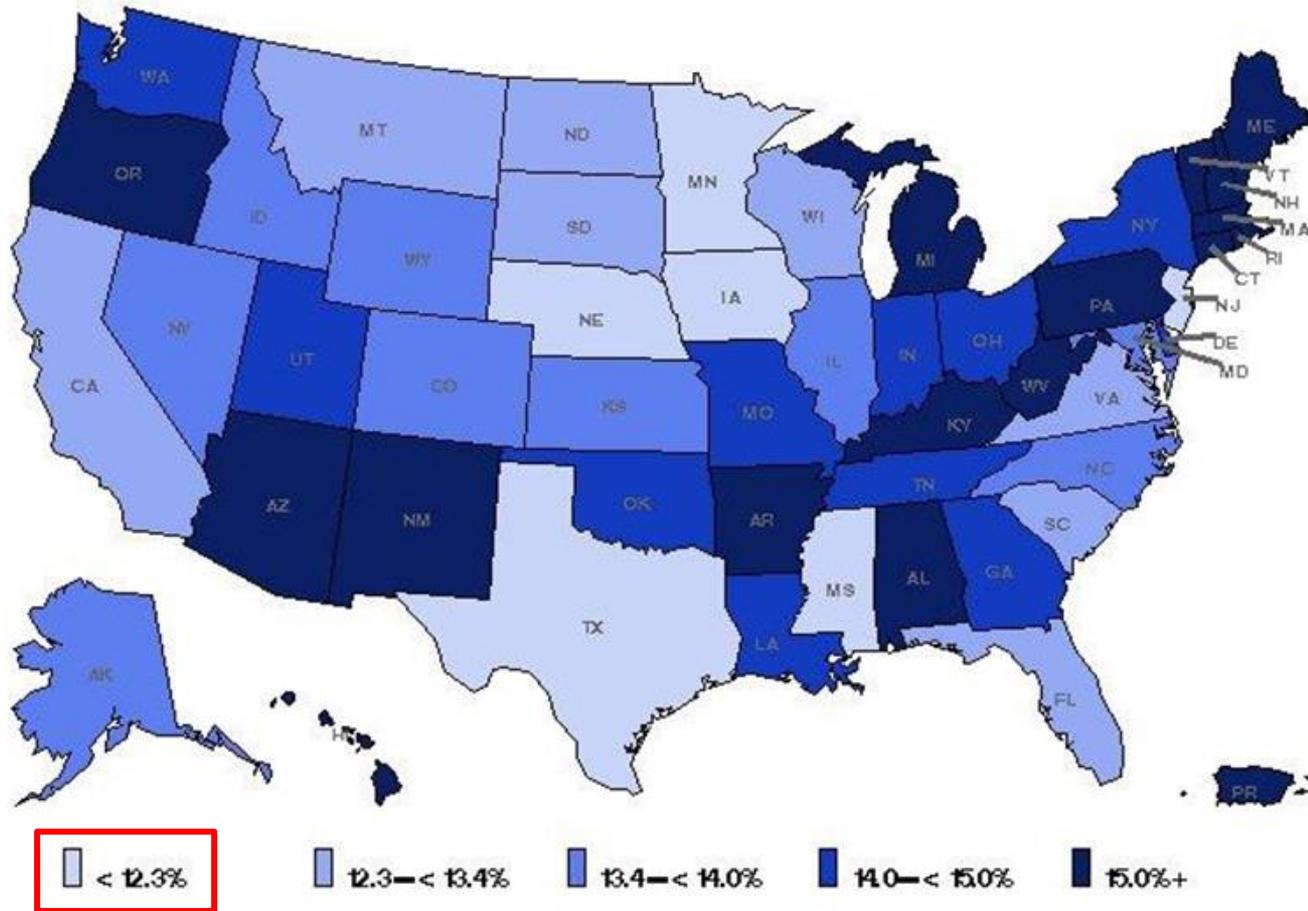
Cancer Incidence in the United States and Texas, 1999-2014





Map L1

Adult Self-Reported Lifetime Asthma Prevalence Rate (Percent) by State: BRFSS 2015



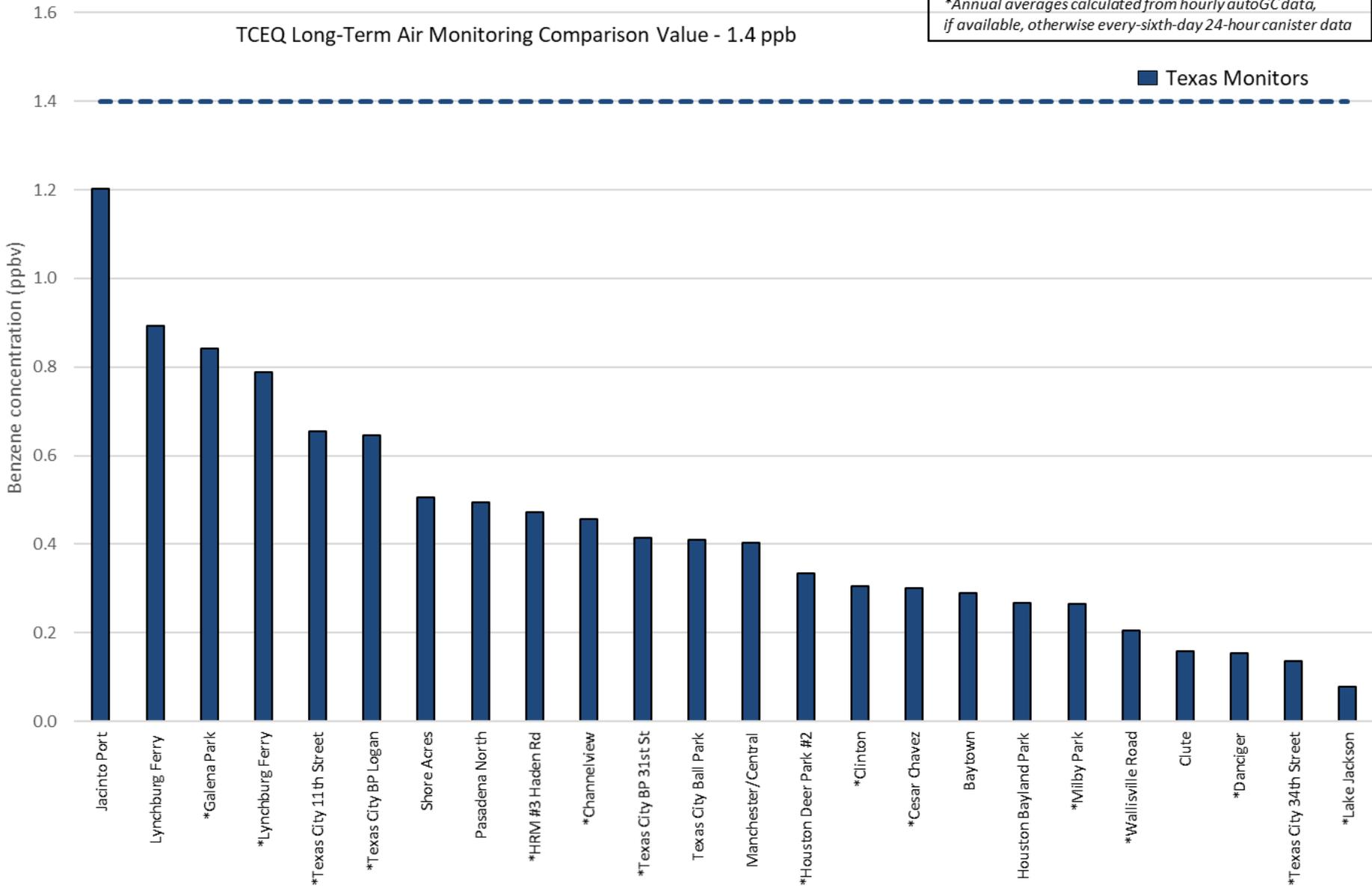
Footnote: Ranges are based on quintiles of the overall prevalence estimates from year 2011 data

2016 Average Benzene Concentrations at Air Monitoring Sites in R12, Houston

Incomplete data set; monitor had less than 75% data return.
*Annual averages calculated from hourly autoGC data, if available, otherwise every-sixth-day 24-hour canister data

TCEQ Long-Term Air Monitoring Comparison Value - 1.4 ppbv

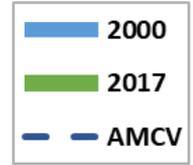
■ Texas Monitors



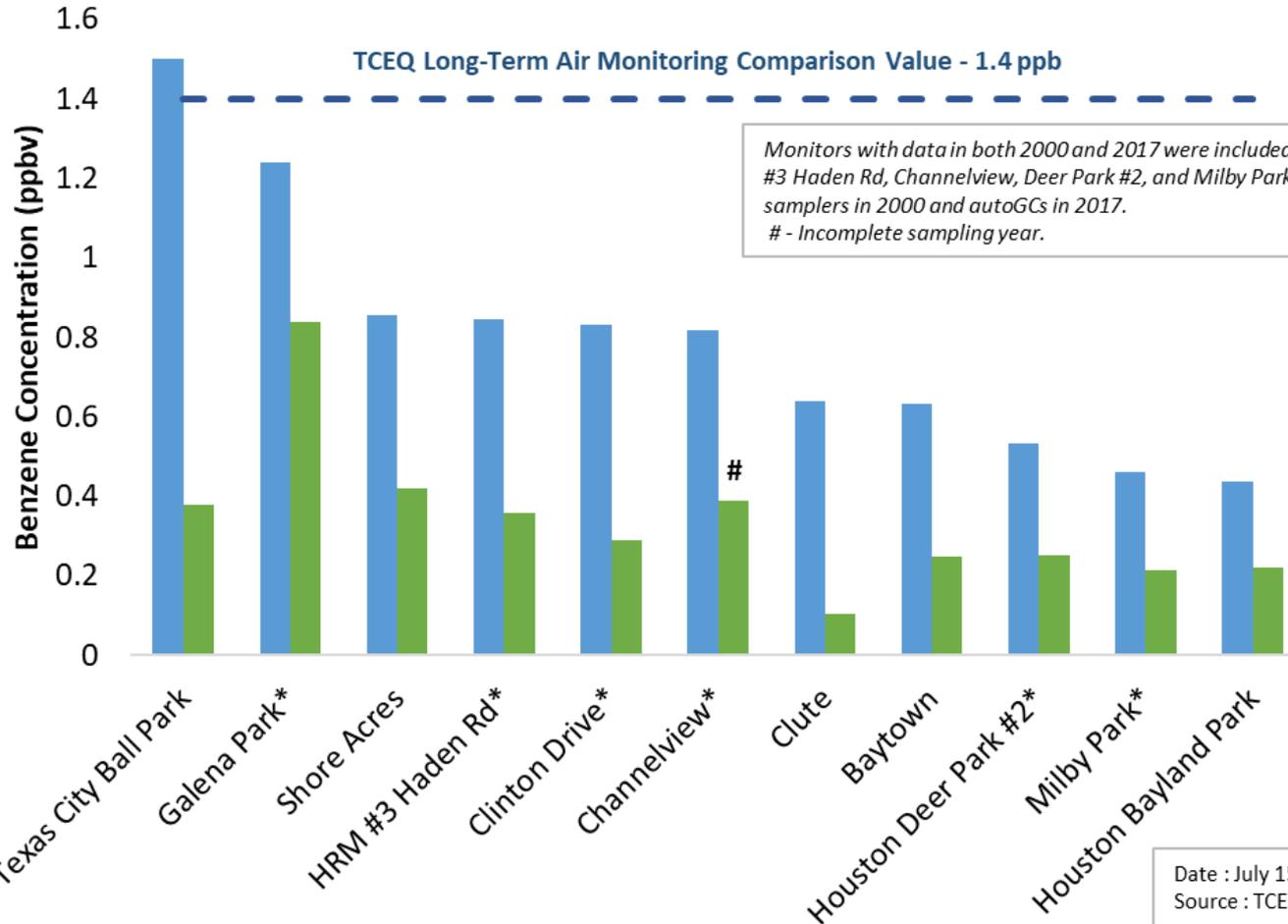


Annual Average Benzene Concentration at Houston Region (12) Monitors Active in 2000 and 2017

(calculated from hourly autoGC data, if available*; otherwise every-sixth-day 24-hour canister data)



TCEQ Long-Term Air Monitoring Comparison Value - 1.4 ppbv



Monitors with data in both 2000 and 2017 were included. Galena Park, HRM #3 Haden Rd, Channelview, Deer Park #2, and Milby Park were canister samplers in 2000 and autoGCs in 2017.
- Incomplete sampling year.

Date : July 15, 2019
Source : TCEQ Toxicology Division



Questions?