

Air Pollutant Watch List (APWL) Proposed Change

***Removal of Port Arthur from the
APWL (Currently Listed for the
Air Toxic Benzene)***

**Texas Commission on
Environmental Quality**

Air Permits Division

August 28, 2013

Summary

The Texas Commission on Environmental Quality (TCEQ) established the [APWL](#) to address areas of the state where air toxics were persistently monitored at levels of potential concern, and the TCEQ uses the APWL to reduce air toxic levels by properly focusing its resources on areas in the state with the greatest need. The TCEQ added Port Arthur to the APWL to address persistent, elevated annual average concentrations of the air toxic benzene at the TCEQ's City Service Center monitor, located just northwest of the industrial complexes in Port Arthur. Since Port Arthur's inclusion on the APWL in 2001, several sources in the APWL area have implemented improvements that led to reductions of benzene emissions.

The TCEQ's Toxicology Division establishes conservative screening values called air monitoring comparison values (AMCVs) to evaluate ambient air toxic data. Adverse health effects are not expected if annual average benzene concentrations remain below 1.4 parts per billion by volume (ppb_v). Data from the TCEQ's City Service Center monitor show that annual average benzene concentrations have been below TCEQ's screening value for four consecutive calendar years and ten of the last eleven calendar years. The TCEQ has determined that benzene concentrations can reasonably be expected to be maintained below levels of potential concern and proposes to remove Port Arthur from the APWL.

Area and Pollutant of Concern

The TCEQ listed Port Arthur on the APWL in 2001 for the air toxic benzene. Benzene, a widely-used industrial chemical, is a clear liquid. It is a volatile organic compound (VOC) that readily evaporates into the air. Benzene is a natural constituent of crude oil; therefore, refined products like gasoline contain benzene. Benzene is also used to make glues, lubricants, and certain prescription medications. Several agencies, including the TCEQ, the U.S. Environmental Protection Agency (EPA), the National Toxicology Program, and the International Agency for Research on Cancer, have designated benzene as a human carcinogen. The TCEQ has developed a [Development Support Document](#), which provides additional detailed information on the potential toxicological effects of benzene.

The [Port Arthur APWL boundary](#) encompasses the geographical area north of Sabine Lake (on the Texas-Louisiana border), south of the Highway 73 Frontage Road, east of the J.D. Wildlife Management Area, and west of Savannah Avenue, extended to Sabine Lake. Figure 1, *Port Arthur APWL Area*, is an excerpt of TCEQ's APWL map. This map illustrates the portion of Port Arthur that the TCEQ added to the APWL for benzene.

Designated Land Use and Proximity to Residential Areas and High-Traffic Roadways

As Figure 1 illustrates, Port Arthur contains an area with multiple industrial complexes. The area contains several canals, waterways, and railways that are used to transport products in and out of the industrial area. In addition, the industrial complexes are located directly west of Port Arthur's downtown area. A portion of downtown Port Arthur, including City Hall, is located within the defined APWL boundary. Many

residences and high-traffic roadways are located either within the defined APWL boundary or are close. Some homes are located west of the industrial area, but the majority of homes are located east. Some homes are within one-quarter mile of industrial equipment. Neighborhoods in Port Arthur are represented in Figure 1 as white gridlines.

Figure 1: Port Arthur APWL Area



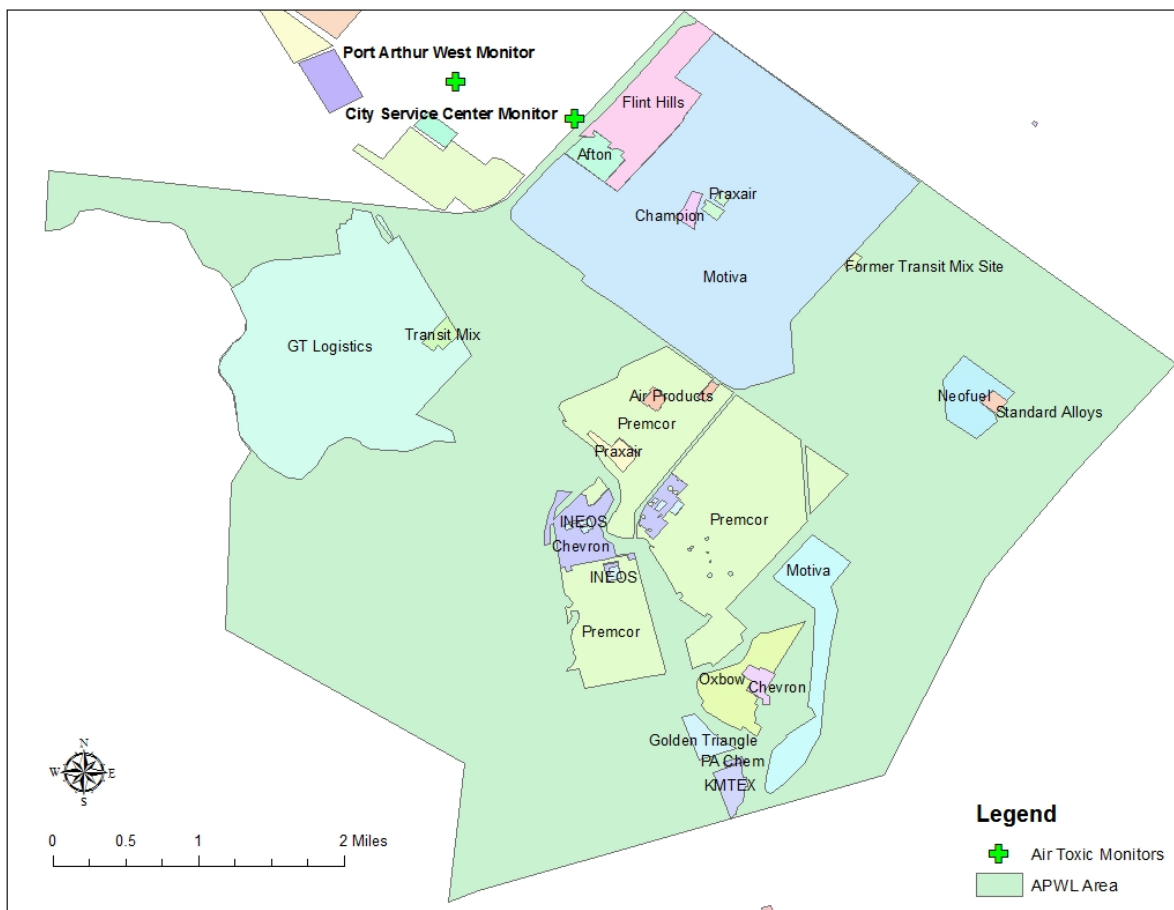
Companies Located in the Port Arthur APWL Area

Multiple industrial complexes are located within the designated APWL boundary, including:

- Two petroleum refineries:
 - The Premcor Refining Group Inc., RN102584026 (Premcor)
 - Motiva Enterprises LLC, RN100209451 (Motiva)
- Ten chemical plants:
 - Flint Hills Resources LP, RN100217389 (Flint Hills)
 - KMTEX LLC, RN100640283 (KMTEX)
 - Chevron Phillips Chemical Company LP, RN100209857 (Chevron)
 - INEOS Americas LLC, RN104620083 (INEOS)
 - Air Products LLC, RN101941284 (Air Products)
 - Praxair Inc., RN102845435 and RN106078850 (Praxair)
 - Afton Chemical Additives Corporation, RN103086799 (Afton)
 - Oxbow Calcining LLC, RN100209287 (Oxbow)
 - Port Arthur Chemical & Environmental Services, RN105156111 (PA Chem)
- Three terminals/dock facilities:
 - Chevron Phillips Chemical Company LP, RN102881588 (Chevron)
 - Motiva Enterprises LLC, RN100238898 (Motiva)
 - GT Logistics LLC—Port Arthur Omniport, RN106114168 (GT Logistics)
- An offshore oil rig construction and repair facility:
 - Golden Triangle Properties LLC (formerly Signal International Texas LP), RN102509676 (Golden Triangle)
- Two concrete batch plants:
 - Transit Mix Concrete & Materials Company, RN106453830 (Transit Mix)
 - Champion Inc., RN105308621 (Champion)
- A tire recycling and syngas facility:
 - Neofuel USA LLC, RN105158281 (Neofuel), and
- A foundry:
 - Standard Alloys Incorporated, RN101935351 (Standard Alloys)

Figure 2, *Port Arthur Companies*, shows the relative locations of the companies listed on the previous page within the APWL area.

Figure 2: Port Arthur Companies



Emissions Inventory

Companies located in the APWL areas are required to comply with Title 30 Texas Administrative Code §101.10, Emissions Inventory Requirements, which requires owners or operators of certain stationary sources to submit an annual emissions inventory to the TCEQ. These companies are required to report all of their actual air emissions each year, including all authorized and unauthorized emissions.

Unauthorized emissions may include those emissions released as a result of emissions events or unauthorized maintenance, startup, and shutdown activities. Seven of the companies in Port Arthur have consistently reported benzene emissions into the emissions inventory in recent years.¹ Table 1, *Tons of Benzene Reported by Port Arthur Companies*, lists the companies and the quantities of benzene emissions reported each year.

¹ 1998 – 2011

Table 1: Tons of Benzene Reported by Port Arthur Companies

Company	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Premcor RN102584026	6.4	15.1	11.0	4.1	5.5	6.4	12.1	5.5	5.5	6.2	5.4	7.3	6.9	10.5
Chevron RN100209857	16.7	19.1	54.5	24.4	26.7	18.9	28.5	23.9	17.4	9.9	14.6	6.7	4.4	4.5
Chevron RN102881588	0	0	0	0	0	4.0	0	5.8	4.3	1.2	5.9	1.9	0.8	4.1
Motiva RN100209451	1.2	1.5	1.4	1.1	1.5	3.7	1.2	1.1	4.1	7.5	7.5	7.1	2.9	6.6
Motiva RN100238898	1.7	2.0	1.8	1.2	1.1	1.8	2.0	1.6	2.3	1.1	1.1	1.2	1.2	1.0
Flint Hills RN100217389	103.9	20.7	14.8	20.8	17.1	34.3	29.9	27.3	42.1	16.1	25.9	33.4	27.6	31.6
INEOS RN104620083	0	0	0	0	0	0	0	0	1.4	6.3	7.4	2.6	0.8	0.1
Total ²	129.9	58.4	83.5	51.6	51.9	69.1	73.7	65.2	77.1	48.3	67.8	60.2	44.6	58.4

² Although not shown here, two companies reported benzene for one year for the timeframe shown in Table 1. KMTEX reported 0.3 tons of benzene in 2007 and Afton reported 0.002 tons of benzene in 1999.

Ambient Air Monitoring Network in Port Arthur

The stationary monitoring network includes six monitors that take ambient benzene measurements in Port Arthur, as is shown in Table 2, *Air Toxic Monitors*. The TCEQ operates three monitors: Port Arthur West, City Service Center, and Jefferson County Airport. The three TCEQ monitors are canister samplers that take a 24-hour concentration every sixth day. Additionally, the South East Texas Regional Planning Commission (SETRPC) owns three stationary monitors in Port Arthur that measure ambient benzene concentrations. SETRPC has a stationary monitor at the Jefferson County Airport and monitors benzene at the Port Arthur Memorial School monitor and at the SETRPC Port Arthur monitor. The SETRPC Port Arthur and SETRPC Jefferson County Airport monitors collect a 24-hour concentration every 12 days. SETRPC's Port Arthur Memorial School monitor is an automatic gas chromatograph monitor (auto GC) that provides ambient concentrations on an hourly basis. Figure 3, *Locations of Monitors*, shows the relative locations of the benzene monitors. The Port Arthur APWL area is shown in Figure 3 as the area with the dashed fill and the red outline. The Port Arthur West and City Service Center monitors are located just northwest of the APWL area, and the Jefferson County Airport monitors are located further northwest. The Port Arthur Memorial School monitor is located northeast of the industrial area, and the SETRPC Port Arthur monitor is located within the APWL area, east of the Premcor industrial site.

Table 2: Air Toxic Monitors

Site Name	AQS Number	Location	Owner
<u>City Service Center monitor</u>	482450019	201 H. O. Mills Boulevard	TCEQ
<u>Port Arthur West monitor</u>	482450011	623 Ellias Street	TCEQ
<u>Jefferson County Airport monitor</u>	482450018	End of 90 th Street at the Jefferson County Airport	TCEQ
<u>SETRPC 43 Jefferson County Airport monitor</u>	482450102	Collocated with the TCEQ's Jefferson County Airport monitor	SETRPC
<u>Port Arthur Memorial School monitor</u>	482450021	2200 Jefferson Drive	SETRPC
<u>SETRPC Port Arthur monitor</u>	482450628	East of the Premcor industrial site	SETRPC

Figure 3: Locations of Monitors



Evaluating Port Arthur's Air Monitoring Data

As discussed previously, the TCEQ evaluates concentrations of the air toxic benzene through the use of its AMCVs. AMCVs are conservative screening values set well below levels at which health effects would occur. AMCVs are, therefore, designed to protect human health and welfare and are established by the TCEQ's Toxicology Division as chemical-specific air concentrations. The Toxicology Division uses its scientifically-rigorous [effects screening level guidelines](#) to establish these AMCVs, in which proposed AMCVs are scrutinized through a scientific peer review and public comment process. More [details on AMCVs](#) can be found on the TCEQ's Web site.

Several of the stationary air toxic monitors in Port Arthur (shown in Table 2) are canister samplers that collect data every six or twelve days for a 24-hour period. Canister data are then averaged and compared to long-term AMCVs. Long-term AMCVs are based on data concerning chronic health and vegetation effects. The TCEQ establishes long-term AMCVs based on lifetime exposures, approximately 70 years. The long-term, health-based AMCV for benzene is 1.4 ppb_v. This long-term AMCV is

compared to the calendar year annual average to determine if benzene concentrations should be reduced.

Mobile monitoring samples provide data over a short duration (samples are usually instantaneous or are taken over a period of time up to three hours) and must be compared to short-term AMCVs. Short-term AMCVs are based on data concerning acute health effects, the potential for odors, and effects on vegetation. The short-term, health-based AMCV for benzene is 180 ppb_v.

The Port Arthur Memorial School monitor is an auto GC, which collects data every hour. Data from this monitor are therefore appropriate for comparison to benzene's 180 ppb_v short-term AMCV. The auto GC data can also be averaged annually and compared to benzene's 1.4 ppb_v long-term AMCV.

Reason for Port Arthur's Inclusion on the APWL

The TCEQ added Port Arthur to the APWL to address persistent, elevated long-term benzene concentrations at the City Service Center monitor. The TCEQ began conducting ambient benzene monitoring at the City Service Center monitor in May 1997 and added Port Arthur to the APWL in 2001 because the annual average benzene concentrations equaled or exceeded the AMCV every calendar year that monitoring was conducted.

Summary of Collected Benzene Data

The TCEQ has conducted numerous mobile monitoring trips in Port Arthur. Most recently, the TCEQ conducted a mobile monitoring trip from July 25 through August 1, 2008. No concentrations over the short-term AMCV were measured.

Regarding the network stationary monitors, as discussed in the previous section, annual average benzene concentrations have exceeded the TCEQ's long-term AMCV at the City Service Center monitor. Since its listing on the APWL, annual average benzene concentrations have not been persistently elevated at any of the other monitors in Port Arthur's ambient network.³ Thus, this document describes in detail the City Service Center monitoring data. City Service Center data show a significant improvement of annual average benzene concentrations.

At the time of Port Arthur's listing on the APWL, benzene's long-term AMCV was 1.0 ppb_v. In 2007, the TCEQ conducted a thorough scientific evaluation of the toxicity of benzene and derived a new long-term, health based AMCV of 1.4 ppb_v. The average benzene concentrations exceeded both the old AMCV of 1.0 ppb_v and the current AMCV of 1.4 ppb_v in 1997 and 1999 through 2001.⁴ The annual average benzene concentration equaled 1.4 ppb_v in 1998.

Annual average benzene concentrations began to decline in 2002, but annual average concentrations continued to remain above the, then, long-term AMCV of 1.0 ppb_v

³ The annual average benzene concentration equaled 1.4 ppb_v in 2002 and exceeded 1.4 ppb_v in 2005 at 2.9 ppb_v at the SETRPC 43 Jefferson County Airport monitor. The elevated concentrations appear to have been attributed to emissions from a nearby natural gas processing facility. Operations from the facility ceased in 2006, and since that time, annual average benzene concentrations have remained well below the long-term AMCV each calendar year, with annual averages ranging from 0.2 ppb_v to 0.9 ppb_v.

⁴ Data was not collected for a full year in 1997, as the monitor was activated on May 9, 1997.

through calendar year 2005. In 2006 and 2007, concentrations were reduced below 1.0 ppb_v, and, as discussed previously, the long-term AMCV was changed to 1.4 ppb_v in 2007. In 2008, however, the annual average benzene level was calculated at its highest concentration at the monitor at 1.9 ppb_v. This value exceeded both the old AMCV of 1.0 ppb_v and current AMCV of 1.4 ppb_v. Average benzene concentrations have been below 1.4 ppb_v from 2009 through 2012.

The TCEQ conducted a wind-directional analysis of the benzene data collected at the City Service Center monitor. The canister data are illustrated in Figure 4, *Benzene Canister Measurements (1997 – 2012)*, Figure 5, *Average and Maximum Benzene Concentrations (1997 – 2012)*, and Figure 6, *Canister Data and Area Map*.

Figure 4 is the distribution of all canister sample data collected at the City Service Center. Each point represents the concentration for each canister sample taken and the resultant wind direction for the sampling period. Figure 4 illustrates that higher measured concentrations occurred between approximately 60 and 150 degrees. Figure 4 also clearly shows the canister sample that occurred on January 19, 2008 as the highest measured value at the monitor (21.92 ppb_v). The resultant wind direction for that 24-hour period was 9 degrees. When evaluated with all other data from this canister sampler, the January 19, 2008, measurement may be an outlier. The January 19, 2008, sample also appears as a spike in the radar plot shown in Figures 5 and 6.

Figure 5 shows the average (mean) and maximum benzene concentrations in relation to the resultant wind directions for the days on which sampling occurred. Benzene concentrations observed at the monitor are higher when winds are from the general southeast direction. The average benzene concentrations of the data collected were above 1.4 ppb_v when winds originated from approximately between 70 and 140 degrees.

Figure 4: Benzene Canister Measurements (1997 - 2012)

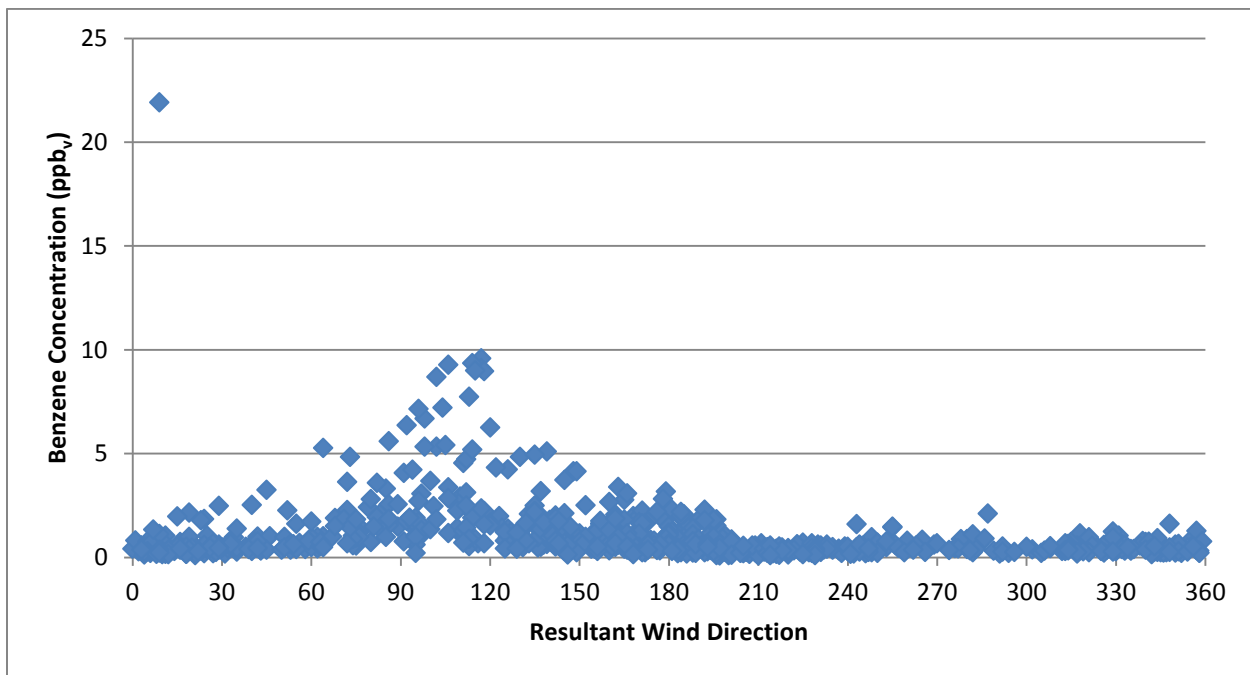


Figure 5: Average and Maximum Benzene Concentrations (1997 - 2012)

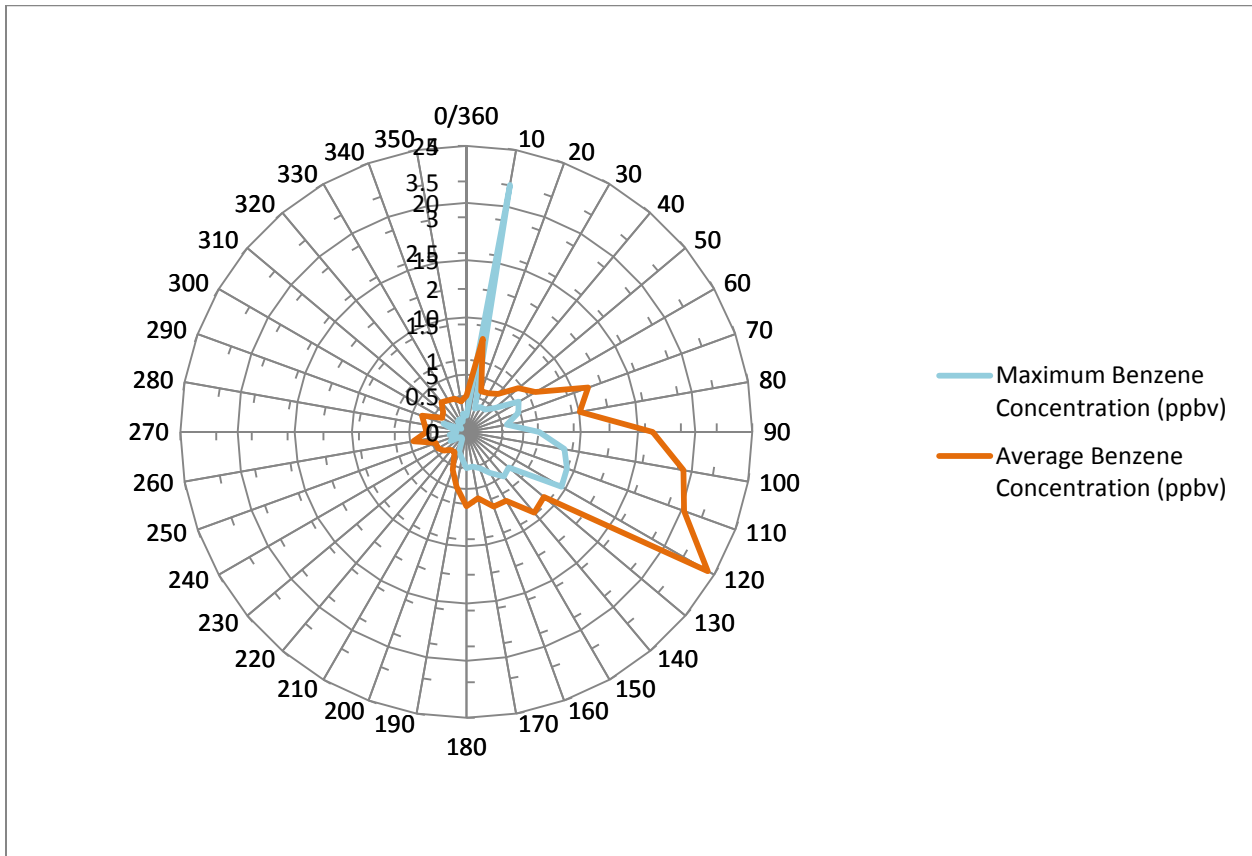
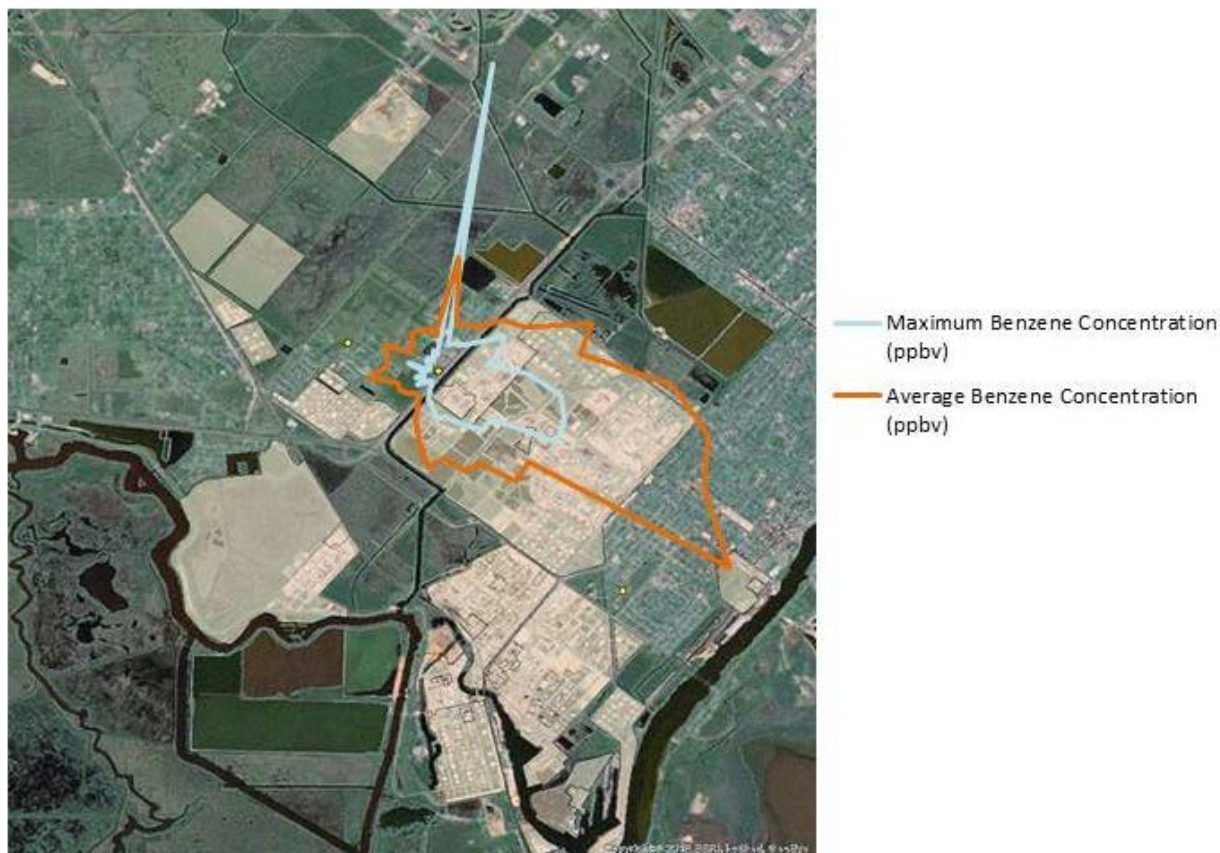


Figure 6 contains the radar plot from Figure 5 together with the area map and helps illustrate both which direction the highest benzene concentrations originate and which sources are in that general direction. As expected, the data show that maximum and average benzene concentrations tend to be higher when winds originate from the general southeast direction, which is the direction of the sources located in the Port Arthur APWL area. Several of these sources have implemented control strategies to reduce benzene emissions, as is explained in the following section.

Figure 6: Canister Data and Area Map



Actions to Reduce Benzene Emissions

Flint Hills

Flint Hills currently operates the chemical plant located at 4241 Savannah Avenue in Port Arthur, and the plant was previously operated by Huntsman Petrochemical Corporation (Huntsman) from 1994 through 2007. This site is across Highway 73 from the City Service Center monitor and is the closest source of benzene to the monitor. In the 1999-2001 timeframe, Huntsman installed a regenerative thermal oxidizer and also made improvements in its wastewater management practices. In 2004, Huntsman installed a fence-line monitoring system.

While under the operation of Huntsman, a fire occurred at the plant's Light Olefins Unit on April 29, 2006. Huntsman entered into an Agreed Order with the TCEQ regarding avoidable emission events and unplanned shutdowns immediately after the fire. Although the release of unauthorized VOCs was documented for the time period following the fire, monitoring data does not demonstrate that average ambient benzene concentrations were elevated at the City Service Center monitor. The fire ultimately caused the plant to shut down for more than a year. The plant was rebuilt, and startup began on October 13, 2007.

Flint Hills then assumed ownership of the Port Arthur chemical plant in November 2007. Monitored ambient benzene concentrations had been below the TCEQ's current

long-term AMCV of 1.4 ppb_v for several years prior to this ownership change, and ambient benzene levels at the City Service Center monitor appeared to be trending downward. In 2008, however, two events significantly contributed to an exceedance of the TCEQ's long-term AMCV, and investigations by TCEQ staff revealed that a spill at Flint Hills was the likely cause of one of the events.

Since 2009, Flint Hills has initiated efforts to minimize benzene emissions. Flint Hills has indicated that it has improved the operation and its evaluation of its fence-line monitors. Flint Hills has also implemented a stringent leak detection and repair program and also uses an infrared camera to help identify leaks and make more timely repairs. Flint Hills also indicated that it has further improved its wastewater management practices and has repaired, taken out of service, and/or changed products stored in certain storage tanks in order to minimize benzene emissions.

Motiva

Motiva operates two sites in Port Arthur—its refinery located at 2555 Savannah Avenue, and its 7th Street Tank Farm located at 3901 Texaco Island Road. Its refinery is adjacent to Flint Hills and is also in relatively close proximity to the City Service Center monitor. Since 1995, the Motiva refinery has received authorization for significant refinery expansions. The air permits authorized additional emissions and also required equipment improvements to reduce VOC emissions. Motiva also agreed to implement enhanced procedures to mitigate benzene emissions through the [EPA's Petroleum Refinery Initiative](#), which resulted in emission reductions from refineries across the country, including the Motiva and Premcor refineries in Port Arthur. Additionally, through the TCEQ's enforcement process (see [TCEQ Agreed Order 2003-1186-AIR-E](#)), Motiva agreed to pay for the cost, installation, operation, and maintenance of the Port Arthur Memorial School monitor discussed previously.

In 1995, Motiva was authorized to implement charge rate and feedstock changes. Through that permitted action, the company also committed to install and/or retrofit all of its sources (including permitted sources and older sources that were grandfathered from air New Source Review permitting requirements) to meet best available control technology.

In [Motiva's March 2001 consent decree](#) with the EPA, the company agreed to improve leak detection and repair practices and make other pollution control upgrades to significantly reduce benzene. Motiva also agreed to install controls to mitigate the release of benzene from wastewater treatment and conveyance systems. Specifically, the company committed to implement an enhanced leak detection and repair program for identifying and repairing leaking components through more frequent monitoring, the use of lower leak limits, and regular auditing of its leak detection and repair program. Motiva also agreed to an enhanced benzene waste management program through comprehensive auditing, monitoring, and improved emission controls such as secondary carbon canisters and scrubbers.

In 2006, the refinery was issued a permit amendment authorizing a major expansion of its operations, including the construction of a new stand-alone refinery to operate alongside the existing refinery operations. During the review of the 2006 permit amendment, the company indicated that it uses a flare gas recovery system and initiated

process changes to reduce the number of flaring events. It also agreed to implement additional process changes to reduce VOC emissions. Specifically, Motiva agreed to subject all components to a stringent TCEQ-prescribed leak detection and repair program (28 MID). Additionally, maintenance, startup, and shutdown activities were evaluated for both the existing refinery and the new refinery, which resulted in new controls and operational limits on equipment degassing and tank landings and refillings.

Some of the changes authorized by the Motiva expansion will ultimately result in a decrease in benzene at the Motiva 7th Street Tank Farm. The tank farm stores gasoline produced at the refinery prior to marine vessel loading operations. Motiva is changing its operations to produce gasoline with a lower benzene content, which will result in lower benzene emissions from gasoline stored at the tank farm. Additionally, the company is operating an in-line gasoline blending system that will lead to marine vessels, and this change may ultimately eliminate the need to store gasoline at the 7th Street Tank Farm. Motiva took some of its tanks at the tank farm out of gasoline service in March 2013.

In addition, Motiva was issued a permit in July 2009 to authorize the remaining maintenance, startup, and shutdown activities that were not previously authorized. The TCEQ is in the process of evaluating emissions from routine maintenance, startup, and shutdown activities that have been historically unauthorized for sites located throughout the state. A permit review of maintenance, startup, and shutdown activities includes an evaluation of best available control technology and a health impacts review, and permitting maintenance, startup, and shutdown activities often requires controls and/or operational changes for activities that have been previously uncontrolled (and, in some cases, controls are required for equipment whose emissions were previously vented to the atmosphere). Motiva's permit required additional control requirements for vacuum trucks, frac tanks, and miscellaneous chemical usage.

Premcor

Premcor operates a refinery at 1801 Gulfway Drive. Premcor also entered into a consent decree with the EPA as a part of the agency's Petroleum Refinery Initiative. Similar to Motiva, Premcor committed to implement enhanced procedures that would help mitigate benzene emissions regarding its leak detection and repair programs and benzene waste management practices. More specifically, through [Premcor's August 2007 consent decree](#) with the EPA (Civil Action No. SA-05-CA-0569), the company agreed to install additional controls for nitrogen oxides and sulfur dioxide, which also result in a reduction of VOCs and other air pollutants. Specifically, Premcor agreed to undertake measures to minimize fugitive benzene waste emissions and implement any necessary corrective actions to ensure compliance with Title 40 Code of Federal Regulations Part 61, Subpart FF, National Emission Standard for Benzene Waste Operations. Through the consent decree, Premcor also agreed to conduct an audit of the refinery's compliance with leak detection and repair requirements, and also to have a third-party audit of leak detection and repair compliance. Additionally, the consent decree included enhancements to the refinery's leak detection and repair program, including stringent leak definitions for pumps and valves, stringent time frames for initial attempt to repair valves, and stringent monitoring frequency. The company also

agreed to maintain a position within the refinery with responsibility for the leak detection and repair program and establish a tracking program for maintenance records. Additionally, Premcor agreed to conduct root cause analyses for hydrocarbon flaring events, thereby minimizing emissions. The company also agreed to implement Supplemental Environmental Projects for the Port Arthur community, such as acquiring a mobile air monitoring van for the Jefferson County Local Emergency Planning Committee, installing shelter-in-place air control systems at the Booker T. Washington Elementary and Memorial Ninth Grade Center schools (to detect, isolate, and/or filter air pollutants and/or emissions that may result from emissions events), and installing controls on unregulated or uncontrolled atmospheric relief vents at its Port Arthur refinery that will route emissions to a control device and significantly reduce fugitive VOC emissions.

In addition, Premcor authorized its maintenance, startup, and shutdown activities. The air permitting action was issued in February 2010 and required additional control requirements for equipment and tank draining, depressurizing, and degassing, vacuum and air mover trucks, and frac tanks.

Chevron

Chevron also operates two different sites in Port Arthur: its chemical plant located at 2001 Gulfway Drive and its chemical dock facility located off of Coke Dock Road. Several actions have been taken to reduce benzene emissions at the chemical plant.

Chevron ceased its benzene production, shutting down its UDEX system in 2003. The large benzene sources associated with this system were phased out through 2005. Shutdown of the UDEX system unit also resulted in a reduction in Chevron's benzene storage and also barge and ship loading. The UDEX system included a cyclohexane unit, which was shut down and replaced with a new cyclohexane unit.

Chevron was issued an air permit authorizing its maintenance, startup, and shutdown activities in September 2012. This action required controls for equipment purging and degassing activities.

INEOS

INEOS bought Chevron's cumene unit and associated tanks in 2005. INEOS was issued an air permit authorizing its maintenance, startup, and shutdown activities in May 2009. This permit action specified controls for tank landings and clearings, vacuum trucks, and frac tanks.

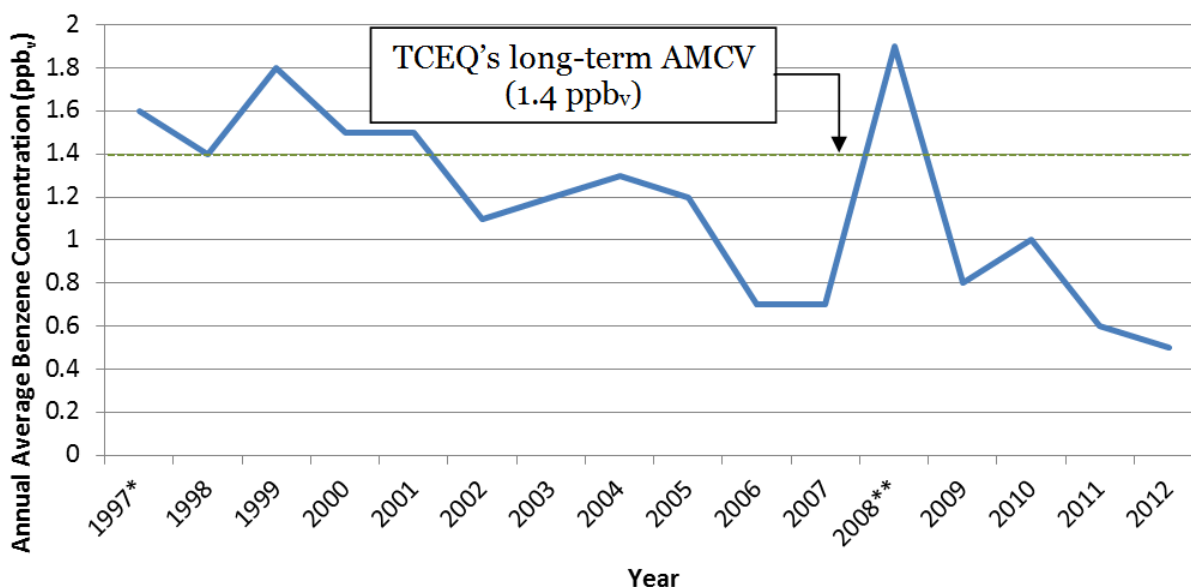
Monitored Decline in Ambient Benzene Concentrations

As discussed previously, the annual average benzene concentration exceeded or equaled the long-term, health based AMCV for benzene from 1997 to 2001 at the City Service Center monitor. Subsequently, the annual average benzene concentrations for the years 2002 through 2005 were above the previous long-term AMCV of 1.0 ppb_v, but had decreased and were below the current long-term AMCV of 1.4 ppb_v. Since 2005, monitored concentrations have decreased significantly, and the 2006 and 2007 annual

average benzene concentrations were below both old and new long-term AMCVs; however, the 2008 annual average benzene concentration exceeded the current long-term AMCV with a value of 1.9 ppb_v, which was the highest annual average concentration observed at that monitor. Thus, Port Arthur remained listed on the APWL, and the TCEQ encouraged further reductions in the area.

Since 2008, the annual average concentrations have decreased once again, and the 2009 and 2010 annual average benzene concentrations were 0.8 ppb_v and 1.0 ppb_v, respectively. Figure 7, *Annual Average Benzene Concentrations at Port Arthur's City Service Center Monitor*, illustrates the annual average concentrations monitored over time.

Figure 7: Annual Average Benzene Concentrations at Port Arthur's City Service Center Monitor



*Benzene monitoring commenced in May 1997, therefore this is an incomplete year of data.

**The 2008 annual average was driven in large part by two very high exceedance days, one that was likely due to a spill and the other from start-up operations after Hurricane Ike.

The annual average benzene concentration at the City Service Center monitor was 0.6 ppb_v in 2011. This level is below the monitored concentrations that occurred during the plant shutdown at Flint Hills in 2006-2007. Further, the 2012 annual average benzene concentration is once again below the long-term, health-based AMCV at 0.5 ppb_v and is the lowest annual average concentration of benzene at the City Service Center since monitoring commenced in 1997. Thus, the City Service Center monitor has remained below TCEQ's screening level for four consecutive years. Further, average benzene concentrations have been below the AMCV for ten of the last eleven years.

In addition, Flint Hill's fence-line monitoring data also shows improvement. The company conducts monitoring upwind and downwind of its facility.⁵ Both monitors are on industrial property. Data show that annual average benzene concentrations have trended downward at the two Flint Hills fence-line monitors. At the monitor nearest to a residential neighborhood (200 yards away), the decrease in annual average benzene concentrations has been statistically-significant, and the average benzene concentrations for the last three years have been below the long-term AMCV of 1.4 ppb_v. The other monitor (surrounded by industrial facilities and over one-half mile from the nearest residences) is also showing a decrease. While the decrease in benzene concentrations at the second monitor is not statistically-significant, the annual average benzene concentration in 2012 was below benzene's long-term AMCV of 1.4 ppb_v.

Health Effects Reviews of Ambient Monitoring Data

The TCEQ's Toxicology Division has conducted [health effects reviews](#) each year that stationary ambient air monitoring occurred in the Port Arthur area. Because annual average benzene concentrations exceeded the 1.0 ppb_v AMCV, the TCEQ encouraged benzene reductions for many years.

The Toxicology Division noted in its health effects evaluation of the 2005 ambient air data that one of Huntsman's fence-line monitors is located less than a quarter mile from the nearest neighborhood, and that the 2005 annual average benzene concentration was 3.2 ppb_v.

The Toxicology Division, as discussed previously in this document, derived a new long-term, health based AMCV of 1.4 ppb_v for benzene. In its review of the 2007 ambient air network monitoring data, the Toxicology Division noted that the annual average benzene concentration at the City Service Center monitor was 0.7 ppb_v (below the current AMCV) and that annual average levels had been below the AMCV since 2002 and not a health concern. The Toxicology Division did, however, note that the 2008 annual average benzene concentration was considered a concern. As discussed previously, the 2008 annual average benzene concentration exceeded the long-term AMCV at 1.9 ppb_v. The Toxicology Division also noted that the 2008 annual average benzene concentration at the City Service Center monitor was the highest annual value in the 2008 ambient air network.

Since 2009, the Toxicology Division has noted that annual average benzene concentrations have once again been below the AMCV and that concentrations would not be expected to cause chronic adverse human health or vegetative effects.

TCEQ Determines that Monitored Concentrations are Below a Level of Potential Concern

The Port Arthur area has several stationary monitors that collect ambient benzene concentration data. The TCEQ listed Port Arthur on the APWL due to persistent, elevated annual average benzene concentrations at the City Service Center monitor.

⁵ Having data from an upwind and a downwind monitor is useful to pinpoint emission sources and help ensure proper operation of equipment; however, both monitors are located on industrial property and are therefore not an indicator of potential exposures of air toxics to the general public.

Several companies in the APWL area have implemented improvements to reduce benzene emissions, and data from the TCEQ's City Service Center monitor show that annual average benzene concentrations have been below the TCEQ's screening value for four consecutive calendar years and ten of the last eleven calendar years. Therefore, the TCEQ determines that benzene concentrations can reasonably be expected to be maintained below levels of potential concern and proposes to remove Port Arthur from the APWL. While the TCEQ is proposing to remove Port Arthur from the APWL, monitoring in the area will continue to ensure that no issues arise.

Public Comment Period

The TCEQ will accept comments on the proposed delisting of Port Arthur from the APWL, which is currently listed for the air toxic benzene. Interested persons may send comments to APWL@tceq.texas.gov or may send comments to the APWL coordinator at the following mailing address:

Ms. Tara Capobianco, P.E.
Air Pollutant Watch List Coordinator
Texas Commission on Environmental Quality
6300 Ocean Drive, NRC Building
Suite 1200, Unit 5839
Corpus Christi, Texas 78412-5839

The comment period began on August 28, 2013, and the TCEQ will accept comments through October 11, 2013. Any questions regarding the proposed delisting or the APWL process may be forwarded to Ms. Capobianco at (361) 825-3386.

Public Meeting

The TCEQ will conduct a public meeting to receive comments on the proposed delisting of Port Arthur from the APWL. The public meeting will be held on Tuesday, October 8, 2013, at 6:00 p.m. in the Lucy Stiefel Gallery of the Port Arthur Public Library, located at 4615 9th Avenue (at Highway 73), Port Arthur, Texas. The TCEQ will give a short presentation of the delisting at 6:00 p.m. After a short question and answer session, the TCEQ will officially open the public meeting. The public meeting will be structured for the receipt of oral or written comments by interested persons.

Individuals may present statements when called upon in order of registration. Open discussion within the audience will not occur during the public meeting; however, the TCEQ's staff will be available to discuss the proposed delisting and answer any additional questions after the meeting.

Persons who have special communication or other accommodation needs who are planning to attend the meeting should contact the Office of the Chief Clerk at (512) 239-3300 or 1-800-RELAY-TX (TDD) at least one week prior to the meeting.