

# **Report on the Air Pollutant Watch List Areas in Texas**

*Prepared by the*

*Texas Commission on  
Environmental Quality*

*Chief Engineer's Office*

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# Executive Summary

The Texas Commission on Environmental Quality (TCEQ) established the Air Pollutant Watch List (APWL) for areas of the state where air toxics were monitored at a level of a potential health concern. The purpose of the APWL is to reduce ambient air toxic concentrations below levels of concern by focusing TCEQ resources and heightening awareness for interested parties in areas of concern. During the 82<sup>nd</sup> Regular Session, the Texas Legislature affirmed the TCEQ's obligation to regulate air toxic emissions with the passing of House Bill 1981, which requires the TCEQ to establish and maintain the APWL.

There are 11 active APWL areas throughout the state. The TCEQ adds areas to and removes areas from the APWL based, primarily, on its evaluation of ambient air monitoring data. The TCEQ collects ambient air monitoring data by deploying its mobile monitoring team to obtain specific data and from its extensive network of stationary ambient air monitors.

The TCEQ has not identified any potential new areas to investigate or consider for addition to the APWL since it released the last APWL report in 2010. The TCEQ has not removed any areas from the APWL since the release of the 2010 report; however, the TCEQ proposed the delisting of Bastrop from the APWL for hydrogen sulfide in December 2011. Also, the TCEQ has observed that pollutants in some APWL areas, such as benzene in Galena Park and Port Arthur, appear to be trending downward, and the TCEQ continues to evaluate monitoring data and encourage reductions in these and other APWL areas. For other pollutants of concern, such as hydrogen sulfide in El Paso, significant reductions are needed. Additionally, the TCEQ conducted a reevaluation of the boundaries for the two APWL areas in Harris County, Lynchburg Ferry and Galena Park, to more effectively implement the APWL program. The TCEQ proposed to revise the Galena Park boundary in August 2011 and proposed to revise the Lynchburg Ferry boundary in October 2011. The TCEQ finalized the Galena Park boundary in December 2011 and is reviewing comments received on the Lynchburg Ferry boundary.

Since the last report, the TCEQ has made improvements to the overall APWL process. In 2010, the Chief Engineer designated an APWL Coordinator to specifically address areas of concern. This staff member is solely dedicated to the implementation and oversight of the APWL program. In addition, the Chief Engineer's Office formed a work group with multiple staff members from different areas of the TCEQ and developed a draft APWL protocol to clearly define APWL procedures, making a consistent and transparent APWL process. The Chief Engineer's Office made the draft APWL protocol available for public comments during a 60-day period and finalized the protocol in February 2012.

# Monitoring for Air Toxics

Air toxics are pollutants known or suspected to cause serious health effects at high concentrations of exposure. Some air toxics are known or suspected to cause cancer. The TCEQ monitors and evaluates ambient air concentrations of air toxics, such as certain sulfur compounds, metals, volatile organic compounds, carbonyls, and polycyclic aromatic hydrocarbons. Texas has the most extensive network of ambient air toxics monitors in the country, collecting data on approximately 150 different air toxics from approximately 80 stationary monitoring sites.<sup>1</sup> The TCEQ Toxicology Division (TD) evaluates air toxics monitoring data (obtained from the stationary monitors and also from the deployment of mobile monitoring projects) to determine the potential to cause short- and long-term health and welfare effects (including vegetation effects and odors).

The TCEQ established ambient state regulatory standards for two air toxics—sulfur dioxide and hydrogen sulfide. For all other air toxics, the TD establishes pollutant-specific air quality screening levels known as Air Monitoring Comparison Values (AMCVs) to protect human health and welfare.<sup>2</sup> The TCEQ evaluates areas for inclusion on the APWL where ambient air monitoring indicates persistent concentrations above state standards or AMCVs.

The TCEQ does not use the APWL as a means to attain the federal ambient standards known as the National Ambient Air Quality Standards (NAAQS). Each state is required to develop a State Implementation Plan (SIP) to demonstrate how it will meet the NAAQS for the six criteria pollutants. More information on the [Texas SIP](#) is available on the TCEQ Web site. Sulfur dioxide is an air toxic for which the TCEQ adopted state regulatory standards and is a criteria pollutant for which the U.S. Environmental Protection Agency has promulgated NAAQS. The TCEQ will implement the APWL program to address exceedances of the state standard and would implement the Texas SIP for attainment of the NAAQS, as needed.

## APWL Overview

The TCEQ uses the APWL to identify companies that have the potential to contribute to elevated ambient concentrations of air toxics and work with them to reduce emissions. The TCEQ may conduct focused investigations for companies located in an APWL area and may provide assistance to small businesses and local governments to identify strategies for reducing APWL contaminants. Air permitting applications submitted to the TCEQ by companies located in APWL areas receive additional scrutiny, and companies requesting increases of APWL pollutants are generally required to provide equivalent reductions for those increases. The TCEQ may also use discretion to assess appropriate penalties in enforcement cases to discourage unauthorized releases of APWL pollutants and ensure that companies achieve compliance in a timely manner. In

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<sup>1</sup> The location of stationary monitors and air toxics measured at each monitor are available on the TCEQ's [Air Monitoring Site Information Map](#) (GeoTAM Viewer).

addition, the TCEQ uses the APWL to notify the public and other interested parties of elevated concentrations and to engage stakeholders in the APWL process.

The APWL has 11 active areas for nine different air toxics, as shown in Table 1, *Active APWL Areas*. Figure 1, *Active APWL Area Locations*, is a map that illustrates the location of the 11 active areas in Texas. This APWL report provides the background for each APWL area and pollutant and an update of each area since the release of the last APWL report.

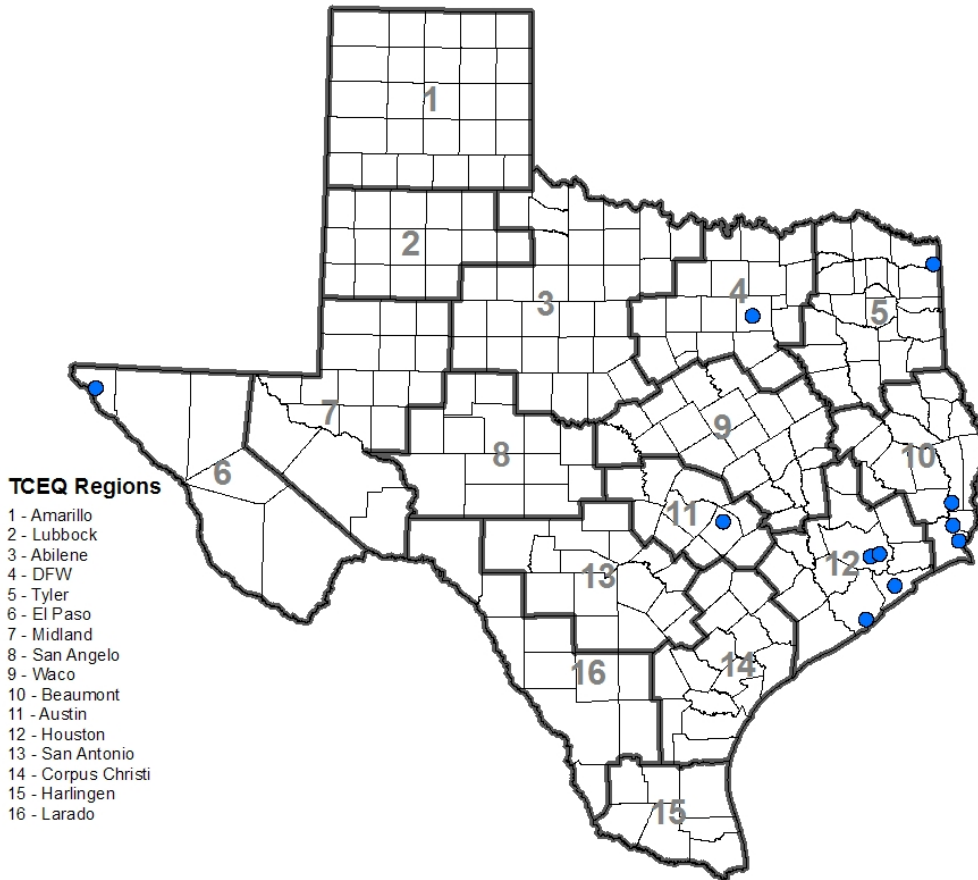
**Table 1: Active APWL Areas**

TCEQ Region	City	County	APWL Number	Pollutant(s)
4	Dallas	Dallas	APWL 0401	Nickel
5	N/A <sup>3</sup>	Bowie and Cass	APWL 0501	Hydrogen Sulfide
6	El Paso	El Paso	APWL 0601	Hydrogen Sulfide
10	Evadale	Jasper	APWL 1001	Hydrogen Sulfide
10	Beaumont	Jefferson	APWL 1002	Sulfur Dioxide
10	Port Arthur	Jefferson	APWL 1003	Benzene
11	Bastrop	Bastrop	APWL 1101	Hydrogen Sulfide
12	Freeport	Brazoria	APWL 1201	Arsenic, Cobalt, Nickel, and Vanadium
12	Texas City	Galveston	APWL 1202	Propionaldehyde, Benzene, and Hydrogen Sulfide
12	Lynchburg Ferry Area	Harris	APWL 1204	Styrene
12	Galena Park	Harris	APWL 1206	Benzene

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<sup>2</sup> Information on [AMCVs](#), including the list of AMCVs used in the review of ambient air monitoring data, is available on the TCEQ Web site.

Figure 1: Active APWL Area Locations



## Active APWL Areas

### *Region 4*

#### **Nickel in Dallas, Dallas County ([APWL 0401](#))**

The TCEQ listed an area located in Dallas on the APWL for nickel in 2004. Nickel is a metal that is used extensively in making stainless steel and other alloys. Nickel is emitted into the air from a wide variety of industrial sources, such as iron and steel foundries, coal- and oil-fired power plants, and electroplating facilities. Some forms of nickel are more toxic than others, and metallic nickel, which is considered a relatively less toxic and noncarcinogenic form of nickel, is the form that is primarily emitted in the Dallas APWL area. Adverse health effects for metallic nickel can include respiratory

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<sup>3</sup> The company that the TCEQ identified as the primary contributor to the hydrogen sulfide concentrations in APWL 0501 is located in Cass County near Queen City and Domino. The APWL boundary encompasses

symptoms and are related to exposure to the small particle sizes of nickel, which are taken deep into the lungs.<sup>4</sup>

The City of Dallas Air Pollution Control Section operates the Dallas-Morrell air monitoring site ([AQS number 481130018](#)), located at 3049 Morrell Avenue. For many years, total suspended particulate (TSP) was collected and the nickel portion of the TSP was speciated and measured. Therefore, the monitored nickel concentrations incorporated all particle size fractions of the nickel particulate. On August 17, 2010, the TSP sampler was replaced with a sampler that measures particulate matter with diameters less than or equal to 10 micrometers, or PM<sub>10</sub>. The new sampler takes measurements that better represent the particle size fractions that could be inhaled (respirable particle size fractions) and is more comparable to the long-term nickel AMCV, which is also based on respirable particle size fractions of nickel particulate. The TCEQ finalized the long-term nickel AMCV of 0.059 micrograms per cubic meter (µg/m<sup>3</sup>) on June 1, 2011.

Annual average concentrations of nickel TSP (for multiple years of data) at the Dallas-Morrell air monitoring site exceed the newly established long-term nickel AMCV of 0.059 µg/m<sup>3</sup>.<sup>5</sup> Specifically, the annual average nickel TSP concentrations for the years 1987 through 1996 exceed the long-term nickel AMCV. The TCEQ determined that Dal-Chrome Company, an automotive chrome bumper recycling facility located at 3044 Morrell Avenue in Dallas, is the predominant source of nickel emissions in the vicinity of the Dallas-Morrell monitor. In 1995, Dal-Chrome Company installed a filtration room to control nickel emissions generated from its bumper polishing stations. As a result, nickel TSP concentrations at the Dallas-Morrell site began to decrease. The annual average nickel TSP concentrations were below the long-term nickel AMCV in 1997 and 1998; however, nickel TSP concentrations subsequently increased. The annual average nickel TSP concentration was above the long-term nickel AMCV again in 1999. Annual average nickel TSP concentrations consistently remained above the long-term nickel AMCV through 2009, which was the last complete calendar year of TSP sampling.

Further, data from the new PM<sub>10</sub> sampler indicates that average concentrations of nickel PM<sub>10</sub> are above the long-term nickel AMCV. As stated previously, the PM<sub>10</sub> sampler was installed in August 2010. The TD calculated the rolling ten-month average nickel PM<sub>10</sub> concentration for September 17, 2010, to June 26, 2011.<sup>6</sup> The rolling ten-month average concentration was 0.075 µg/m<sup>3</sup>, which exceeds the long-term AMCV of 0.059 µg/m<sup>3</sup>.

The TCEQ continues to encourage reductions in nickel emissions in the Dallas-Morrell APWL area. The most recent site inspection at Dal-Chrome Company was conducted by

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an area over Bowie and Cass counties.

<sup>4</sup> This APWL report does not provide an exhaustive list of potential health effects that could result from all levels of exposure to air toxics. This APWL report includes only a brief discussion of the primary health considerations that are related to the specific quantities of the contaminants of concern that have been monitored in the APWL areas.

<sup>5</sup> As discussed previously, the long-term AMCV is based on respirable particle size fractions, not TSP. Comparing TSP concentrations to the long-term AMCV established for respirable particle size fractions is considered conservative.

the City of Dallas Air Pollution Section on April 11, 2011. No excess emissions were observed and no violations were noted during the investigation. The TCEQ has formed an APWL Work Group in accordance with the APWL protocol to determine the best course of action to address this APWL area. The TCEQ will continue to monitor and assess nickel at the Dallas-Morrell site, and this area will remain on the APWL.

## ***Region 5***

### **Hydrogen Sulfide in Bowie and Cass Counties ([APWL 0501](#))**

Hydrogen sulfide is a colorless gas with a characteristic odor of rotten eggs, and people can smell it at low levels. Some individuals can detect hydrogen sulfide in concentrations as low as 0.005 parts per million by volume (ppm<sub>v</sub>). Hydrogen sulfide occurs naturally in crude oil and natural gas and is also produced by anaerobic digestion of organic matter. Exposure to low concentrations of hydrogen sulfide may result in adverse effects, such as eye, nose, and throat irritation. Many industrial processes emit hydrogen sulfide, including petroleum refining, food processing, and paper milling.

The TCEQ added an area located in Bowie and Cass Counties to the APWL in 1999 following a U.S. Environmental Protection Agency study. The study measured concentrations of hydrogen sulfide exceeding the 30-minute state regulatory hydrogen sulfide standard of 0.08 ppm<sub>v</sub> near the International Paper Company near Domino. In September 2009, the TCEQ Small Business and Local Government Assistance staff conducted air sampling using a Jerome analyzer. Staff did not conduct testing to ensure compliance with the state 30-minute average hydrogen sulfide standard; however, one instantaneous concentration measured with the Jerome analyzer indicated that the concentration may be above the state standard. The TCEQ has not conducted additional monitoring of this site.

This area will remain on the APWL for hydrogen sulfide and the TCEQ will continue to encourage hydrogen sulfide reductions.

## ***Region 6***

### **Hydrogen Sulfide in El Paso, El Paso County ([APWL 0601](#))**

The TCEQ listed an area located in El Paso on the APWL for hydrogen sulfide in 2004. Multiple exceedances of the 30-minute state regulatory hydrogen sulfide standard of 0.08 ppm<sub>v</sub> have been monitored every year at the CAMS 36 El Paso Lower Valley Sounder air monitoring site since the TCEQ commenced monitoring in 2004. The El Paso Lower Valley Sounder air monitor ([AQS number 481410054](#)) is located at 8470 Plant Road and is approximately one-tenth of a mile from the U.S. and Mexico border. The Juarez Municipal Water and Wastewater Department (JMAS by its Spanish acronym) operates the North Wastewater Treatment Plant (NWWTP), which the TCEQ and other agencies previously identified as the primary hydrogen sulfide source

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<sup>6</sup> The TD has conducted multiple [health effects reviews](#) of the Region 4 ambient air network monitoring data, which are available on the TCEQ's Web site. The Region 4 health effects reviews contain further

impacting the monitor. The NWWTP is located south of the U.S. and Mexico border, but is located approximately one mile northwest of the monitor. Figure 2, *El Paso Lower Valley Sounder Monitor and the NWWTP*, shows the location of the El Paso Lower Valley Sounder monitor (the green and yellow circle<sup>7</sup>) in relation to the NWWTP.

**Figure 2: El Paso Lower Valley Sounder Monitor and the NWWTP**



The NWWTP has several design issues that contribute to the elevated concentrations of hydrogen sulfide. The Texas Department of State Health Services (DSHS) conducted an evaluation to determine whether working or living near the NWWTP might affect public health. The [2005 DSHS report](#) states that exposure to levels of hydrogen sulfide measured in the El Paso Lower Valley neighborhood could result in adverse health effects for sensitive individuals. The report explained the issues with the NWWTP and the actions taken by JMAS at that time. Elevated hydrogen sulfide levels were the likely result of the dumping of wet sludge piles on the NWWTP property and inadequate sewer line slopes from residences to the NWWTP, resulting in sewage remaining in the lines longer and allowing anaerobic bacteria more time to break down the sewage and produce hydrogen sulfide. Additionally, the NWWTP is operated with a primary treatment process but does not have a secondary treatment process, such as an anaerobic digester. The report noted that, in 2004, the JMAS began to transfer sludge off site. The report recommended that hydrogen sulfide emissions be reduced further.

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explanation of the Dallas-Morrell nickel trends and analyses.

The NWWTP operates over capacity and the facility cannot process all of the biosolids from the sewage. The JMAS intends to perform long-term improvements to the NWWTP, such as constructing an anaerobic digester, and has already conducted several improvements to the NWWTP since the DSHS issued its report. The JMAS made improvements to address the sludge issue by constructing a duct to convey the biosolids to another facility. The system is approximately six miles in length and has been in full operation since July 2011.

The JMAS has made several other improvements over the past few years, which specifically mitigate hydrogen sulfide emissions from the NWWTP. In 2005, JMAS began covering critical areas and controlling the associated emissions. Additionally, in 2006 and 2007, JMAS changed the chemicals in the primary treatment process to mitigate hydrogen sulfide emissions from the wastewater stream generated at the NWWTP. The JMAS and the TCEQ El Paso Regional Office have begun a dialogue to discuss other options for improving the NWWTP.

Table 2, *Hydrogen Sulfide Exceedances at the El Paso Lower Valley Sounder Monitor*, illustrates the number of exceedances of the TCEQ hydrogen sulfide standard at the El Paso Lower Valley Sounder air monitoring station. In 2005, there were 5,196 exceedances of the standard. From 2005 to 2006, the number of exceedances decreased by 45 percent (2,855 exceedances). The number of exceedances in each of the years 2007 through 2010 was significantly lower than in 2006, yet fluctuated from year to year. In 2011, the number of exceedances of the standard and number of days with at least one exceedance of the standard increased from the previous year.

**Table 2: Hydrogen Sulfide Exceedances at the El Paso Lower Valley Sounder Monitor**

Year	Number of Exceedances of the Standard	Number of Days with at Least One Exceedance	Highest Concentration (ppm <sub>v</sub> )
2004*	2,921	90	0.6663
2005	5,196	184	1.000
2006	2,855	138	1.034
2007	376	54	0.3988
2008	635	57	0.5584
2009	218	33	0.6652
2010	145	21	0.2547
2011	262	23	0.2215

\*Hydrogen sulfide monitoring commenced in July, 2004. As such, this is an incomplete year of data.

The TCEQ continues to have concerns that the frequency and intensity of hydrogen sulfide concentrations measured at the monitor have the potential for acute health effects and odors. Additionally, the monitoring data continues to demonstrate that

<sup>7</sup> Specific, detailed information about individual monitors can be found using the [GeoTAM Viewer](#).

ambient hydrogen sulfide concentrations frequently exceed the state standard. Therefore, this area will remain on the APWL. The TCEQ will continue to monitor the area and encourage hydrogen sulfide reductions.

## ***Region 10***

### **Hydrogen Sulfide in Evadale, Jasper County ([APWL 1001](#))**

The TCEQ listed an area located in Evadale on the APWL as a result of a 2003 mobile monitoring trip. Data from the monitoring trip demonstrated that measured levels of hydrogen sulfide exceeded the 30-minute state regulatory standard of 0.08 ppm<sub>v</sub> downwind of MeadWestvaco Texas, LP (MeadWestvaco). The TCEQ also documented exceedances of the state standard during a subsequent mobile monitoring trip in 2004.

MeadWestvaco is a pulp and paper mill located at 1913 Farm-to-Market Road 105 in Evadale. The TCEQ determined that the primary sources of hydrogen sulfide were the A1 Basin wastewater ponds. MeadWestvaco staff noted that modifications were made to the wastewater flow and clarifiers were added to the ponds after the exceedances were measured; however, the TCEQ measured additional exceedances of the standard after the modifications were made, during mobile monitoring trips in 2005, 2006, 2007, and 2008 (the most recent mobile monitoring trip). Because of the documented concentrations downwind of MeadWestvaco that exceed the state standard, Evadale will remain on the APWL for hydrogen sulfide and the TCEQ will continue to encourage hydrogen sulfide reductions.

### **Sulfur Dioxide in Beaumont, Jefferson County ([APWL 1002](#))**

The TCEQ listed an area located in Beaumont on the APWL for sulfur dioxide in 2003. Sulfur dioxide is a colorless, odorous gas and is commonly emitted from coal- and oil-fired power plants. Inhaling elevated concentrations of sulfur dioxide may result in a burning sensation in the nose, throat, and lungs.

The TCEQ currently operates two monitors that measure sulfur dioxide concentrations in Beaumont: the Beaumont Mary monitor ([AQS number 482451050](#)), located at 414 Mary Street, and the Beaumont Downtown monitor ([AQS number 482450009](#)), located at 1086 Vermont Avenue. The Beaumont Mary monitor was activated on October 13, 2010. Prior to activation of the Beaumont Mary monitor, the TCEQ operated the Carroll Street Park monitoring site (AQS number 482450020) at Grant and Grove Streets from November 18, 1997, to July 30, 2008.

Since 1997, the Carroll Street Park monitor and Beaumont Downtown monitor have measured exceedances of the 30-minute sulfur dioxide state regulatory standard of 0.32 ppm<sub>v</sub>. Specifically, since this area was added to the APWL in 2003, exceedances of the state standard were monitored at Carroll Street Park in 2006 and 2007; exceedances were monitored at Beaumont Downtown in 2003, 2004, 2009, and 2011. The TCEQ determined that exceedances monitored at Beaumont Downtown in 2009 were a result of releases from Chemtrade Logistics. The most recent exceedances in Beaumont occurred on June 7, 2011, at Beaumont Downtown and appear to be the result of a

complete shutdown following a power outage at Chemtrade Logistics. Table 3, *Exceedances of the Sulfur Dioxide Standard*, illustrates the number of exceedances of the 0.32 ppm<sub>v</sub> standard, the number of days over which the exceedances occurred, and the highest concentrations observed at the monitors.

**Table 3: Exceedances of the Sulfur Dioxide Standard**

Year	Monitor	Number of Exceedances	Number of Days with an Exceedance	Highest Concentration (ppm <sub>v</sub> )
2003	Beaumont Downtown	27	2	0.6616
2004	Beaumont Downtown	21	1	0.5119
2006	Carroll Street Park	9	1	0.5244
2007	Carroll Street Park	3	1	0.3828
2009	Beaumont Downtown	16	2	0.4691
2011	Beaumont Downtown	16	1	0.5295

In addition to the stationary monitoring data, the TCEQ monitored sulfur dioxide levels above the state standard during mobile monitoring trips from 2003 through 2007. A member of the monitoring staff required medical attention during the 2003 mobile monitoring trip, which was downwind of Chemtrade Logistics.

The TCEQ will continue to monitor and evaluate the Beaumont APWL area. This area will remain on the APWL, and the TCEQ continues to encourage sulfur dioxide emission reductions.

### **Benzene in Port Arthur, Jefferson County ([APWL 1003](#))**

Benzene is a clear liquid that readily evaporates into the air and is a widely used industrial chemical. It is used to make glues, lubricants, and certain drugs, and it is also contained in crude oil and gasoline. Several agencies, such as the TCEQ, the U.S. Environmental Protection Agency, the National Toxicology Program, and the International Agency for Research on Cancer, have designated benzene as a human carcinogen.

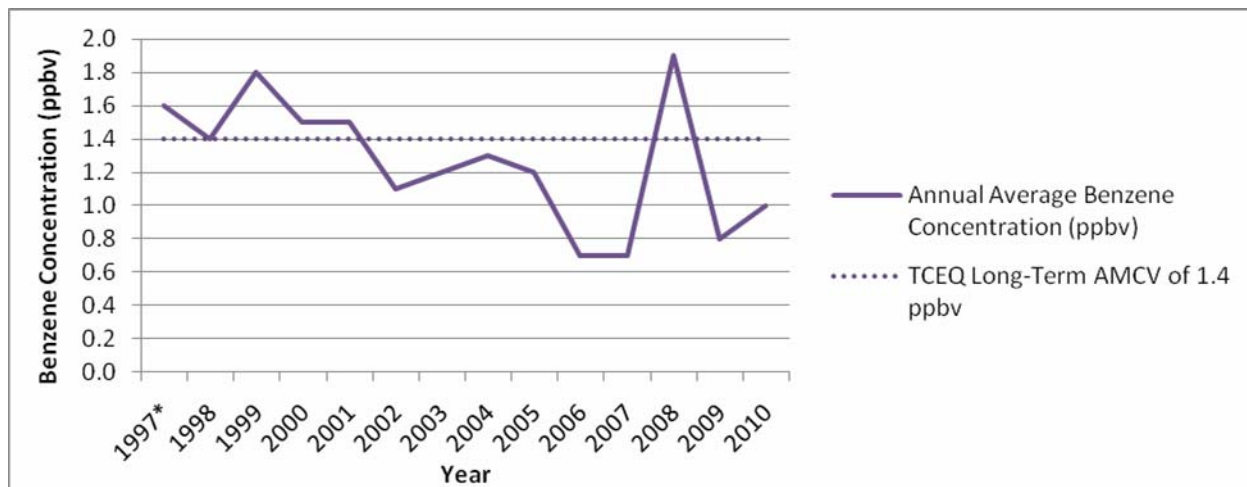
Since May 9, 1997, the TCEQ has conducted ambient monitoring for benzene at the Port Arthur City Service Center ([AQS number 482450019](#)), located at 201 H.O. Mills Boulevard. The TCEQ listed an area located in Port Arthur on the APWL in 2001. At the time of the Port Arthur APWL listing, the long-term benzene AMCV was 1.0 part per billion by volume (ppb<sub>v</sub>). The TD reevaluated the long-term benzene AMCV in 2007,

using its new, peer-reviewed and state-of-the science screening level guidelines, and established the current long-term AMCV of 1.4 ppb<sub>v</sub>.<sup>8</sup>

The TCEQ listed Port Arthur on the APWL for benzene in 2001 because the annual average benzene concentrations for each calendar year exceeded the then-current long-term AMCV of 1.0 ppb<sub>v</sub>; however, the average concentrations also equaled the current long-term AMCV of 1.4 ppb<sub>v</sub> in 1998 and exceeded 1.4 ppb<sub>v</sub> for the years 1999 through 2001. The annual average benzene concentrations for the years 2002 through 2005 were above the previous long-term AMCV of 1.0 ppb<sub>v</sub>, but were below the current long-term AMCV of 1.4 ppb<sub>v</sub>. 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<sub>v</sub>, which was the highest annual average concentration observed at that monitor.

Since 2008, the annual average concentrations have decreased once again, and the 2009 and 2010 annual average benzene concentrations were 0.8 ppb<sub>v</sub> and 1.0 ppb<sub>v</sub>, respectively. Figure 3, *Annual Average Benzene Concentrations at Port Arthur's City Service Center Monitor*, illustrates the annual average concentrations monitored over time.

**Figure 3: Annual Average Benzene Concentrations at Port Arthur's City Service Center Monitor**



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

The TCEQ will continue to evaluate the Port Arthur APWL area and supports all efforts to ensure that the annual average benzene concentration remains below the long-term AMCV of 1.4 ppb<sub>v</sub>. The TCEQ continues to monitor ambient benzene concentrations in Port Arthur, which remains on the APWL.

<sup>8</sup> An annual average concentration of benzene above 1.4 ppb<sub>v</sub> would not necessarily result in adverse health effects. 1.4 ppb<sub>v</sub> is a screening value, and an exceedance of a screening value would require the

## ***Region 11***

### **Hydrogen Sulfide in Bastrop, Bastrop County ([APWL 1101](#))**

The TCEQ listed an area located in Bastrop on the APWL for hydrogen sulfide in 2007. In February 2006 and March 2007, the TCEQ conducted mobile monitoring downwind of Griffin Industries, LLC (Griffin Industries), located at 264 Farm-to-Market Road 2336 in Bastrop. During both mobile monitoring trips, the TCEQ monitored hydrogen sulfide concentrations that exceeded the 30-minute state regulatory standard of 0.08 ppm<sub>v</sub>. The highest 30-minute concentration monitored during the TCEQ's March 2007 trip was 1.066 ppm<sub>v</sub>. Additionally, the highest reported 5-minute average concentration during the March 2007 trip was 6.700 ppm<sub>v</sub>.

In response to a TCEQ enforcement action, Griffin Industries installed a lagoon cover and on-demand flare system to reduce hydrogen sulfide emissions from the primary anaerobic lagoon. Griffin Industries completed installation of the system in March 2007, after the TCEQ conducted its mobile monitoring trip. After this corrective action was complete, a third party contractor conducted monitoring in December 2008, in which all reported 30-minute average hydrogen sulfide concentrations were below the state regulatory standard.

The TCEQ proposed removal of the area from the APWL in September 2009; however, the TCEQ did not adopt the removal. Odor complaints were submitted to the TCEQ Region 11 Office during the 30-day public comment period, and strong odors were confirmed by TCEQ staff during a follow-up investigation near Griffin Industries on September 24, 2009. The TCEQ noted in its response to public comments on the APWL delisting that it would not remove the area from the APWL, as further investigations were warranted.

The TCEQ followed up with a site assessment and survey on August 25 – 26, 2010. Staff collected 50 instantaneous hydrogen sulfide readings using a Jerome 631X analyzer. The instantaneous hydrogen sulfide concentrations ranged from 0.002 ppm<sub>v</sub> to 0.039 ppm<sub>v</sub>, and all of these readings were below the 30-minute state standard of 0.08 ppm<sub>v</sub>. The state standard is a 30-minute time-weighted average, and the measurements collected during the August 2010 mobile monitoring trip are instantaneous measurements; however, a highest instantaneous concentration is usually higher than the highest 30-minute time-weighted average concentration. As such, comparing the highest instantaneous reading to the 30-minute state standard is considered a worst-case scenario and conservative.

The TCEQ conducted its most recent survey of Griffin Industries on October 19, 2011. The TCEQ used a Jerome 631X analyzer to sample the ambient hydrogen sulfide concentration at the facility boundary, downwind of the anaerobic lagoons. The instantaneous hydrogen sulfide reading was 0.008 ppm<sub>v</sub>, which is below 0.08 ppm<sub>v</sub>.

Griffin Industries has taken corrective action in installing the lagoon cover and flare system, and the monitored concentrations show a significant improvement. The TCEQ does not expect that hydrogen sulfide concentrations will exceed the state standard if

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TCEQ to do a more in-depth evaluation to determine the potential health effects.

the controls are operated and maintained properly. Therefore, in December 2011, the TCEQ proposed the delisting of Bastrop from the APWL.

The TCEQ acknowledges that there is a potential for nuisance odor from the site. The delisting of Bastrop from the APWL would not affect an individual's ability to report any possible odor or other complaints regarding Griffin Industries to the TCEQ Region 11 Office, which will continue to respond to all citizen complaints.

## ***Region 12***

### **Arsenic, Cobalt, Nickel, and Vanadium in Freeport, Brazoria County ([APWL 1201](#))**

Arsenic is a compound that occurs naturally in many minerals, and arsenic compounds are used as pesticides and to preserve wood. Cobalt is a metal that is naturally occurring in soil, plants, and animals and is used to produce alloys, magnets, and pigments. Vanadium is a metal that is commonly used to make alloys, such as steel. Sources of vanadium are those industries that process vanadium or make vanadium products and oil-fired combustion units. Vanadium pentoxide is used as a catalyst. Short-term exposures to elevated levels of nickel, arsenic, vanadium, or cobalt have the potential to cause respiratory symptoms and eye irritation. Chronic inhalation also may cause cancer.

The TCEQ listed an area located in Freeport on the APWL in 2005 due to elevated levels of arsenic, cobalt, nickel, and vanadium downwind of Gulf Chemical & Metallurgical Corporation (GCMC), which is located at 302 Midway Road in Freeport. The TCEQ conducted its most recent mobile monitoring trip from October 24 – 27, 2010, and determined that measured levels of nickel and vanadium exceeded their short-term AMCVs downwind of GCMC along the north fence line and that measured levels of nickel exceeded the short-term AMCV at a location approximately 1.8 miles north and downwind of GCMC. The TD determined that downwind emissions may result in unacceptably high short-term concentrations in the nearby neighborhoods and recommended decreases in emissions.

The TCEQ has identified multiple compliance problems with GCMC and is seeking injunctive relief through the Texas Attorney General's Office. The TCEQ deployed the Freeport South Avenue I monitor ([AQS number 480391012](#)) on May 25, 2011. The monitor is located at 207 South Avenue I and monitors multiple air contaminants, including arsenic, cobalt, nickel, and vanadium. Figure 4, *Freeport Monitor and GCMC*, shows the location of the monitor in relation to GCMC.

Figure 4: Freeport Monitor and GCMC



The TCEQ has identified GCMC as the source of the emissions resulting in the elevated concentrations of metals. The TCEQ staff was concerned about the accuracy of the Freeport APWL map. Therefore, in February 2011, the TCEQ revised the narrative of the map to remove all companies listed in the Freeport APWL area except GCMC.

### **Propionaldehyde, Benzene, and Hydrogen Sulfide in Texas City, Galveston County ([APWL 1202](#))**

The TCEQ added APWL area 1202 for propionaldehyde for an area located in Texas City in 2001. Subsequently, the TCEQ added benzene to the area in 2003 and hydrogen sulfide 2004.

#### **Propionaldehyde**

Propionaldehyde is a colorless liquid at room temperature with a pungent, suffocating, fruity odor. Propionaldehyde is used in the manufacture of plastics, in the synthesis of rubber chemicals, and as a disinfectant and preservative.

The TCEQ conducted mobile monitoring trips in Texas City in 2000 and 2001. The TCEQ measured propionaldehyde concentrations above the odor-based AMCV of 8 ppbv downwind of the former Union Carbide site, now Dow Chemical, located at 3301 5<sup>th</sup> Avenue South. The TCEQ subsequently listed propionaldehyde on the APWL.

Concentrations were not measured above the odor-based AMCV during the TCEQ's 2004 mobile monitoring trip. The company has performed some actions to reduce emissions. The most significant reductions were achieved from a flare project in 2005 that resulted in the control of emissions from the refining and hydrogenation area that

were previously vented to the atmosphere. This project resulted in decreased propionaldehyde emissions; however, the TCEQ conducted a mobile monitoring trip in 2008 that measured concentrations above the odor-based AMCV. Therefore, the TCEQ continues to encourage reductions from Dow Chemical and propionaldehyde will remain on the APWL.

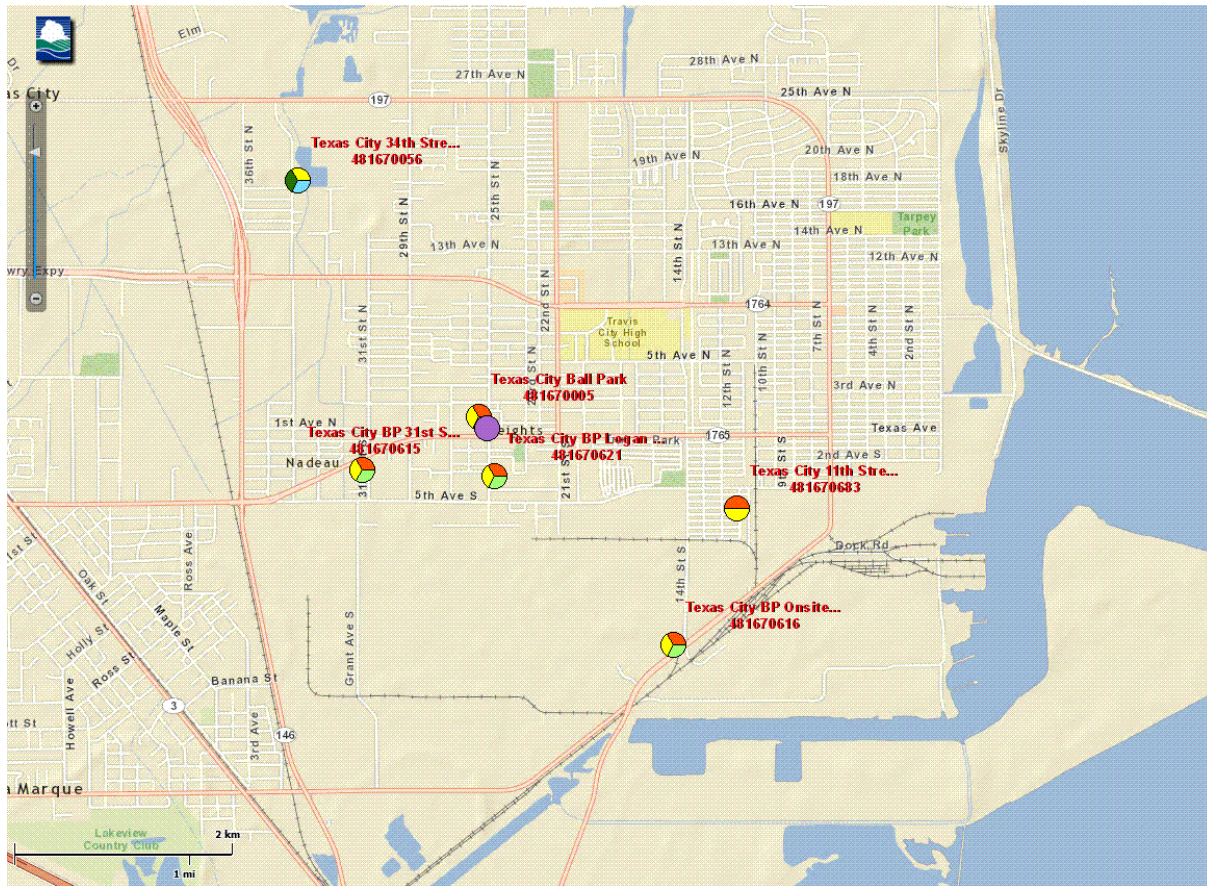
## Benzene

The TCEQ has monitored elevated benzene levels during mobile monitoring projects in Texas City since 2001. Additionally, stationary monitors in the Texas City area have historically detected ambient concentrations above the long-term AMCV of 1.4 ppb. Several sites monitor benzene in Texas City. BP Products North America, Inc. (BP), located at 2401 5<sup>th</sup> Avenue South, and Marathon Petroleum Company, LP (Marathon), located at 502 10<sup>th</sup> Street South, sponsor four monitors in the area through individual agreements with the TCEQ and/or the U.S. Environmental Protection Agency and the U.S. Department of Justice. In addition, the Texas City Industry Group and the TCEQ each operate a monitor in Texas City. Table 4, *Active Texas City Monitors*, is a list of the active Texas City monitors, and Figure 5, *Texas City Monitoring Locations*, shows the locations of those monitors.

**Table 4: Active Texas City Monitors**

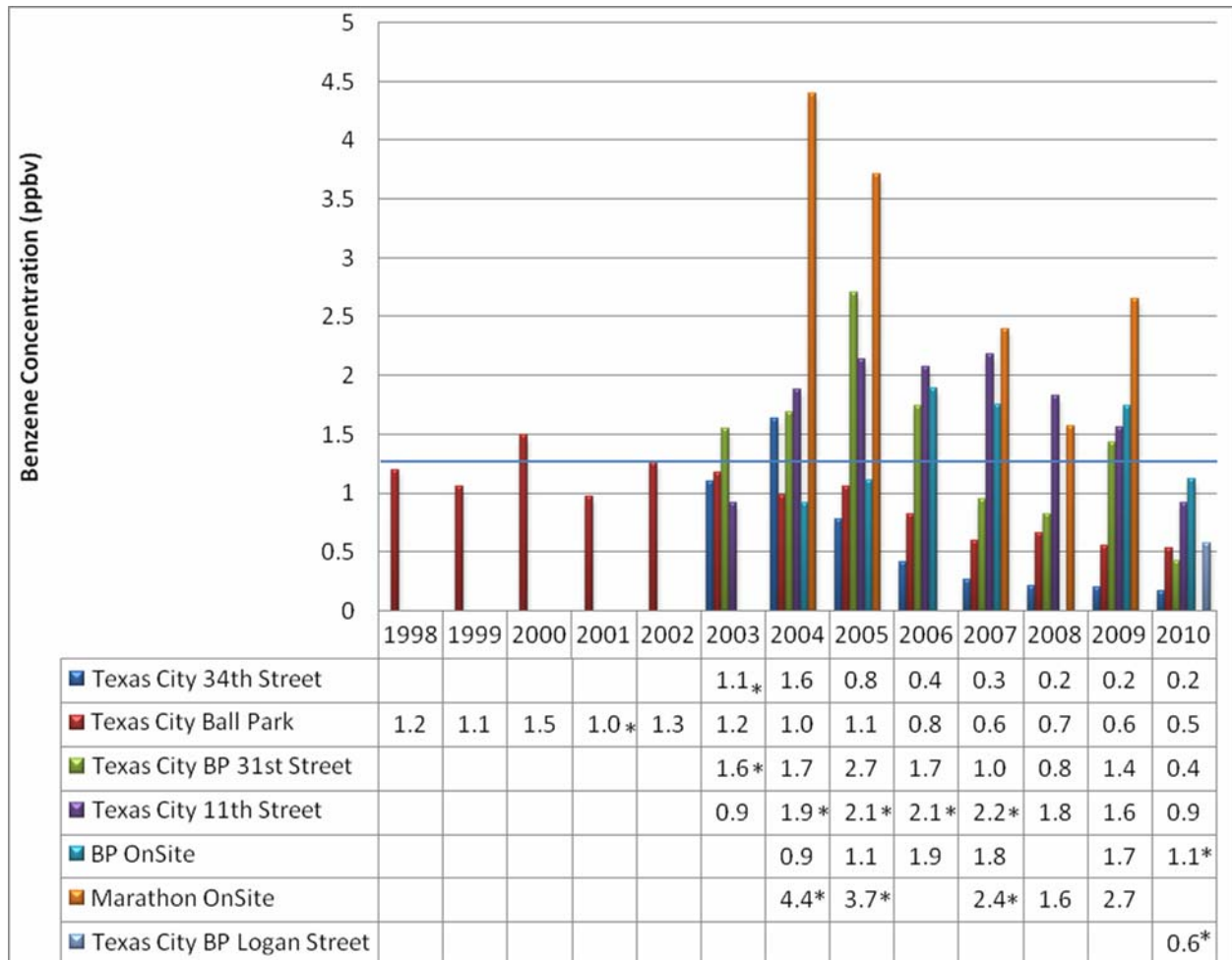
Monitoring Site Name	AQS Number	Location	Owner
Texas City BP Logan Street	<a href="#">481670621</a>	303 Logan Street	BP
Texas City BP Onsite	<a href="#">481670616</a>	BP property near Highway 197	BP
Texas City BP 31 <sup>st</sup> Street	<a href="#">481670615</a>	BP property between Texas Avenue and 5 <sup>th</sup> Avenue	BP
Texas City 11 <sup>th</sup> Street	<a href="#">481670683</a>	502 10 <sup>th</sup> Street South	Marathon
Texas City 34 <sup>th</sup> Street	<a href="#">481670056</a>	2212 North 34 <sup>th</sup> Street	Texas City Industry Group
Texas City Ball Park	<a href="#">481670005</a>	2516 ½ Texas Avenue	TCEQ

Figure 5: Texas City Monitoring Locations



In addition, Marathon operated an on-site monitor until 2009. Figure 6, *Average Benzene Concentrations in Texas City*, is a graphical representation of the average benzene concentrations from the active and historical Texas City monitors. Several of the averages represented in Figure 6 are based on an incomplete year of data (i.e., the average is based on data taken during a time period other than January 1 to December 31 of that year).

**Figure 6: Average Benzene Concentrations in Texas City**



\*These average benzene concentrations are based on an incomplete year of data.

Figure 6 illustrates that annual average benzene concentrations exceeded the 1.4 ppbv long-term AMCW for multiple years (and monitors) prior to 2010, yet the 2010 average benzene concentrations at all active monitors are below 1.4 ppbv. Texas City will remain on the APWL until the TCEQ can determine that the reduced benzene concentrations in the area will be maintained.

### Hydrogen Sulfide

The TCEQ listed hydrogen sulfide in Texas City on the APWL in response to a 2004 mobile monitoring trip that detected hydrogen sulfide levels that exceeded the 30-minute state regulatory standard of 0.08 ppm<sub>v</sub>. Stationary monitoring data from the Texas City Ball Park monitor indicated 69 exceedances of the state standard in 2004 and no exceedances from 2005 through 2008. In 2009, however, 16 exceedances of the standard were monitored. No exceedances were monitored in 2010 or 2011. The TCEQ will continue to encourage hydrogen sulfide reductions in Texas City and this pollutant will remain on the APWL.

## **Styrene in the Lynchburg Ferry Area, Harris County ([APWL 1204](#))**

The TCEQ listed an area located near Lynchburg Ferry on the APWL for styrene. Styrene is a colorless to slightly yellowish oily liquid with a sweet, sharp odor. Styrene is widely used for the manufacture of polystyrene, rubber resins, and insulators, and it is a common cross-linking agent in glass fiber-reinforced and unsaturated polyester resins. Styrene is a very odorous compound with a very low odor threshold. Exposure to low levels of styrene has the potential to cause odor-related health effects, such as nausea and headaches.

The Lynchburg Ferry monitoring site ([AQS number 482011015](#)) was previously located at 1001 B Lynchburg Road and is now located at 4407 Independence Parkway South. Styrene levels have exceeded the TCEQ odor-based AMCV of 25 ppb<sub>v</sub> since monitoring began in Lynchburg Ferry in 2003. The highest number of hourly styrene odor exceedances occurred in 2005, in which there were 92. The number of styrene odor exceedances, in general, has declined in recent years. Specifically, the number of exceedances steadily declined in the years 2006 through 2009, with 20 exceedances of the odor-based AMCV in 2009. In 2010, however, the number of styrene exceedances increased to 27. Three exceedances were monitored between January 1, 2011, and September 12, 2011.<sup>9</sup>

The Lynchburg Ferry APWL boundary includes almost 50 companies, and many of the companies in the APWL boundary do not emit styrene. The TCEQ formed a Work Group of TCEQ staff to reevaluate the Lynchburg Ferry APWL boundary. The Work Group conducted an evaluation to better identify the styrene sources that potentially contribute to the styrene exceedances at the Lynchburg Ferry monitor, and the TCEQ proposed to redefine the Lynchburg Ferry APWL boundary in October 2011 based on the Work Group's evaluation. The proposed boundary would enable the TCEQ to more effectively focus its resources to encourage styrene reductions. The TCEQ received and is evaluating public comments on its proposal.

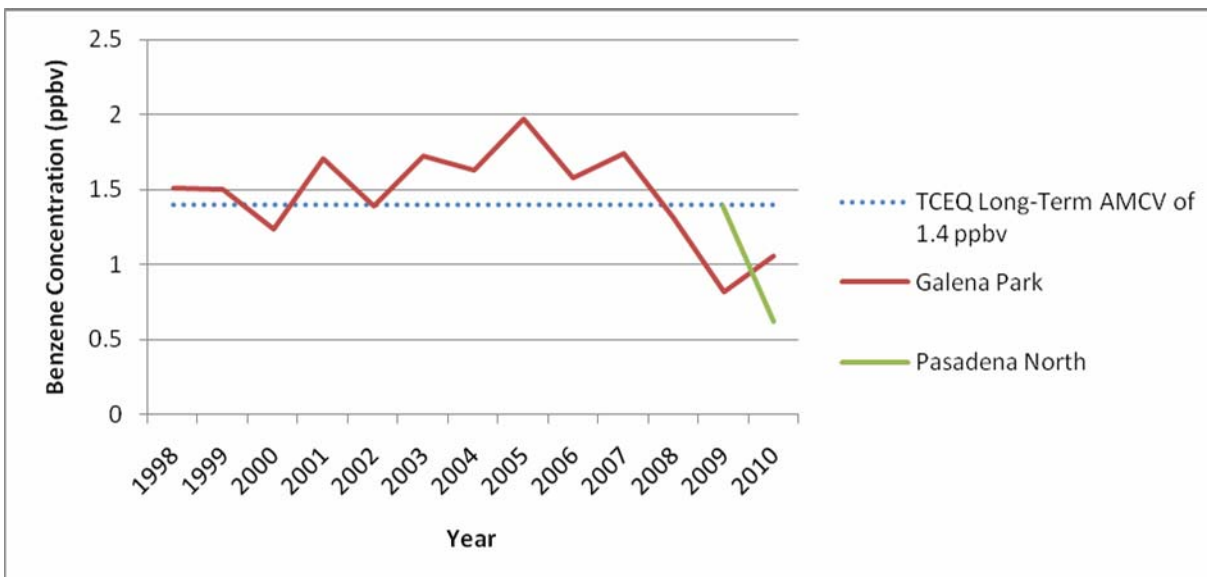
The TCEQ continues to encourage reductions of styrene in the Lynchburg Ferry area. This area will remain on the APWL.

## **Benzene in Galena Park, Harris County ([APWL 1206](#))**

The TCEQ listed the Galena Park area on the APWL for benzene in 2000. The TCEQ has conducted benzene monitoring at the Galena Park monitoring site ([AQS number 482010057](#)), located at 304 Stewart Street, since October 21, 1997. Additionally, the TCEQ has monitored benzene at the Pasadena North monitoring site ([AQS number 482011049](#)), located at 702 Light Company Service Road, since July 1, 2008. The annual average benzene concentrations exceed the long-term AMCV of 1.4 ppb<sub>v</sub> at Galena Park for several years since 1997 but are below the long-term AMCV for the years 2008 through 2010. The annual average benzene concentration at Pasadena North equaled the long-term AMCV in 2009 but was below the long-term AMCV in 2010. Figure 7, *Annual Average Benzene Concentrations in Galena Park and*

*Pasadena North*, illustrates the annual average benzene concentrations for the Galena Park and Pasadena North monitors.

**Figure 7: Annual Average Benzene Concentrations in Galena Park and Pasadena North**



The annual average benzene concentrations at the Galena Park monitor show a significant improvement in ambient benzene concentrations; however, the TCEQ continues to encourage emission reductions in the Galena Park and Pasadena North area to ensure that the annual average benzene concentrations remain below the long-term AMCV at the Galena Park and Pasadena North monitors. The TCEQ established a Work Group of TCEQ staff to reevaluate the Galena Park APWL boundary. The Work Group identified significant benzene sources located outside of the Galena Park APWL boundary that have the potential to affect the annual average benzene concentrations at the Galena Park and Pasadena North air monitoring sites. In August 2011, the TCEQ proposed to expand the Galena Park APWL boundary to include these additional sources of benzene. The TCEQ received public comments on its proposal and finalized the expanded Galena Park APWL boundary in December 2011.

In addition, the Harris County Pollution Control Services Department deployed an automatic gas chromatograph monitor at the Galena Park monitoring site, next to the existing monitor, in August 2011. Data from the new monitor will help the TCEQ better pinpoint sources that contribute to benzene levels in Galena Park.

The TCEQ continues to encourage benzene reductions in the Galena Park and Pasadena North area. The TCEQ will delist the Galena Park area from the APWL when the APWL Coordinator determines that reductions in emissions are permanent and the TD determines that there is no longer a potential for adverse health effects.

<sup>9</sup> September 12, 2011, was the last full day of monitoring conducted at 1101 B Lynchburg Road.

# Conclusions

Texas has the most extensive network of ambient air monitors in the country. Most of the monitoring data demonstrates compliance with state standards and AMCVs. For those areas that have shown persistent exceedances, the TCEQ establishes APWL areas. The APWL currently contains 11 areas. The APWL incorporates approximately 0.08 percent of the area of Texas and represents less than seven percent of the Texas monitoring network. The TCEQ has not observed persistent, elevated monitored concentrations of air toxics in any potential new APWL area.

The TCEQ has observed that monitored concentrations of APWL contaminants have shown improvements in several existing APWL areas. The TCEQ has proposed the delisting of Bastrop from the APWL for hydrogen sulfide. The TCEQ will continue to monitor and evaluate some of the other APWL areas, such as Galena Park and Port Arthur, to determine whether or not the improvements in ambient air quality are expected to be maintained.

In other areas, such as Dallas and El Paso, further reductions of air toxics must be obtained in order for ambient concentrations to be below levels of concern. The TCEQ will use the APWL process to work with companies to obtain necessary emission reductions.

The TCEQ will also use the APWL process to communicate with companies in APWL areas and to provide information to interested persons and organizations. The TCEQ provides notice of all changes on the [APWL Web site](#). The APWL Coordinator will also provide notification of APWL changes to subscribers of the TCEQ APWL email group. Interested persons may join the APWL email group by visiting the TCEQ's [GovDelivery Web site](#) and checking the box for Air Pollutant Watch List under the Air Quality Heading. The APWL Coordinator will use the APWL email group to announce any public comment periods for proposed APWL listings and delistings and any other pertinent information relating to the APWL, such as the release of APWL reports. Any concerns regarding the APWL or the APWL process may be emailed to the APWL Coordinator at [APWL@tceq.texas.gov](mailto:APWL@tceq.texas.gov).