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Natural

OUTLOOK

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY



**SUCCESS
IS IN THE AIR**
Air Quality in Texas



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Natural OUTLOOK

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Exploring environmental issues and challenges in Texas

Success Is in the Air 1

Texas has been successful in reducing air pollution in the state. This issue of *Natural Outlook* highlights some of the success stories and the TCEQ programs and initiatives that have contributed to these successes.

Terms used in this issue of *Natural Outlook* 1

Focus on Houston 2

The Houston-Galveston-Brazoria region continues to make significant progress in addressing air quality challenges.

Focus on DFW 4

Despite living in one of the fastest growing metropolitan areas in the nation, residents of the Dallas-Fort Worth area are breathing cleaner air today than they were ten, or even five, years ago.

Around the State 6

Efforts in the Beaumont-Port Arthur and El Paso areas have paid off with improved air quality.

TCEQ Programs are Key to State's Success 8

The agency has a variety of programs and initiatives that offer innovative emissions-reduction solutions.

Science and Technology Help Keep the Air Clean 11

The TCEQ employs the latest technology and scientific methods to improve the quality of the air in Texas.

Research Leads to Air Quality Improvements 12

Investment in research has helped to improve air quality in the state.

Challenges 12

Texas faces substantial air quality challenges in the next several years.

on the back

Ozone Concentrations Across the U.S.

How does Texas compare to other states in the nation?

COVER: Houston skyline

Photo ©iStockphoto.com/John Zellmer

SUCCESS IS IN THE AIR

Texans are extremely proud of Texas. And they well should be. With a vigorous economy, a rich supply of natural resources, and a diverse population, the Lone Star State is worth bragging about.

Although Texas has some of the most highly industrialized and populated areas in the nation, air quality in these and other areas of the state is continuously improving and is comparable to or better than that of similar areas in other states.

“Texas is a leader when it comes to protecting the environment,” says TCEQ Chairman Bryan W. Shaw, Ph.D. “The state has been especially successful in reducing air pollution. For example, in the last eight years, ozone has been reduced by 22 percent across the state and NO_x, a precursor to ozone formation, has been reduced by 46 percent.”

According to the Texas Data Center and the Office of the State Demographer, the population in Texas will increase by 71.5 percent between 2000 and 2040, from 20.9 million to 35.8 million. This growth poses increasingly complex challenges to state leaders.

Keeping the air clean and safe for Texans is the challenge that has been and will continue to be addressed by the TCEQ.

In the following articles, *Natural Outlook* highlights a few of the air quality success stories around the state and the TCEQ programs and initiatives responsible for those successes. We will also examine challenges that lie ahead. ✨

TERMS USED IN THIS ISSUE OF *NATURAL OUTLOOK*

Attainment area	A geographic area that complies with a NAAQS under the Federal Clean Air Act.
Attainment demonstration	A plan to demonstrate how a nonattainment area expects to meet the NAAQS by a given deadline.
Area source	A source of air pollutant emissions not attributable to a specific location.
Control strategies	Measures to deal with air pollution.
Design value	A statistic that describes the air quality status of a given area relative to the level of the NAAQS. It is calculated from observed pollutant concentrations and is used as an indicator for the air pollution level of a particular pollutant.
8-hour ozone standard	An indicator of air quality acceptability as it pertains to ground-level ozone.
Ground-level ozone	Ground-level ozone is formed through chemical reactions between natural and man-made emissions of volatile organic compounds (VOC) and nitrogen oxides (NO _x) in the presence of sunlight. These gaseous compounds mix in the air, and when they interact with sunlight, ground-level ozone is formed. Sources of these pollutants include automobiles, gas-powered mowers, refineries, chemical manufacturing plants, solvents used in dry cleaners and paint shops, and wherever natural gas, gasoline, diesel fuel, kerosene, and oil are used as fuel.
NAAQS (National Ambient Air Quality Standards)	The Clean Air Act requires the EPA to set two types of NAAQS for criteria air pollutants: primary standards to protect public health with an adequate margin of safety, including the health of sensitive populations such as asthmatics, children, and the elderly; and secondary standards to protect public welfare from adverse effects, including visibility impairment and effects on the environment (e.g., vegetation, soils, water, and wildlife). The criteria pollutants are ozone, particulate matter, carbon monoxide, lead, nitrogen oxides, and sulfur dioxide.
Nonattainment area	A geographic area that fails to meet a NAAQS. An area must be officially designated by the EPA, under procedures set forth by the Federal Clean Air Act, in order to be classified in nonattainment.
PM _{2.5}	Particles with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
PM ₁₀	Particles with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
Point source	A single, identifiable source of air pollutant emissions that meets the reporting requirements of 30 TAC 101.10.
SIP (State Implementation Plan)	The Federal Clean Air Act (CAA) requires states with areas that fail to meet the NAAQS prescribed for criteria pollutants to develop a State Implementation Plan (SIP). The SIP describes how the state will reduce and maintain air pollution emissions in order to comply with the federal standards.

FOCUS ON HOUSTO

The Houston-Galveston-Brazoria (HGB) region—which includes Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller counties—is home to the fourth largest city in the USA, and is among the nation's fastest-growing metropolitan areas in terms of people, traffic, and industry. When you consider the massive size of the region's industrial complex along with its rapid economic and urban population growth, it is easy to see how addressing air quality in the region can be a highly complex undertaking.

HGB, however, continues to make significant progress in addressing air

quality challenges, and for the first time the area is meeting current ozone standards. The TCEQ has been at the forefront of efforts to improve air quality, aggressively targeting specific pollutants and successfully employing a variety of strategies and initiatives.

1997 8-Hour Ozone Design Values Trending Downward

Attainment of the 8-hour ozone National Ambient Air Quality Standard (NAAQS) in the HGB region poses unique challenges due to economic and population growth, complex ozone formation chemistry, unique weather

patterns, and the magnitude of the emissions reductions that are needed for attainment. Ozone levels for the region, however, have been trending downward since 2000. The 8-hour ozone design values decreased by 25 percent from 2000 to 2009, and 2009 data indicates that the HGB area has reached a design value of 84 parts per billion (ppb), which is below the 1997 ozone standard.

TCEQ Strategies Reduce NO_x Emissions

Mobile sources (on-road and nonroad) account for 62 percent of the NO_x emissions for the area. Point and area



Photo © iStockphoto.com/Katherine Welles



sources contribute the remaining 38 percent. While the state has jurisdiction over point and area source emissions, it must rely on the federal government to help reduce emissions from mobile sources.

Strategies employed by the TCEQ to reduce NO_x emissions from stationary sources have required industry to reduce NO_x emissions by approximately 80 percent. These initiatives—which include an emissions cap-and-trade program; limits on other minor source sites with combustion equipment such as boilers and process heaters; and restrictions on operating stationary

diesel engines for testing and maintenance purposes between 6 a.m. and noon—were responsible for a reduction of more than 180,000 tons per year of NO_x from 1997 through 2008.

Benzene Reduction in the Lynchburg Ferry Area

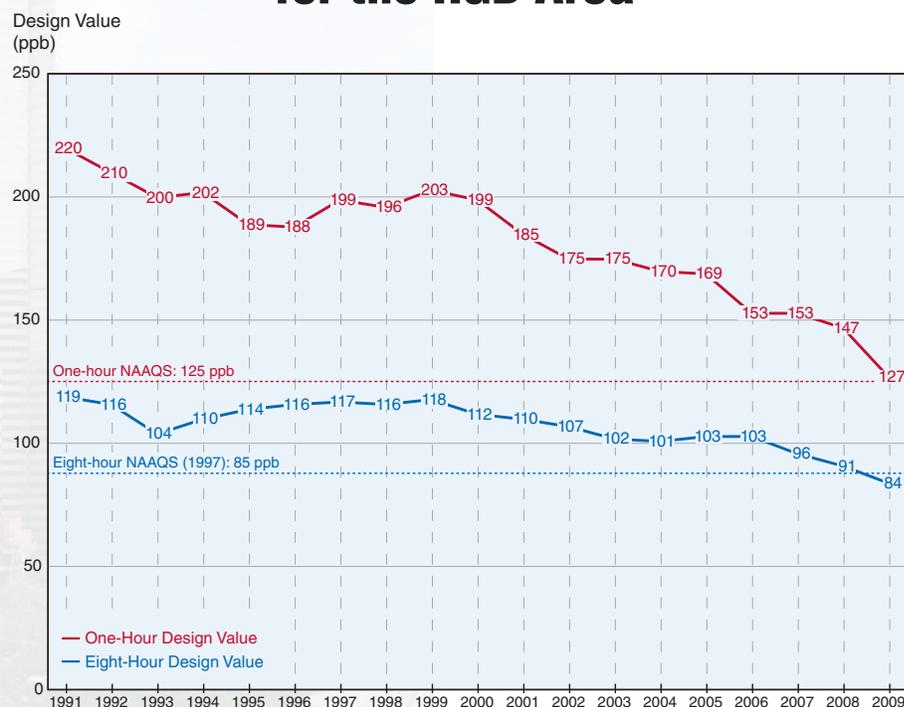
“Benzene concentrations in the Greater Houston area have decreased

considerably in the last four years and, in most cases, are no longer at a level of potential concern,” says TCEQ Chief Engineer Susana Hildebrand.

One success of note is in the Lynchburg Ferry area, where annual benzene concentrations have been elevated above the long-term air monitoring

continued on page 10

Ozone Design Values for the HGB Area



Note: 2009 data is as of October 6, 2009, and is subject to change.

FOCUS ON DFW

Despite living in one of the fastest growing metropolitan areas in the nation, the more than six-million residents that call the Dallas–Fort Worth (DFW) area home are breathing cleaner air than they were ten, or even five, years ago.

In 2008, for example, the area—which includes Collin, Dallas, Denton, Tarrant, Ellis, Kaufman, Johnson, Parker, and Rockwall counties—measured the lowest levels of ozone in three decades. Ozone readings, which had been at more than 100 parts per billion (ppb) a few years prior, fell to 85 ppb. Design values—statistics that describe the air quality status of a given area relative to the level of the National Ambient Air Quality Standards (NAAQS)—decreased by

16 percent from 2000 to 2009. The area currently has a design value of 86 ppb. Additionally, ozone levels only exceeded the health-based standard of 84 ppb for nine days during the summer of 2008 and 12 days during the summer of 2009, compared to over 40 days in the late 1990s. The DFW area has also been in compliance since 2006 with the previous one-hour ozone standard of 124 ppb.

Control Strategies Reduce NO_x Emissions

About 75 percent of the DFW area's NO_x emissions—such as from on-road mobile sources (cars and trucks) and nonroad mobile sources (construction

equipment, aircraft, and locomotives)—are under federal jurisdiction. The state, however, has achieved substantial NO_x reductions through regulation of point and area source emissions, which make up 22 percent of NO_x emission sources. The remaining three percent of NO_x emissions is from natural sources, such as microbial soil emissions.

Control strategies adopted by the TCEQ for stationary sources include strict air pollution rules inside the DFW area, which require NO_x reductions from power plants, cement kilns, and other major and minor



Photo © iStockphoto.com/Andrew Dean



industrial, commercial, and institutional sources. Rules also require NO_x reductions from stationary rich-burn, gas-fired internal-combustion engines in 33 attainment counties east and southeast of the area.

TCEQ Initiatives
Reduce Ozone Emissions

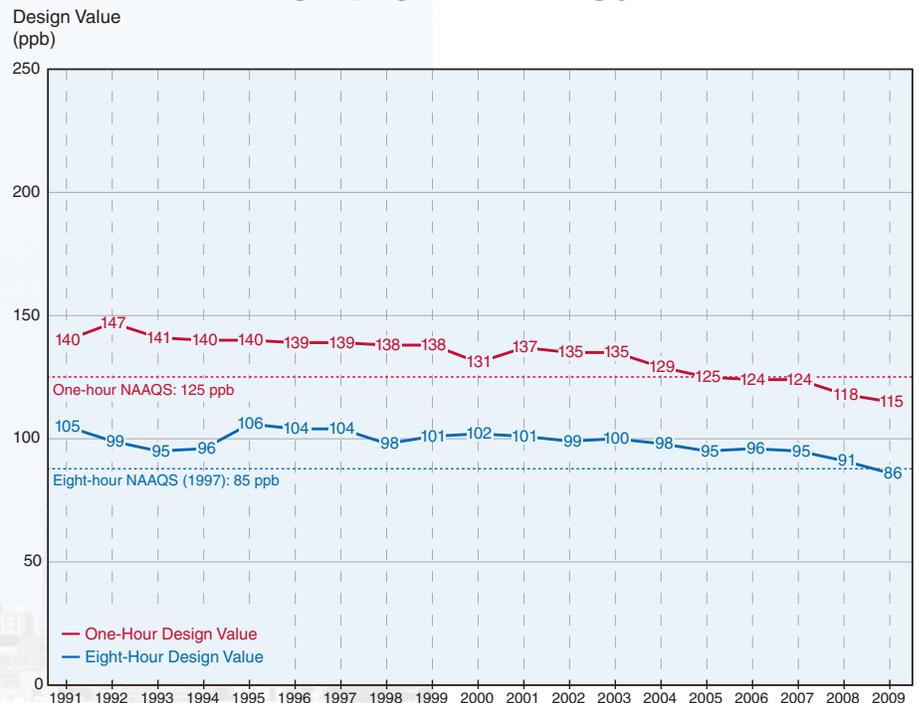
Hundreds of lane-miles of freeways and interstates move hundreds of thousands of vehicles each year throughout the region. Because transportation-related activities account for nearly one-half of all ozone-causing pollution, the TCEQ has collaborated with local businesses, governments, and communities to implement programs that target mobile-source emissions for reduction.

Two TCEQ programs established by the Texas Legislature have been especially effective. They are the Texas Emissions Reduction Plan (TERP), which was created to reduce emissions from heavy-duty on-road vehicles and nonroad equipment, and the Drive a Clean Machine program, which was initiated as a way to replace older, polluting vehicles with newer,

cleaner-running vehicles. (See “TCEQ Programs are Key to State’s Success,” on page 8, for more about these two programs.)

Fleet turnover has also been a major contributor to getting older vehicles off the road. Furthermore, residents in the DFW area are required to submit their cars for strict emissions-control inspections. 🚗

Ozone Design Values for the DFW Area



Note: 2009 data is as of October 6, 2009, and is subject to change.





AROUND THE STA

FOCUS ON THE GOLDEN TRIANGLE

The heavily industrialized Beaumont–Port Arthur (BPA) area, which includes Jefferson, Hardin, and Orange counties, is home to a large concentration of petrochemical facilities. The TCEQ has worked closely with industry and community groups to reduce benzene, 1,3-butadiene, and ozone levels in this area.

The BPA area is currently designated as nonattainment for the 1997 8-hour ozone standard. Because BPA monitored attainment with a 2005-through-2007 8-hour ozone design value of 83 parts per billion (ppb), in 2008 the commission asked the EPA to redesignate the area to attainment for the 1997 8-hour ozone standard.

As a result of the efforts of TCEQ regional staff and industry, annual average benzene concentrations from 2000 to 2009 remained below the air monitoring comparison value of 1.4 ppbv (parts per billion by volume) for all but one of the monitoring sites. For the one site with elevated benzene levels, regional staff met with representatives from possible sources to address the problem, and subsequent reports have shown a decrease in this pollutant.

In 1996, concentrations of 1,3-butadiene monitored at one location in Port Neches exceeded the air monitoring comparison value in place at the time (5 ppbv), resulting in its addition to the Air Pollutant Watch List (APWL). Annual average 1,3-butadiene concentrations at this site decreased by 81 percent from

1996 to 2007, partially due to cooperative agreements between the TCEQ and local industry. Ambient concentrations of 1,3-butadiene continue to remain below the current air monitoring comparison value of 9.1 ppbv. As a result, it has been removed from the APWL. At all other monitoring sites in the BPA area, the annual average concentrations have remained below the air monitoring comparison value of 9.1 ppbv from 2000 to the first quarter of 2009.

FOCUS ON EL PASO

El Paso was once the only city in Texas having to deal with nonattainment for three different pollutants; however, efforts to reduce carbon monoxide (CO), ozone for the 1-hour standard, and



El Paso, Texas. Photo ©iStockphoto.com/David Liu



Corpus Christi, Texas. Photo © Stockphoto.com/Philip Lange

coarse particulate matter (PM₁₀) have definitely paid off with cleaner air. The area has been in attainment of the 1997 8-hour ozone standard since 2004 and was redesignated to attainment of the CO standard in 2008. The El Paso area remains designated nonattainment only for PM₁₀.

Because analysis of monitoring data shows that El Paso would be in attainment of the PM₁₀ standard if not for such natural events as dust storms, the TCEQ has adopted a natural-events action plan to flag exceedance days that occur due to natural events. Flagging allows the EPA to discard those

days when determining the area's compliance with the standard, placing the state in a better position to seek El Paso's redesignation to attainment for PM₁₀.

8-HOUR OZONE FLEX PROGRAM

Two areas of the state are taking a collaborative, voluntary approach to reducing ozone-generating emissions with the 1997 8-Hour Ozone Flex Program.

The program—implemented through an intergovernmental Memorandum of Agreement (MOA) between the TCEQ, the EPA, and local communities—includes action plans developed by local governments that will reduce emissions of ozone precursors. Voluntary initiatives allow communities or regions to address ozone challenges proactively rather than wait to be required to address them through the federal nonattainment process.

The Corpus Christi area of Nueces and San Patricio counties was

approved for the program in 2007. Their voluntary measures include the use of less volatile gasoline from May through September; the installation of vapor recovery and control systems at marine fuel transfer and loading facilities; the rescheduling of uncontrolled loading activities on ozone action days until evening or until another day; a pollution-prevention program that targets both small and large businesses; promotion of alternative fuels through the Clean Cities Program of the U.S. Department of Energy; and the promotion of reformulated gasoline for use in large fleets by a local refiner.

In 2008, an MOA for the Austin–Round Rock area was approved. (This area includes Bastrop, Caldwell, Hays, Travis, and Williamson counties and the cities of Austin, Bastrop, Elgin, Lockhart, Luling, Round Rock, and San Marcos.) Their voluntary emission-reduction measures include area-wide programs such as Commute Solutions, Clean Cities, and Clean School Bus; a regional rideshare program; a watch and warning ozone-alert system; TERP grant applications; and road paving projects. ♻️



TCEQ PROGRAMS ARE KEY TO STATE'S SUCCESS

The TCEQ's toolbox includes a variety of programs designed to improve air quality in Texas. Its permitting process is one of the most comprehensive in the nation. Its compliance and enforcement programs have received high marks from the EPA. And the agency's mobile source emission programs offer innovative emissions-reduction solutions.

A Robust Air Permitting Program

The TCEQ requires permits for nearly all stationary sources emitting air contaminants into the atmosphere. All air contaminants that are being emitted by a facility, and not just the National Ambient Air Quality Standards (NAAQS) criteria pollutants, are reviewed by agency staff.

Air permits have been required for new and modified facilities in Texas since the early 1970s, which in some cases predates federal air quality permitting rules. Facilities must demonstrate that their controls meet best available control technology and that emissions will not impair public health or welfare.

Compliance and Enforcement Program Receives High Marks from the EPA

The TCEQ is responsible for enforcing state environmental laws. In order to ensure that enforcement actions are consistent, just, and timely, the TCEQ

created the Enforcement Initiation Criteria (EIC), a set of guidelines used by TCEQ inspectors across the state.

When environmental laws are violated, the agency has the authority to levy penalties. To hinder entities from benefiting financially through non-compliance, the TCEQ enhances penalties by evaluating and assessing the economic benefit (EB) gained through non-compliance.

Agency efforts have received high marks from the EPA, through its State Review Framework process, which reviews the state's compliance and enforcement performance relative to the Clean Air Act, the Resource Conservation and Recovery Act, and the National Pollutant Discharge Elimination System programs. The TCEQ's program review undertaken by the EPA in 2007 indicated that the agency was meeting or exceeding all of its compliance and enforcement commitments.

Mobile Source Programs Help Reduce Emissions

Exhaust from cars and trucks is a major contributor to impaired air quality in many urban areas. Since mobile source emission standards are set by the federal government, states are federally preempted from directly regulating this emissions category.

The Texas Legislature, however, has invested more than \$1 billion in programs

that have resulted in significant reductions in mobile source emissions.

▪ **The Texas Emissions Reduction Plan (TERP)**

The Texas Legislature established the Texas Emissions Reduction Plan (TERP) in 2001 to reduce emissions from heavy-duty on-road vehicles and nonroad equipment. Providing grants for voluntary upgrades, the program is targeted at areas of the state designated as nonattainment for ground-level ozone under the federal Clean Air Act. Projects are funded also in other areas of the state with air quality issues.

As of November 2009, the program had awarded \$780 million for the upgrade or replacement of over 12,273 heavy-duty vehicles, locomotives, marine vessels, and pieces of equipment. Over the life of these projects, 158,612 tons of NO_x will be reduced, which equals to 70.7 tons per day in 2010.

The success of the program in Texas has encouraged other states, as well as the federal government, to implement voluntary incentive programs targeted at mobile sources, modeling their programs after the TERP.

Visit www.terpgrants.org.

▪ **Drive a Clean Machine**

The Drive a Clean Machine program was created in 2007 as a way to

remove older, polluting vehicles from Texas roads and replace them with newer, cleaner-running vehicles—which can be up to 98 percent cleaner than vehicles produced a decade ago. From the program's debut through November 2009, \$96.4 million have been provided to qualifying vehicle owners in the Dallas–Fort Worth, Houston–Galveston–Brazoria, and Central Texas areas to replace a total of 30,390 vehicles and to repair 10,077 vehicles. For more information, visit www.driveacleanmachine.org.

■ **Vehicle Inspection and Maintenance Program**

The Vehicle Inspection and Maintenance Program identifies high-emitting vehicles in need of repair in 17 Texas counties, and requires them to be fixed before the state can issue a vehicle safety certificate. Each year, approximately 8 million vehicles are tested in the Houston–Galveston–Brazoria, Dallas–Fort Worth, Central Texas, and El Paso areas.

■ **Texas Clean School Bus Program**

Air pollution from diesel vehicles has health implications for everyone, but children may be more susceptible to this pollution because they breathe more air per pound of body weight than adults do. Fine particulate matter from diesel exhaust can easily pass through the nose and throat, penetrate deep into the lungs, and pose serious health risks.

The Texas Clean School Bus program was created to improve the health of school children and bus drivers by reducing emissions of diesel exhaust from school buses. The program provides grants for eligible projects that reduce particulate matter emissions inside the cabin of a bus. Reductions per school bus range from 20 to 90 percent, depending on the installed technology. The program also educates school district personnel and school bus providers about the potential health impacts of diesel bus idling.

Visit www.texascleanschoolbus.org. 🌟

Supplemental Environmental Projects Putting Fines to Work Close to Home

When the TCEQ finds a violation of environmental laws, the agency and the regulated entity often enter into an administrative order, which usually includes the assessment of a monetary penalty. Penalties collected are deposited into the state's general revenue fund.

An option under state law, however, gives violators a chance to direct some of the penalty dollars to local improvement projects. By negotiating an agreement to perform or support a Supplemental Environmental Project (SEP) in return for an offset of the administrative penalty, the violator can do something beneficial for the community in which the environmental offense occurred.

Regulated entities may draw up their own SEP or choose from a list of pre-approved SEPs, which consists of projects that have already received general approval from the commission. The list includes sponsoring such activities as cleaning up illegal dumpsites, providing first-time adequate water or sewer service for low-income families, removing hazards from bays and beaches, and improving nesting conditions for colonial water birds.

Visit www.tceq.state.tx.us/goto/sep. 🌟

Planned Maintenance, Startup, and Shutdown

Emissions can occur anytime during facility maintenance, startup, or shutdown. Emissions that occur during these activities have previously not been accounted for in facility permits.

The TCEQ Air Permits Division staff has begun reviewing permit applications for the authorization of planned Maintenance, Startup, and Shutdown (MSS) activities at petroleum refineries and chemical plants, which are the first types of facilities to undergo this review. Next to undergo review will be carbon black facilities, electric generating facilities, and various oil and gas facilities. These permits will result in emission reductions from planned MSS activities. 🌟

Flexible Air Permits

One type of air permit that has contributed to significant reductions in emissions across the state since its inception in 1994 is the flexible permit. This voluntary type of permit allows an operator flexibility in managing operations by staying under an overall emissions cap or individual emission limitation. Flexible permits have been especially valuable in achieving reductions in emissions at previously grandfathered facilities.

Two examples of emission reductions that are attributable to flexible permits, based on air monitoring data, are in coal-fired power plants and in petroleum refineries. 🌟

comparison value since 2003. TCEQ and industry initiatives to reduce emissions in the area have resulted in an overall decrease in annual average benzene concentrations of 65 percent from 2005 to 2008, as indicated by monitored concentrations.

The industry initiatives include signing emission-reduction agreements with the TCEQ, forming the Monument Area Air Quality Focus Group, and using an Environmental Monitoring Response System to automatically alert area industries when the monitor registers an elevated concentration, so that investigations and process changes can be quickly made.

The TCEQ has conducted frequent and thorough investigations of facilities in the area, which have led to corrective

actions directed at reducing benzene emissions. In addition, the agency has coordinated investigations with the industry monitoring group and the United States Coast Guard to identify and reduce benzene emissions from barges in the Houston Ship Channel.

The average benzene concentration for 2009 was 0.892 parts per billion by volume (ppbv), compared to 1.10 ppbv in 2008—which represents an additional reduction of about 19 percent. As a result, benzene was removed from the Air Pollutant Watch List for the Lynchburg Ferry area in January 2010.

Industry Agreements Lower 1,3-Butadiene in Milby Park

Butadiene is emitted from a variety of sources, including gasoline- and diesel-powered vehicles, industrial plants, and the combustion of other fossil fuels or biomass.

Based on monitoring data, in 2004 the TCEQ identified a need to reduce 1,3-butadiene levels in Houston's Milby Park area. The agency implemented a number of surveillance strategies, identified specific emissions sources at Texas Petrochemicals and Goodyear Tire and Rubber, and contacted these companies to discuss air quality concerns.

The TCEQ then entered into Voluntary Emission Reduction Agreements with the two companies, laying out emission-reduction goals, actions to meet those goals, and timelines for those actions. The companies were required to install fence-line monitors and use the GasFindIR camera to identify leaks. A notification system was established that enabled the companies

to immediately investigate their plant activities in response to elevated emission levels monitored at Milby Park.

As a result of the agreements, 1,3-butadiene levels at the Milby Park monitor were 78 percent lower in 2008 than in 2004 and are no longer considered of potential health concern. In 2009, 1,3-butadiene was removed from the Milby Park Air Pollutant Watch List.

Cooperative Efforts Lead to Reduction of PM_{2.5} at Clinton Drive

Until 2006, all the PM_{2.5} monitors in the Houston area had recorded design value readings lower than the NAAQS of 15.0 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$)—except for the monitor on Clinton Drive, a heavily traveled road across the street from the entrance to the Port of Houston Authority (PHA).

To determine the cause of the elevated readings at this monitor, the TCEQ funded a series of in-depth studies. The studies concluded that the high readings were confined to a small area near the monitor, which is in close proximity to heavy truck traffic at the port entrance, unpaved shipyards along the Houston Ship Channel, and railroad tracks that run parallel to the road.

To remedy the situation, the TCEQ worked in cooperation with the PHA, the City of Houston, Harris County, and local industry. Subsequent readings, in 2009, at the Clinton Drive monitor showed an annual average of 12.6 $\mu\text{g}/\text{m}^3$ of PM_{2.5} that translates to a design value of 14.1 $\mu\text{g}/\text{m}^3$ for 2007 through 2009. 🌱



SCIENCE AND TECHNOLOGY HELP KEEP THE AIR CLEAN

The TCEQ has the unique challenge of authorizing, regulating, and monitoring industry in a state with one of the most developed and diverse economies in the nation, all the while protecting human health and the environment. One of the best ways to meet this challenge is to employ the latest technology and scientific methods to ensure that each chemical emitted in Texas is kept at or below a level that could potentially cause adverse health and welfare effects.

GasFindIR Camera Technology

The TCEQ was one of the first state agencies in the country to use GasFindIR camera technology to monitor air quality. Originally developed for the military, the camera is a handheld remote sensing device based on infrared thermographic principles, with the special capability of making hydrocarbon emissions visible under certain ambient conditions.

The camera—which serves as a screening tool to assist the agency in activities such as facility and reconnaissance investigations and mobile monitoring—has proved to be highly effective in the detection of VOC emissions from leaks and previously unidentified or unrecognized sources. With the knowledge gained from the use of the camera, the TCEQ has improved emissions inventories and enhanced regulations to address these emissions,

focusing efforts on real air quality solutions with real results. The use of this technology has resulted in thousands of tons of reduced VOC emissions.

Effects Screening Levels

The TCEQ uses scientific data to establish effects screening levels (ESLs) and reference values (ReVs)—health-protective levels of exposure for air pollutants. ESLs assist the TCEQ in permitting safe emission levels from industry and both ESLs and ReVs are used in confirming that the air is safe to breathe through monitoring evaluations.

In 2006, the TCEQ Toxicology Division finalized new guidelines for developing ESLs and ReVs. A stringent external scientific peer review by world-renowned experts and two rounds of public comment resulted in a scientifically defensible method of developing chemical-specific guidelines that are protective of both short- and long-term human health and welfare.

ESLs developed using the TCEQ's 2006 guidelines have garnered attention from other states and countries as being among the most scientifically sound health-based assessments.

“A case in point is 1,3-butadiene,” says Lindsey Jones of the TCEQ Toxicology Division. “In 2008, the Ontario Ministry of Environment deemed the TCEQ ESL the most defensible assessment of health risk over the assessments made

by the U.S. EPA, the World Health Organization, and other state and national organizations.”

Air Pollutant Watch List

The Air Pollutant Watch List (APWL) is a list of small geographic areas in Texas (typically smaller than a zip code area) where the TCEQ has determined that specific air pollutants have been measured at levels of concern.

Each year, the TCEQ Toxicology Division reviews ambient air monitoring data from approximately 74 monitoring sites across the state and data gathered during mobile monitoring activities. Monitored concentrations of pollutants are then compared to the TCEQ's health-protective comparison values, such as ESLs and ReVs. After an opportunity for public comment, areas of concern are placed on the APWL. The agency then works with area facilities to achieve emissions reductions in watch list areas through enhanced monitoring, permit reviews, investigations, voluntary facility actions, and enforcement.

There are currently 11 APWL areas in 10 Texas counties. As a result of agency efforts to reduce emissions of compounds of concern in APWL areas, monitored concentrations for many of these compounds are trending downward. Since 2007, 12 pollutants have been removed from the list, and no areas have been added. ♻️

RESEARCH LEADS TO AIR QUALITY IMPROVEMENTS

Texas has devoted more funds to air quality research during the past decade than any other state in the country,” says TCEQ Chief Engineer Susana Hildebrand. “Using state resources and in-kind support from colleges, universities, and national organizations, almost \$50 million have been invested in investigating the complex and often unique issues associated with ozone formation in the state.”

Flare Task Force and Research

Flare systems gather and burn unwanted gases, converting these vapors into less-objectionable compounds. Flaring safely eliminates unwanted gases generated over the entire range of plant operating conditions.

To evaluate the adequacy of existing flare regulations and to provide executive management with options for improving air quality, the TCEQ created a flare task force. With input from industry and public stakeholders, a draft report was issued in 2009, recommending additional monitoring of flare operational parameters, flare minimization plans, process changes to agency permitting programs for flares, and continued public outreach on flare issues.

In addition, research will be conducted in 2010 to assess how efficiently flares function as emissions-control devices under varying design and operating parameters. Results from this study will allow the agency to evaluate the accuracy of flare emission estimates as well as any proposed improvements to flare operational or monitoring requirements.

CHALLENGES

Texas faces substantial challenges in the next several years, many of them due to new requirements from the federal government.

Ozone Standards

On Jan. 7, 2010, the EPA proposed a range for a new primary ozone standard designed to protect public health, of between 0.060 to 0.070 parts per million (ppm)—down from the 0.075 ppm level adopted by the EPA in 2008. Twenty-eight counties have monitor readings that are above the lowest range of the proposed primary ozone standard of 0.060 ppm.

The TCEQ has formally commented that the lower standard does not offer

significantly better health protection than the 1997 standard of 0.08 ppm.

“The EPA’s own data supports a conclusion that a standard of 85 ppb is protective,” says Chairman Bryan W. Shaw, Ph.D. “This EPA decision provides the illusion of greater protectiveness, but with no regard for cost, in terms of dollars or in terms of the freedoms that Americans are accustomed to.”

“This new proposed range will cause unwarranted concern in areas currently in attainment. There is no doubt we strive to make the air cleaner through our permitting process and a variety of other programs; but the goals set by the EPA must be achievable,” says Commissioner

Buddy Garcia. “The purpose of the Clean Air Act is to protect human health and the environment, not to attain an arbitrary threshold.”

“The Texas Legislature has invested more than \$1 billion in programs that have resulted in significant reductions in mobile source emissions, mobile sources that the federal government prohibits us from regulating. This is necessary because Texas is penalized for ozone nonattainment that is caused in large part by these mobile source emissions that the state cannot regulate,” says Commissioner Carlos Rubinstein. “This new proposed range from the federal government will cause urban areas across America that have automobiles, sunshine, and variable summer winds to contemplate what is reasonably left to do to reduce these ozone concentrations.”

Residential Exposure Studies

The TCEQ Toxicology Division has been involved with numerous studies investigating human exposure to airborne toxic chemicals and the potential of these exposures to cause adverse health effects. For example, studies have been completed in Houston, Midlothian, and the Dallas–Fort Worth area. These studies have been critically important: they have not only led to a greater understanding of air pollution and more knowledgeable decision-making by the TCEQ, but they have also become an invaluable way to address community concerns, since many of these studies were originally requested by citizens. Additional studies are being planned for the Corpus Christi and Barnett Shale areas. (The Barnett Shale is a large natural gas reserve encompassing more than 5,000 square miles and covering at least 17 counties in North Texas.)

TexAQS 2000

In 2000, the TCEQ joined forces with over 40 research institutions and more than 250 scientists to conduct the Texas Air Quality Field Study 2000 (TexAQS 2000), a comprehensive research field study designed to shed new light on the

complicated issues associated with air quality in the Houston–Galveston–Brazoria area and throughout East Texas.

TexAQS 2000 resulted in the TCEQ taking major steps to improve the reporting of emissions inventories from industrial sources along the Texas Gulf Coast region. The better inventories improved the computer-based predictive tools used to design air quality plans. An improved understanding of what contributes to high ozone in Houston helped the agency develop regulations to reduce smog-forming pollutants.

TexAQS II

For the Texas Air Quality Field Study II (TexAQS II), conducted in 2005 and 2006, data was collected throughout the eastern portion of Texas from the Interstate 35 corridor eastward.

The results of this study have been useful in highlighting the importance of background air-pollution levels and the impact of air-pollution transport within Texas and between states. Analyses show that upwards of 50 percent of ozone pollution can be transported from outside the state. Understanding the transport effects is critical to explaining the challenge of addressing and attaining the recently proposed, more stringent federal ozone standard. 🌿

The EPA also proposed to establish a distinct cumulative, seasonal, “secondary” standard, designed to protect sensitive vegetation and ecosystems. The EPA proposed to set the level of the secondary standard within the range of 7 to 15 ppm-hours. This new standard would add weighted hourly ozone concentrations across all days in a three-month period of the year when ozone concentrations are highest. Twenty-three counties have monitor readings above the lowest range of the proposed secondary ozone standard of 7 ppm-hours.

CO₂ Regulations

The EPA also recently announced its intent to regulate carbon dioxide (CO₂). Despite the TCEQ’s opposition to the CO₂ regulation, the agency is working to ensure that states’ interests are protected if the regulations proceed. The

greatest concern about greenhouse gas regulation is that these regulations would increase the cost of energy and consequently, the cost of almost everything Americans consume. Other concerns include the possibility of regulations affecting jobs in the U.S. Measuring the effectiveness of any CO₂ regulation in reducing global temperatures is another complex challenge facing regulators and policy makers.

Barnett Shale

Oil and gas drilling in the Barnett Shale area in and around Fort Worth has grown rapidly in the last few years and, for the first time, large-scale gas production is taking place in more urban environments. The TCEQ has increased investigations and research in the area; is pushing the oil and gas industry to quickly reduce

emissions; and is evaluating the need for changes in permitting requirements for oil and gas operations. Extensive monitoring studies in the Barnett Shale area have been completed by the TCEQ.

Goals

“Texas already has some of the most stringent emission standards in the United States,” says Chairman Shaw. “It is the goal of each and every one of us at the TCEQ to ensure a clean and safe environment for all Texans in the most efficient and economic manner possible. We will meet the challenges that lie ahead. We will achieve our goals by continuing to incorporate the latest scientific research and methods, together with cutting-edge technology, to strategically investigate, evaluate, and improve the air quality for the citizens of Texas.” 🌿



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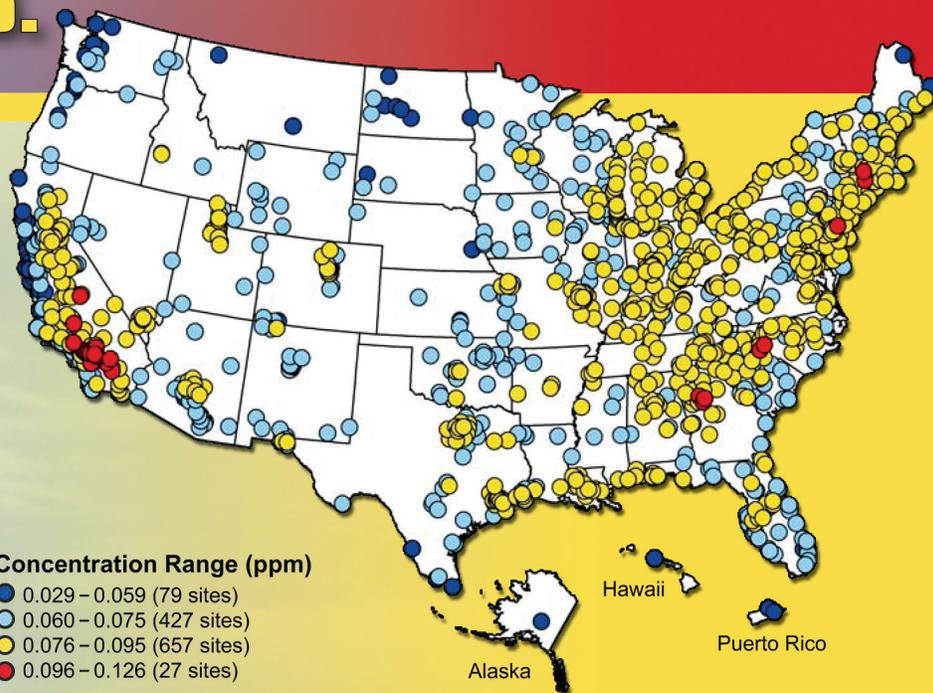
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OZONE CONCENTRATIONS ACROSS THE U.S.

As of 2007, the states with the highest ozone concentrations were California, Connecticut, Georgia, Massachusetts, North Carolina, and Pennsylvania.

While Texas has sites measuring above the 1997 8-hour ozone standard, no sites are measuring in the highest range of 0.096 to

0.126 ppm. 



Ozone concentrations in parts per million (ppm), 2007 (fourth highest daily maximum 8-hour concentration).
Source: EPA, www.epa.gov/airtrends/2008/report/TrendsReportfull.pdf.