

The FAN

Fresh Air News

Inside this issue:

Central Texas Bares Its Air	1
Ozone: Good Up High but Bad Nearby	2
Do Your Share for Cleaner Air	4
How High is Too High?	6
How Are We Doing?	7
Contact Us	8

Prepared under a grant from the Texas Commission on Quality. The preparation of this report was financed through grants from the State of Texas through the Texas Commission on Environmental Quality. The content, findings, opinions, and conclusions are the work of the author(s) and do not necessarily represent findings, opinions, or conclusions of TCEQ.

PGA Number: 582-16-61114-02

The official purpose of the CTAIR Advisory Committee is to foster community participation in local ozone reduction efforts, review technical work, serve as a source of information and advice on how to utilize the grant funds in order that the CTAIR Program and its projects benefit the area environment, economy, and community.

Anyone can become an ex officio member (non-voting position). If you are interested in participating on this committee, simply send us a request in writing (email is fine), and your request will be voted on at the next scheduled meeting.

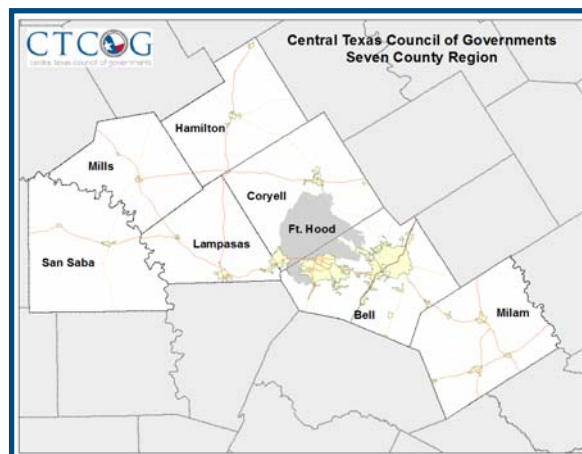
CENTRAL TEXAS BARES ITS AIR

The average Central Texan probably does not think too much about air quality, and why should they? We do not have the industry of Houston, the population of New York City, or the smoggy congestion of Los Angeles. So, it may surprise you to learn that there is a new program in town dedicated to increasing everyone's air quality knowledge and awareness.

The **Central Texas Air Information and Research (CTAIR) Program** was established through the Texas Commission on Environmental Quality (TCEQ) Rider 7 State and Local Air Quality Planning Program grant. The Rider 7 grant distributed funds to several areas within the state that were designated as "near non-attainment" for ozone levels. The Central Texas Council of Governments (CTCOG) Region was one of those areas. The grant funds will be used to perform technical studies, create public awareness projects, and conduct outreach activities to help ensure that the Central Texas region does not fall into the "non-attainment" category.

CTAIR Advisory Committee

Guiding this program, will be CTAIR staff and the newly formed CTAIR Advisory Committee. The Advisory Committee is made up of representatives from Bell, Coryell, Hamilton, Lampasas, Milam, Mills, and San Saba counties and the cities of Belton, Copperas Cove, Gatesville, Harker Heights, Killeen, and Temple. Representatives from various institutions such as Fort Hood, public health, economic development, environmental organizations, and the energy sector comprise the remaining members.



OZONE: GOOD UP HIGH...

Ozone is a gas found naturally in the Earth's upper atmosphere or stratosphere. There, it forms a protective shield known as the ozone layer where it protects life on Earth from the sun's harmful ultraviolet radiation. Without it, life on Earth would be impossible and the events that would follow sound like something out of a horror movie: within just days of the ozone's disappearance plants would die because the intense radiation would make photosynthesis impossible. Herbivores would starve to death as the building blocks of the food chain fade away. Carnivores and omnivores could survive a little longer living off of the starving, dying herbivores, but eventually even that pitiful food source would disappear culminating in a worldwide extinction (except roaches — you can bet roaches would survive).

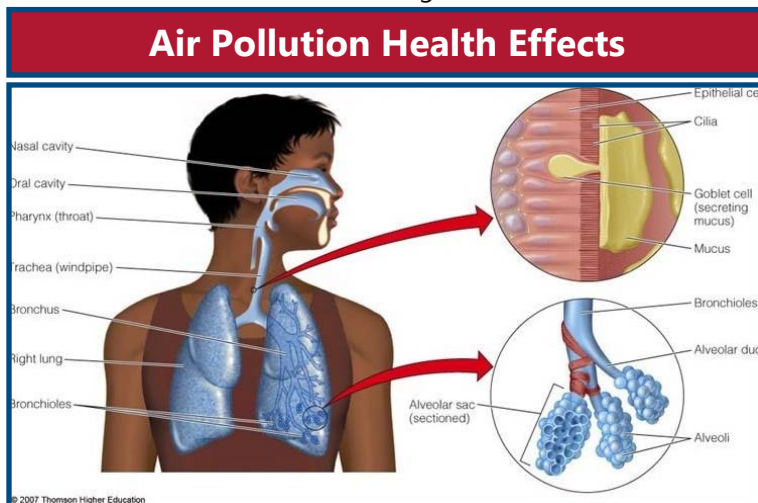
It is this heroic aspect of ozone — the perception of a "good guy" protecting us from evil — that most people are familiar with. And they are correct — ozone is good, as long as it stays in the stratosphere. Ozone, however, has an uncanny ability to be agathokakological*. When it is found at ground level here on Earth, the story changes completely.



*Agathokakological: Composed of both good and evil. Now you can impress your friends with your environmental AND vocabulary knowledge!

...BUT BAD NEARBY

The Earth's lowest level of atmosphere is the troposphere. It is found close to the Earth's surface and extends upwards about six miles. The troposphere is fairly active, as clouds and weather occur here. Something else can occur here too — ozone, and this time it is not protecting us. This **ground level ozone** is harmful (it is considered an air pollutant), and it can wreak havoc on the natural environment, damage vegetation (agriculture, anyone?), and harm human and animal health. In fact, breathing ozone (which has been described as giving a sunburn to your lungs) can trigger or exacerbate problems such as chest pain, cough, throat irritation, bronchitis, asthma, and emphysema. Ozone is ugly too. You know when you are driving to a large city and instead of seeing a pretty view of the skyline you see an ugly brown blob haze? Well, that smog is actually ground level ozone pollution—and when you see it, you breathe it.



According to the Auckland University of Technology, air pollution cause 7% of stroke-related deaths and disability. Pollution can also lead to high blood pressure, diabetes and blood clots.

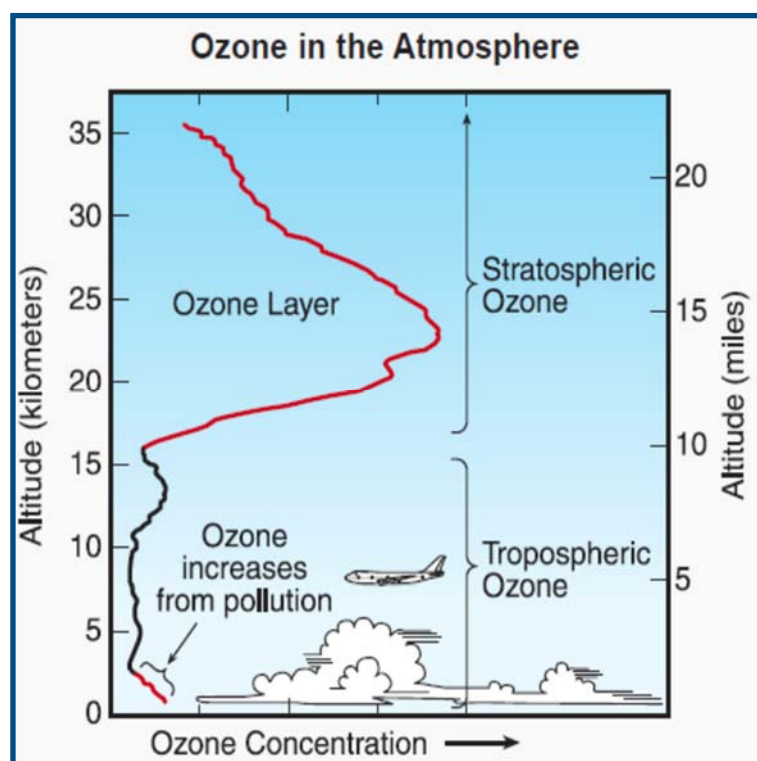
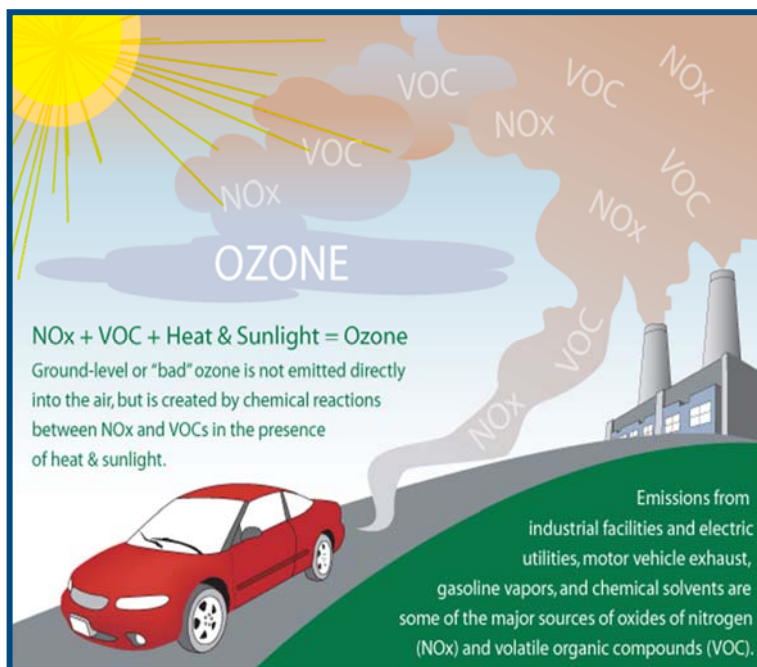
Source: October 2016 Prevention Magazine

OZONE: GOOD UP HIGH BUT BAD NEARBY continued

Ground level ozone is a bit sneaky. It is not emitted directly into the air. Instead it is created through a chemical reaction when its cohorts, volatile organic compounds (VOCs) and nitrogen oxides (NOx) react together in the presence of sunlight and heat. If you take away one of these factors in the ozone equation — presto! — no ozone.

In order to reduce ground level ozone, you have to eliminate one of its required components. It sounds like you get to pick the one you want, doesn't it? You don't. Unless you're a deity, it's a pretty safe bet that the sun will be sticking around for years to come. Heat? Even if global warming were not a problem the Texas summers would still be scorching, so scratch that one. VOCs or volatile organic compounds are carbon containing chemicals found in all living things. Most scents or odors are actually VOCs. They are also released from burning fuels such as gasoline and wood, and from the use of solvents, paint products, glues, dry cleaning chemicals, aerosol sprays, and auto motive chemicals, among others. Many man-made VOCs are already regulated nationally, and it would be impossible to manage naturally occurring VOCs, so let's knock that one off the list too.

That leaves us with NOx or nitrogen oxides. NOx is a term for a group of highly reactive gases containing nitrogen and oxygen. Primary sources of NOx are the burning of coal, oil, natural gas, diesel fuel, industrial processes, and motor vehicle exhaust. You can probably picture it clearly now: a sunny and hot Texas morning, everyone up and in their cars heading to work, traffic slows to a crawl as the roads become more and more congested, the massive numbers of idling cars creates a NOx cloud that mixes with all of the VOCs in the air and VOILA—an ozone haze envelopes the city. And if you are alive and breathing on this type of day, you are breathing it right into your lungs.



Did you know... Diesel engines produce nearly 20% of the total NOx emissions in outdoor air and 26% of the total NOx emissions from on-road sources.

Source: <http://www.factsaboutscr.com/public-health-impact/ozone.aspx>

DO YOUR SHARE FOR CLEANER AIR

If you are like the rest of us, you probably do not like to start off your mornings with a nice big gulp of an air pollutant. Want to know how you can help? Good! Keep reading because there are many, many things you can do, and they are so very easy and cost absolutely nothing.



1. Use environmentally safe cleaning products and paints — they are usually made so they emit lower amounts of VOCs.



2. Refuel your car in the evening when it is cooler. Why does this make a difference? If the sun is on its way down and you don't have heat, you've removed two of the components for forming ozone.
3. Make sure your gas cap is on tightly—those fumes emit VOCs.
4. Don't spill fuel — spilled fuel can pollute rivers and lakes and emit VOCs.
5. Never top off your gas tank. There is a long explanation as to

why this practice will damage your car, how you aren't really putting extra gas in your car but putting it back into the vapor recovery system of modern gas pumps, but it's complicated. When the pump clicks off, your gas tank is full.

6. Conserve energy and resources at home, work, school—
 - ⇒ Turn of the lights when you are not using them;
 - ⇒ Don't leave the water running;
 - ⇒ Turn off the television when you are not watching it;
 - ⇒ Recycle, etc.

You already know this stuff, so now we want you to consider the bigger picture—turning off a light might not seem like a big deal, but in order to generate electricity some type of energy resource, like coal, had to be burned (NOx) to get it to usable form. The less energy we use, the fewer NOx emissions are released, the less ozone is formed, and the more nonrenewable resources we conserve.



Did You Know...If every US home replaced just one light with an Energy Star efficient light, the saved energy would be enough to light more than 3 million homes for a year and prevent 9 billion pounds of greenhouse gas emissions per year, equivalent to the emissions of about 800,000 cars.

Source: <http://interestingenergyfacts.blogspot.com/2010/05/energy-efficiency-facts.html>

DO YOUR SHARE *continued*



7. Quit using your car so much. Seriously, combine errands and reduce trips in your car, take public transportation, carpool, take your bike, or walk. Now, we realize this is not always practical, and we're not asking you to bike down I-35 next time you want to head out of town, but when the opportunity arises try and take advantage of it.
8. Keep your vehicle properly maintained and the tires inflated to the correct air pressure — doing so allows your vehicle to run at its most fuel efficient.
9. Avoid using lighter fluid — it emits VOCs — which explains why it stinks so much. Besides, in this day and age most people aren't too crazy about a fatal chemical being around their food.
10. Eliminate vehicle idling whenever possible. An idling engine burns $\frac{1}{4}$ to $\frac{1}{2}$ gallon of gas per hour. It's actually more energy efficient to restart your car than to idle for one minute.



OK, let's talk about this. Obviously, some idling cannot be helped, like when you are in a traffic jam for instance, but how many times have you seen a fast food drive through line with six to eight cars lined up? It takes less time to get out of the car and go in and pick up your food. We know that it is not always convenient to go inside, but when the opportunity arises to help out our air quality, why not take one for the team?

NOTE: Never, ever leave your child or pet locked in a car—even 10 minutes during a mild day can be fatal to infants and pets.

See? You have no shortage of options. Even if you just commit to one it will help, and then everyone can (sorry, this just begs to be said) breathe easier.

Did You Know.... According to the US Department of Energy every one psi drop in the pressure of your tires is going to lower gas mileage by 0.4%,

Source: <http://procarmechanics.com/how-tire-pressure-affects-mpg/>

HOW HIGH IS TOO HIGH?

Now that you are an ozone expert and understand why ground level ozone must be regulated, let's get you up to speed with how it is regulated. The U.S. Environmental Protection Agency (EPA) establishes limits or standards for pollutants that are known to be dangerous to human health and the environment. Ozone is one of those pollutants. These standards are known as the US National Ambient Air Quality Standards or NAAQS (pronounced like knacks, as in knick-knacks), and on October 1, 2015, the EPA strengthened the standards for ground level ozone from 75 parts per billion (ppb) to 70 ppb. This means that as long as the amount of ground level ozone in a region stays at or below 70 ppb, then that region is within the NAAQS standards or the region is in-attainment. Areas that are above 70 ppb are designated as non-attainment, and will ultimately be penalized for violating this standard.

In order to measure ground level ozone in a region, the EPA places specialized equipment in designated areas throughout the United States. To determine compliance with NAAQS, ozone readings are taken every hour each day, then eight hour blocks of readings for the day are averaged and the highest number is the daily value calculation. Monitoring is a continuous process, so the fourth highest daily value for the year is the annual value calculation, and the three year average of annual values is what is known as the **design value**. This is the important number — the one that determines compliance. The formula is confusing, but all we are really concerned with is that design value, and it needs to be at or below 70 ppb to be in attainment.

Calculating Eight-Hour Ozone Design Values: An Example

1. Monitor A has three years of complete data:

Eight-Hour Ozone	2013	2014	2015
Maximum Peak	87	85	86
2 nd Highest Peak	85	83	80
3 rd Highest Peak	70	78	75
4 th Highest Peak	69	73	72

2. Mean of the 4th highest peak from each year

$$\frac{69 + 73 + 72}{3} = 71.334$$

3. Now truncate the average $71.334 = 71 \text{ ppb}$

If a region is found to be in attainment — great! Keep up the good work, and make sure you stay that way. If a region is designated as non-attainment, well, that's when things get a little dicey. There are five classification areas that could be assigned to a region when it is designated non-attainment: marginal, moderate, serious, severe, and extreme. Each classification has a different time limit to attain the standard and different regulatory requirements imposed upon the area. For example, time limits range from three years to 20 years, while regulations may include anything from new permitting requirements and restrictions on federal approvals and funding to penalty fees and severe traffic control measures. In other words, non-attainment regions will more than likely have to budget additional funds to clean up the air, and when a city needs new funds, generally it's you, the resident, who will help foot the bill.

Sources: https://en.wikipedia.org/wiki/National_Ambient_Air_Quality_Standards, <https://www.epa.gov/ozone-pollution/2015-revision-2008-ozone-national-ambient-air-quality-standards-naaqs-supporting>; <https://www.tceq.texas.gov/>

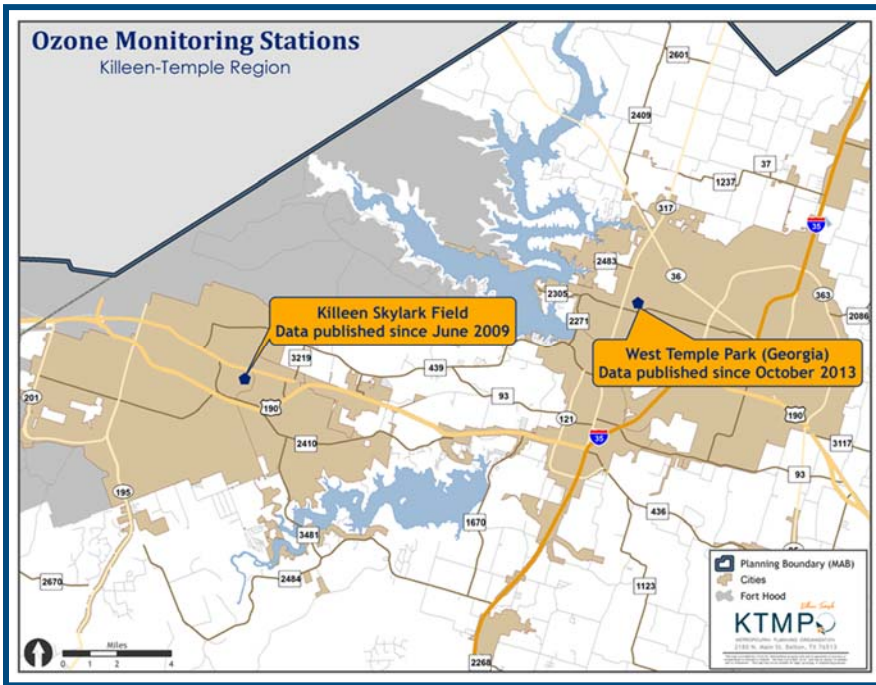


Left: Ozone monitoring station located at West Temple Park.

Right: Ozone monitoring station located at Killeen Skylark Field.



HOW ARE WE DOING?



The EPA has established two Continuous Ambient Monitoring Stations (or CAMS) within the CTOG region in order to monitor ozone levels. Site C1047 is located at Skylark Field in Killeen and has been operating since 2008. In 2013, a new site, C1045, was set up in West Temple Park. Data is continuously collected and reviewed annually for NAAQS compliance.

The latest three year average (2013-2015) or Design Value for the Killeen/Temple region is 69 ppb. Remember, the Design Value had to be **70 ppb or less** in order to comply with the NAAQS standard. In other words, our region just made it — so far. On August 3, 2016 the TCEQ approved the designation recommendations for the 2015

ozone standard and forwarded them to the governor for his consideration. These recommendations were based on complete and certified air monitoring data for the 2013-2015 period — the latest three years of complete data at that time. Under these recommendations, Bell County will be considered in attainment. (Whoo-hoo!) The governor submitted the recommendations to the EPA by October 1, 2016 which starts the clock for the one year review period.

4th Highest Concentration Per Year

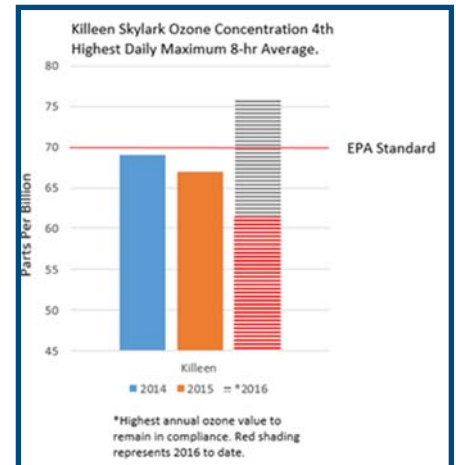
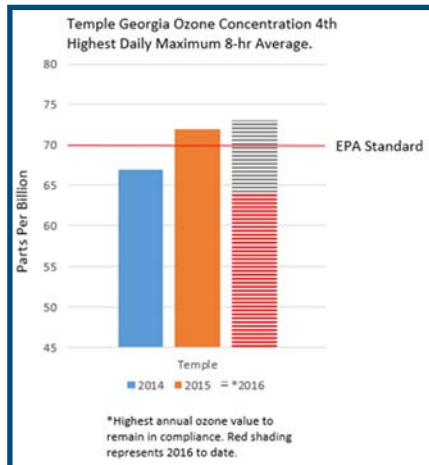
2014-2016 Design Value as of October 1, 2016:

Temple: 67 ppb
Killeen: 66 ppb

For 2016, the maximum 4th highest ozone reading that CTOG can have to remain in-attainment is:

Temple: 73 ppb
Killeen: 76 ppb

If the 4th highest ozone readings are above these values, the region will be designated as "non-attainment".



ppb = Parts per Billion

***Value shown does not represent an entire year (274 days valid data)**

DO YOUR SHARE FOR CLEANER AIR!

CONTACT US

2180 North Main Street
PO Box 729
Belton, TX 76513

www.ctair.org

Be sure to visit
our website
and take our
brief survey!



HOW ARE WE DOING? *Continued*

Once data for the 2016 ozone season is complete, it will be certified by the TCEQ and submitted to the EPA by May of 2017. The EPA will take into consideration the monitoring data for the 2014-2016 period, and the TCEQ has suggested that areas designated nonattainment based on 2013-2015 be revised to attainment for any counties monitoring attainment based on the 2016 data. The EPA should finalize designations by October 1, 2017.

What does this really mean? It means our region should remain in attainment unless we begin to have extremely high ozone readings during the end of the season. But don't go out and celebrate just yet—being in attainment is great, but we must make sure we **remain** in attainment. Just because we get that EPA stamp of approval does not mean we are in the clear. That stamp can be revoked at any time, and the higher we allow our ozone levels to become, the harder (and more expensive) it is to bring them back down again.

So, once we get word that we are officially in attainment in October 2017, give yourself a hearty pat on the back and get right back to work. Sources: <https://www.tceq.texas.gov/>



Keep Up the Good Work Everyone—
Clear Skies Ahead!