September 20, 2013

Janet McCabe

Acting Assistant Administrator

Office of Air and Radiation

U.S. Environmental Protection Agency

1200 Pennsylvania Avenue, N.W.

Washington, DC 20460

Honorable Ms. McCabe:

On behalf of the organizations who have signed this letter and the thousands of members and supporters they represent in the Houston, Texas metropolitan area, we are writing to ask you deny the request by the Texas Commission on Environmental Quality (TCEQ) for EPA to approve the designation of certain days in 2010 as *exceptional events* under 40 CFR § 50.14 [1]. The request by TCEQ would have the effect of removing a number of days with high ambient PM2.5 concentrations from the calculation of the official design value, and by so doing, bring the design value to below the 12 microgram per cubic meter annual fine particulate matter national ambient air quality standard (NAAQS). If approved by EPA, the removal of those days would artificially bring the designation of the Houston area to "attainment" even though the ambient concentration of particulate measured in the city is above the 12 $\mu g/m^3$ NAAQS.

TCEQ has provided EPA with its rationale as to why their request to designate a number of days as exceptional events should be approved, resulting in designation of Houston as attainment for the particulate matter NAAQS.

However, for the reasons we outline in this letter, EPA should deny the request. The TCEQ rationale fails to comply with basic EPA regulations governing exceptional events, and is unsupported by the data.

In addition, there are policy considerations that support EPA denying the TCEQ request, including important public health considerations for the people of Houston.

[1] Texas Commission on Environmental Quality, Houston 2010 PM2.5 Exceptional Events Demonstration, May 22, 2013. http://www.tceq.state.tx.us/assets/public/compliance/monops/air/pm2_event_2010.pdf

Exceptional Event Rule Provisions

On March 22, 2007, EPA promulgated the "Treatment of Data Influenced by Exceptional Events; Final Rule" (72 FR 13560) pursuant to the 2005 amendment of CAA Section 319. This rule, known as the Exceptional Event Rule (EER) created a regulatory process codified at CFR parts 50 and 51 (50.1, 50.14, and 51.930). These regulatory sections contain definitions, procedural requirements, requirements for air agency determinations, and criteria for EPA approval for the exclusion of air quality data from regulatory decisions under the EER.

Importantly, the rule requires at 40 CFR § 50.14(c)(3)(iv) that the state to justify data exclusion for an exceptional event designation by providing evidence that "the event is associated with a measured concentration in excess of normal historical fluctuations, including background."

The TCEQ demonstration fails the test in 40 CFR § 50.14(c)(3)(iv). The days in question, June 9, June 10, and July 13, 2010, had PM2.5 concentrations typical of high concentration days that happen annually and have been repeating regularly for many years. In addition, the natural weather pattern that TCEQ describes as being responsible for the high PM2.5 concentrations, the presence of Saharan dust in Texas ambient air, is a regular meteorological occurrence that scientists have been studying for more than 100 years.

The presence of wind-blown African dust might be unusual or a unique occurrence were it to happen elsewhere in the U.S., for example, in New England or along the west coast. However, along the Texas Gulf coast, the presence of African dust is a regular and annual occurrence. African dust is part of the natural background of particulate in coastal Texas. The meteorology that brings the dust across the Atlantic is hardly the kind of singular, special, or rare event for which the exception events regulations were written, and it is part of the background for this region.

Because the TCEQ demonstration does not comply with 40 CFR § 50.14(c)(3)(iv), the request to exclude the days in question should be denied.

Normal Historical Fluctuations

The TCEQ has asked EPA to approve the designation of several days in 2010 as *exceptional events*. These include June 9, 2010, June 10, 2010, and July 13, 2010, and all three for measurements obtained at the Clinton Drive monitor in Houston, Texas. The 24-hour average PM2.5 values for these three days were 29.2, 25.1, and 27.2 micrograms per cubic meter.

Regulations at 40 CFR § 50.14(c)(3)(iv) effectively defines "exceptional" event as having concentrations above "normal historical fluctuations, including background."

Furthermore, the Merriam-Websters Thesaurus provides the following synonyms for "exceptional":

> aberrant, aberrated, abnormal, anomalous, atypical, extraordinary, singular, uncommon, uncustomary, and unique.

An examination of recent particulate matter concentrations at the Clinton Drive monitor demonstrates that the concentrations on the days requested for exceptional designation are hardly abnormal, singular, or unique, and in fact, those concentrations are typical and repeating and predictable concentrations consistent with historical norms.

Eleven years of ambient particular matter concentration data was obtained from the TCEQ and analyzed for the 11 year period from 2002 through 2012. This period spans the first full year of PM2.5 data for the Clinton Drive monitoring site and the last full year of data for the site. For each year, the monthly highest daily value was determined for the 6-month period from May through October of each year. The monthly highest day (MHD) value is defined as the maximum 24-hour daily concentration for the month. The May through October period is the time during the Texas coast is dominated by southeasterly flows from the Gulf into inland areas. This time period is the core portion of the unofficial "hurricane season" in the Gulf, when easterly winds bring African low pressure systems across the Atlantic and into the Carribean, Gulf of Mexico, and US East Coast.

Table 1 shows the eleven (11) monthly highest days for the 2002-2012 time period for May through October, sorted from lowest to highest. Values above and below 25.1 micrograms per cubic meter are indicated, as this is the lowest value of the 3 days requested by TCEQ for exception events designation.

Table 1. Monthly Highest Days with Values Above 25.1 Indicated.

	May	June	July	August	September	October
lowest	18.2	16.8	22.3	22.1	14.9	12.1
	21.1	19.7	24.7	22.6	18.4	17.9
	23.1	21.0	25.6	24.2	19.1	18.7
	24.2	22.8	26.0	24.9	19.5	20.4
	25.9	23.2	27.3	25.0	23.4	22.0
	28.3	24.8	28.3	26.5	29.9	22.0
	29.9	***27.8***	***28.9***	30.2	30.3	22.9
	31.3	28.0	30.0	30.3	32.4	26.3
	32.4	28.8	31.4	32.2	32.8	27.9
	37.6	30.2	33.5	36.1	34.0	29.6
highest	42.2	44.9	39.3	37.7	56.2	35.1

In contrast to the assertions of TCEQ that the June and July, 2010 days in question were exceptional events, an examination of the monthly highest days over the last 11 years shows that concentrations at and above 25.1 micrograms per cubic meter frequently occur at the Clinton Drive monitoring site. In fact, 24-hour average concentrations at the site above 25.1 have occurred each month and during multiple years in this eleven year period.

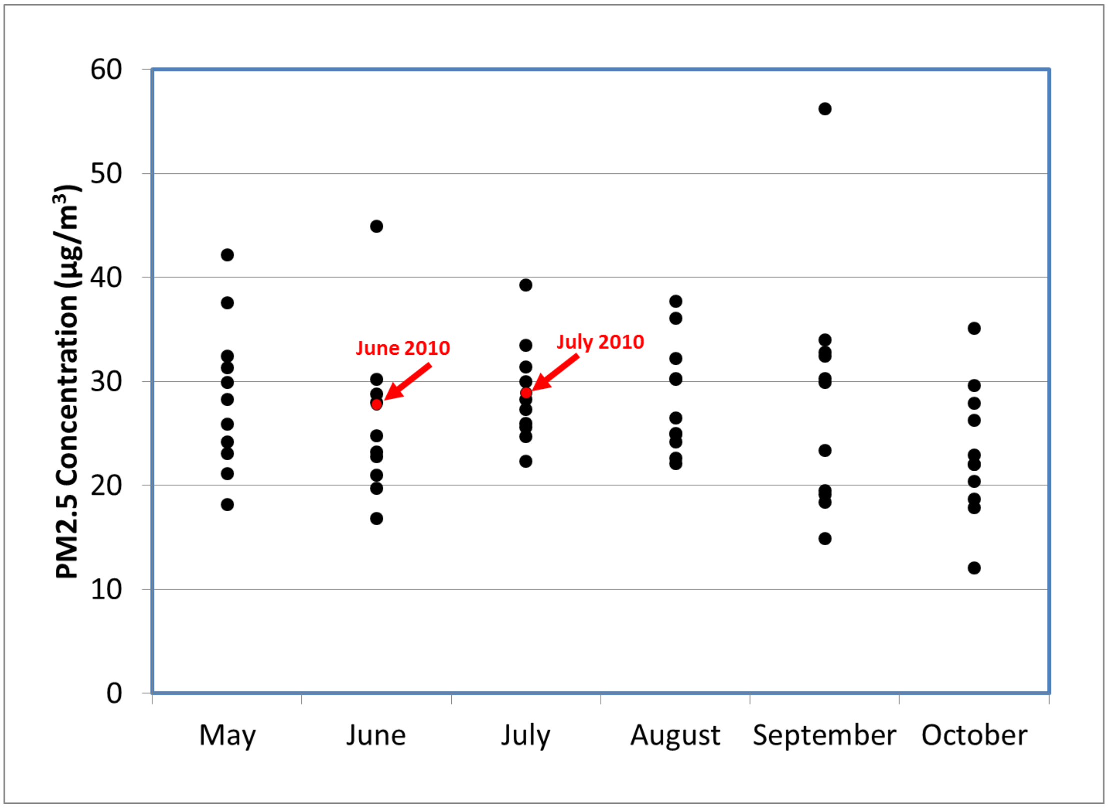
Table 2. Number of Years in 2002-2012 with Monthly Highest Days Above 25.1 ug/m^3.

	May	June	July	August	September	October
# of Years Out of 11 with Monthly High Day (MHD) > 25.1	7	5	9	6	6	4
% of Years Out of 11 with Monthly High Days (MHD) > 25.1	64%	45%	82%	55%	55%	36%

During the 2002 to 2012 period, each month from May through October had monthly highest days concentrations multiple times. In fact, in 5 of 11 years the month of June experienced PM2.5 concentrations at least as high as the June 2010 day that TCEQ would like designated as exceptional. In 9 out of 11 years, fully 82% of the years during the time period when the monitoring site has been operations, PM2.5 concentrations have been at least as high as the June 2010 day that TCEQ would like deisngated as exceptional.

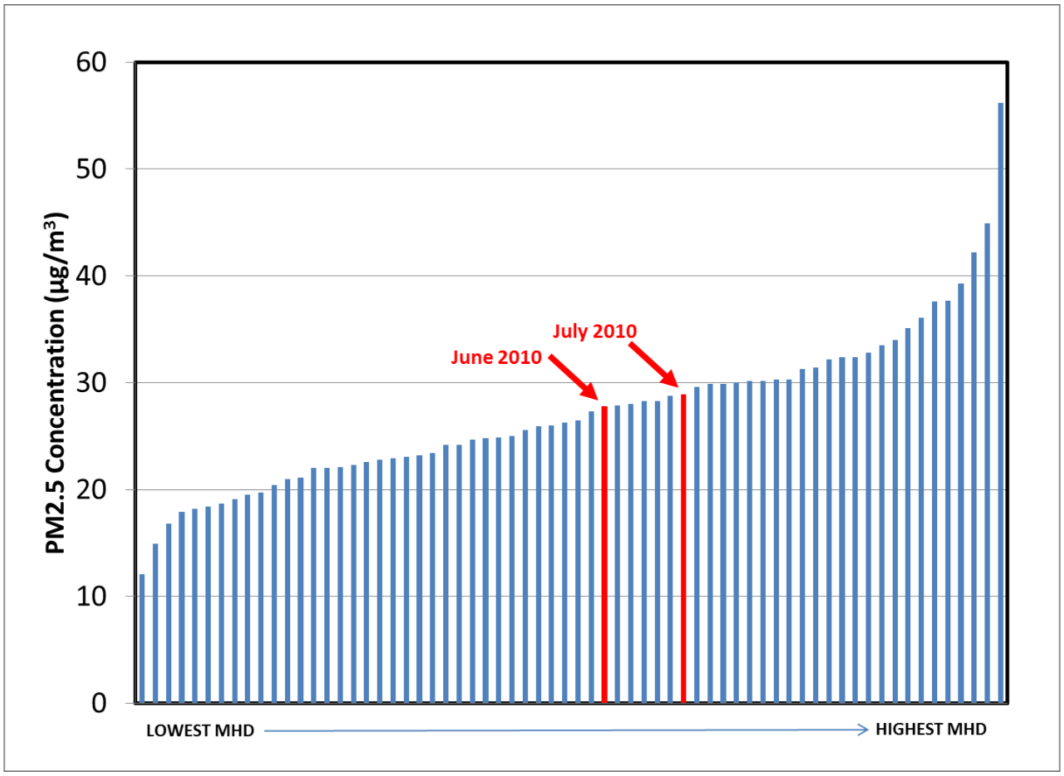
Daily average concentrations of the level observed on the days requested by TCEQ for exceptional designation are routine events that happen on average many times per year on average. In fact, an examination of the monthly highest days during a long period shows that the 6 month period from May to October has the greatest number of high concentration days, and it can be predicted that all of these months will likely produce a peak as high as the level noted by TCEQ at least 1/3 (36%) of the time, with many months experiencing peak days as high as the level noted by TCEQ a majority or high majority (up to 82%) of the time.

Figure 1. Monthly Highest Days from 2002-2012 by Month with June/July 2010 Days of Interest Indicated



The June 2010 and July 2010 monthly highest days are indicated in red on Figure 1. The figure demonstrates that those days were completely unremarkable. Those days were near the midpoint of typical June and July monthly highest days. There were numerous monthly highest days in the eleven year period that were in the range of 20 to 30 micrograms per cubic meter, and there were many days well above 30. Rather than the days of interest in June and July 2010 being "exceptional", they are in fact quite typical for high days in that occur every month during the May through October time period for the last 11 years. Figure 2 shows the sixty-six monthly highest days during 2002 through 2012, sorted from lowest to highest values.

Figure 2. Daily Average Concentrations of the Sixty-Six (66) Monthly Highest Days from 2002-2012 by Month with June/July 2010 Days of Interest Indicated



Unlike the requirements 40 CFR § 50.14(c)(3)(iv), which specifies that days proposed for exceptional events be outside of historical fluctuations, the June and July 2010 days proposed by TCEQ are typical of days that happen with regular frequency every year during May through October. Sorting the monthly highest days from lowest to highest shows that the days in 2010 that were flagged by TCEQ are in fact far from unique. Over the last 11 years there were 24 separate months (out of 66 months in the time period) that had peak days with concentrations higher than the TCEQ flagged days.

Saharan Dust Events

The transport of dust from the Sahara desert over the Atlantic Ocean and then into the Gulf of Mexico and into Texas is a phenomenon that has been happening for hundreds, if not thousands or tens of thousands of years. One of the first Western analyses of Saharan dust blowing out over the Atlantic Ocean was made by Charles Darwin during his voyage aboard the Beagle. On June 4, 1845 Darwin wrote:

> Many scattered accounts have appeared concerning the dust which has fallen in considerable quantities on vessels on the African side of the Atlantic Ocean….I have found fifteen different statements of dust having fallen; and several of these refer to a time period of more than one day, and some to a considerably longer time.
>
> On the 16th of January (1833), when the Beagle was ten miles off the N.W. end of St. Jago, some very fine dust was found adhering to the under side of the horizontal wind vane at the mast head…The wind had been for twenty-four hours previously E.N.E., and hence, from the position of the ship, the dust probably came from the coast of Africa…very fine dust was almost constantly falling, so that the astronomical instruments were roughened and a little injured. The dust collected on the Beagle was excessively fine-grained, and of a reddish brown colour; it does not effervesce with acids; it easily fuses under the blowpipe into a black or gray bead.[2]

In the 20th century, scientists began to quantify the effects of African dust blowing into the coastal regions of the U.S. From their studies emerged a picture of African dust blowing out over the Atlantic Ocean as a regular phenomemon, and then continuing on easterly winds across the Atlantic and into the Carribean, the Gulf of Mexico, and to coastal areas of the U.S.

In 1970, a research team from the University of Miami published research from Saharan dust storm observations, measurements, and satellite imagery in 1967 that showed large quantities of material traversing the Atlantic. [3] Figure 3 from their paper shows a diagram of Saharan dust transport across the Atlantic.

[2] Darwin, C. (1846), An account of the fine dust which falls upon vessels in the Atlantic Ocean, Q. J. Geol. Soc. London, 2, 26 – 30.

[3] Joseph M. Prospero, Enrico Bonatti, Carl Schubert and Toby N. Carlson , Dust in the Caribbean Atmosphere Traced to an African Dust Storm, Earth and Planetary Science Letters 9 (1970) 287-293, 23 June 1970.

Figure 3. Calculated Trajectory For the Dust Sample of June 12 – from Prospero et. al. (1970)

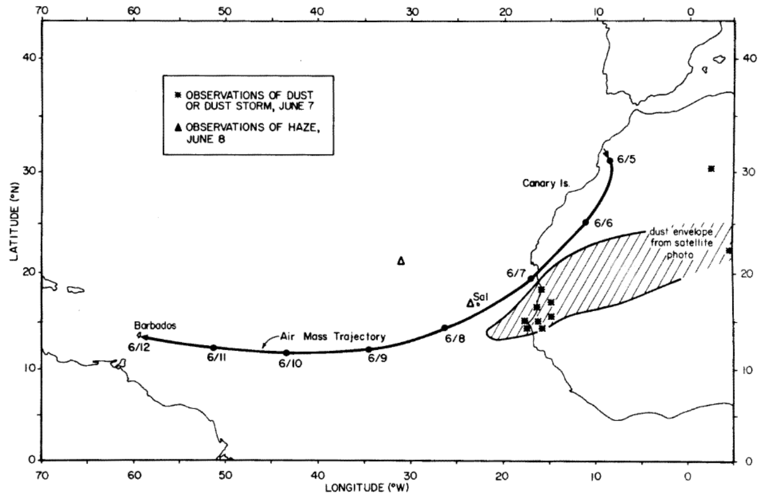


Fig. 3. Calculated trajectory for the dust sample of June 12 and the location of the African dust storm of June 7, 1967, as determined by ESSA 5 satellite photo. Trajectory positions (month/day) are for 1200 GMT. Stars indicate location of meteorological stations reporting airborne dust or dust storms on June 7.

On September 20, 1972, researchers from the University of Miami and NOAA published additional research on the large quantities of Saharan Dust impacting airborne particulate levels in the Caribbean.[4] They wrote:

> The mineral aerosol concentration in the sea-level trade wind air at Barbados, West Indies has been measured from the fall of 1965 to the present. During the first four years of this program, the air sampling was essentially continuous. These measurements have shown that large quantities of dust are transported across the northern equatorial Atlantic from the deserts of North Africa during the late spring, summer, and early fall. The average surface air concentration of mineral aerosol at Barbados during the dusty season varies from year to year but generally is on the order of 10 micrograms per cubic meter of air…

By 1987 scientists were publishing studies on the impacts of Saharan dust on U.S. coastal regions. For example, in 1987 researchers published studies on impacts of the dust on areas such as the city of Miami, in which they wrote [5]:

[4] Prospero and Carlson, 1972, Vertical and Areal Distribution of Sahaarn Dust over the Western Equatorial North Atlantic Ocean, Journal of Geophysical Research, Vol. 77, No. 27, p. 5255.

> Mineral dust is a major atmospheric constituent in many oceanic regions. Over the North Atlantic, large concentrations of Saharan dust are frequently measured as far west as the Caribbean and Miami and as far north as Bermuda. African dust constitutes a major fraction of the nonbiogenic component of the sediments in this region.

In the 1990's, scientists and media across Texas were writing about the impacts of Saharan dust on ambient particulate levels. In a 1992 story Cox News Service wrote about observations of TNRCC (the predecessor agency to the TCEQ) officials in Waco to a Saharan dust event: [6]

> WACO, Texas - The new haze hovering over parts of Texas is not the smoky-brown variety that comes from south-of-the-border fires, but one caused by dust particles that have floated all the way from the Sahara Desert. "I drove to Austin and I thought, `Is it just me or is it hazy?" said Zoe Rascoe, air program manager for the Waco office of the Texas Natural Resource Conservation Commission. "It's very likely (Saharan dust) is what we're seeing." In the Sahara, located in northern Africa, the wind whips up dust storms every few days, said TNRCC meteorologist Bryan Lambeth. In the winter, this dust sails over the Mediterranean to Europe, he said. But in the summer, the same winds that bring hurricanes to the Gulf Coast carry the dust to the United States, he said. **This occurs several times each summer**, Lambeth said.
>
> **"It's probably always happened,"** he said. "But it's much easier to document now" thanks to satellites and high-tech equipment. The first Saharan dust cloud of the summer swept through South Texas on Sunday, Lambeth said. (emphasis added)

The TCEQ and its predecessor agencies in Texas have long studied and monitored Saharan dust events, for example, in 2002 [7] and 2008 [8] [9].

---

[5] Prospero and Nees, Deposition Rate of Particulate and Dissolved Aluminum Derived from Saharan Dust in Precipitation at Miami, Florida, Journal of Geophysical Research, Vol. 92, No. D12, Pages 14723-14731, December 20, 1987.

[6] Jodi Wetuski , Dusty haze comes from African desert, Cox News Service, 1998. http://tinyurl.com/qguvb24

[7] Eastern Texas Saharan Dust, July 30 - August 1, 2002, Texas Natural Resource Conservation Commission, http://capita.wustl.edu/CAPITA/CapitaReports/020730TexasSaharaDust/Air%20Pollution%20Events%20Texas%20Saharan%20Dust%207-30-2002.htm.

[8] Texas Saharan Dust July 25-27, 2008, Texas Commission on Environmental Quality, http://www.tceq.texas.gov/airquality/monops/air-pollution-events/2008/texas-saharan-dust-july-25-27-2008.

Beginning in the 1800's and continuing through today, scientists have long studied the the meteorological phenomenon of Saharan dust blowing into the Atlantic Ocean. What scientists have understood for decades is that winds carry the Saharan dust into the Gulf of Mexico and from there onto coastal Texas. This phenomenon is predictable, annual, repeated – and part of the natural background of ambient particulate in Texas. The regular and predictable nature of these events makes the TCEQ request to exclude days impacts by the events contrary to the regulatory intent in the exception events rule. Not only are these events not producing PM concentrations in "excess of normal historical fluctuations including background" as the rules require, but the meteorological phenomenon that brings the dust into Texas has been doing so for a very long time.

The citizens in Houston and other parts of coastal Texas live in areas that are impacted by numerous anthropogenic sources of particulate, including major and minor stationary sources and mobile on-road and non-road motor vehicles. In addition, several days per month during the summer and fall, the air also contains background levels of African dust that can spike and contribute to high PM2.5 concentrations.

However, the TCEQ's own data shows that the phenomenon is an annual event from May through October, with high days every month almost every year. Rather than being exceptional, unique, or anomalous, these events are part of the natural background of ambient particulate in Texas. They are in every sense part of the "background" of the Houston airshed as the isoprenes and terpenes are to the ozone problem in cities like Atlanta, or the unusual topography that makes pollution problems such a problem in Los Angeles and the rest of the south coast air basin in California. We don't exclude high ozone days in Atlanta because of the trees, or high ozone or PM days in Los Angeles because of the mountains, and we shouldn't exclude high PM2.5 days from Houston or other Texas cities. The people in the cities really do breathe the air with these pollutants, and they deserve the full protection of the NAAQS and the SIP planning process so that regulators develop control strategies to control the anthropogenic sources of pollution to the point that the total anthropogenic and background contributions are below safe levels.

Supplementary Particulate Monitors Show PM2.5 Levels Above the NAAQS

In addition to the official monitoring station on Clinton Drive showing levels of PM above the NAAQS, unofficial monitors in the area around the Port of Houston have demonstrated that particulate levels at the neighborhood level may be far above what has been recorded at the

---

[9] Southern Texas Saharan Dust June 28 - July 2, 2008, Texas Commission on Environmental Quality, http://www.tceq.texas.gov/airquality/monops/air-pollution-events/2008/southern-texas-saharan-dust-june-28-july-2-2008

official monitors.[10] Since May of 2012, Air Alliance Houston has been monitoring particulate levels at five locations in and around the Galena Park Neighborhood.

The data gathered at these monitors has shown that particulate matter levels are often well above the NAAQS standard in this area, which is exposed to particulate matter pollution from multiple oil refineries, chemical facilities, coal and petcoke storage facilities, haul road dust, background PM, and other industrial development. The monitor placed at 1908 2nd Street on the Early Head Start building has recorded particulate matter daily average levels ranging from 7.8 to 23.1 micrograms per cubic meter, with an annual average value of 18.14. The highest 24-hour particulate matter level recorded was 36.2 micrograms per cubic meter at the Galena Park City Hall on 2000 Clinton Drive. The two year average for these monitors is 15.8, well above the NAAQS.

Conclusion

We strongly support the efforts by EPA and implement the Clean Air Act to protect the public from air pollution. The Clinton Drive monitor in Houston is telling us that people are breathing air with levels of PM2.5 that are harmful. Scientists as far back as Darwin and continuing to 2013 provide us with clear evidence that the Saharan dust phenomenon in Texas is a regular, recurring, and predictable event, and therefore, that classifying the highly daily averages flagged as TCEQ as *exceptional events* because of Saharan dust is inappropriate and contrary to federal requirements in 40 CFR § 50.14(c)(3)(iv). EPA regulations require exceptional events to be exceptional and producing concentration levels in excess of historical norms. Saharan dust impacting Texas at the levels suggested by TCEQ is not exceptional or in anyway outside of historical fluctuations.

There are numerous anthropogenic sources of PM2.5 in the Houston area, many of which could reduce their emissions under the structure and timelines of a nonattainment designation. We still have numerous undercontrolled flares and sooty stacks in Houston, the EPA OECA office is still finding ample clean air enforcement cases to prosecute and sometimes settle, and the Texas Legislature has not fully funded the SIP-required Texas Emissions Reductions Program (TERP) for diesel emissions reductions.

Importantly, Texas leads the nation in point source SO2 and NOx emissions, and efforts to bring down those pollutants across all of east and coastal Texas would lower the fine PM background levels of and the levels of PM precursors that blow into Houston.

But unless the regulators, regulated community, and environmental stakeholders have the deadlines and regulatory requirements that come with a nonattainment designation, efforts to reduce direct PM emissions and emissions of PM precursors will be slow at best, unsuccessful at worst.

[10] *See* attached spreadsheet, provided by Air Alliance Houston.

While the ozone nonattainment problem in Texas has taken much too long to solve, and many families in Houston and elsewhere have had to live with the respiratory problems that ambient ozone imposes, nonetheless ozone levels are slowing falling. The success in bringing down ozone levels has not been easy. There have been numerous federal versus state clashes, including a threat to withhold federal highway money in the early 2000's. There have also been numerous enforcement cases against industrial facilities whose emissions violated the Clean Air Act.

The silver lining of the ozone nonattainment SIP process in Texas is that the development of nonattainment SIPs includes robust public participation by local and regional stakeholders. Stakeholders from medical, public health, and environmental protection professions have engaged in the ozone nonattainment SIP work in Texas for decades. This has included participation in local workgroups, filing of formal comments during state rule development, and engagement with EPA Region 6 during the SIP evaluation process. While the work hasn't been easy and getting lower levels of ozone in Houston has taken much longer than it should have, the process works and has had a track record of gradual success.

Importantly, very little of this would have been successful without the deadlines, the structure, case law, and the local/state/federal stakeholder processes that the nonattainment SIP process brings with it.

While no one, including us, wishes any community to have a nonattainment designation simply for its own sake, in this case before EPA today, the TCEQ request to avoid a PM2.5 nonattainment designation in Houston via an exceptional events process is contrary to a plain reading of applicable federal regulations, especially the requirements in 40 CFR § 50.14(c)(3)(iv).

The real world data at the official TCEQ monitoring station for PM in eastern Houston and the unofficial data collected at the community level are both telling us that people in Houston are breathing air with levels of particulate that are harmful. This is a double tragedy because these same people are also exposed to unsafe levels of ambient ozone, as well as, air toxics from the largest concentration of HAP sources in the country. A nonattainment designation process for PM2.5 and the structure it creates will result in public health improvements that will save lives and reduce illness in Houston.

While we look forward to the day when the air in Houston meets all federal air quality standards, including for ozone and PM2.5, we are not there yet and we must continue to work hard and implement and enforce federal regulations, including designation of Houston as nonattainment for the revised PM2.5 NAAQS and rejection of the TCEQ request for designation of days in 2010 as exceptional events.

Sincerely,

Adrian Shelley

Executive Director

Air Alliance Houston

Neil Carman

Director of Air Programs

Lone Star Chapter of Sierra Club

Juan Parras

Director

Texas Environmental Justice Advocacy Services (TEJAS)

Tom "Smitty" Smith

Director – Texas Office

Public Citizen

cc: Ron Curry, Regional Administrator, EPA Region 6