



February 4, 2014

The Honorable Eddie Bernice Johnson

U.S. House of Representatives

Washington, D.C.

Subject: February 5, 2014 Hearing Titled: “Examining the Science of EPA Overreach. A Case Study in Texas”

Dear Honorable Eddie Bernice Johnson:

To introduce myself, I am a former Texas Commission on Environmental Quality (TCEQ) official of twelve years involved in Clean Air Act inspections and enforcement at industrial plants in Texas, including oil refineries, chemical plants, power plants, natural gas processing plants, and others. More recently, I work on air quality in Texas for the Sierra Club’s Lone Star Chapter, including Clean Air Act-citizen’s enforcement cases .

On behalf of the Lone Star Chapter of the Sierra Club and its thousands of members and supporters in the great State of Texas I am submitting these comments about the full committee hearing scheduled for February 5, 2014 by the House Committee on Science, Space and Technology, titled “Examining the Science of EPA Overreach: A Case Study in Texas.”

A brief summary of my experience includes:

1. I have 34 years of combined experience in the field of air pollution control and enforcement.
2. I served 12 years (1980-1992) as a state environmental regulatory official at the Texas Air Control Board (“TACB”), now the Texas Commission on Environmental Quality (“TCEQ”), which has federal regulatory oversight of industrial plants in Texas. My years at the TACB/TCEQ were spent in the field inspecting, for state and federal air regulatory compliance, a broad range of industrial plant sites, including major oil refineries, chemical and petrochemical plants, power plants, natural gas processing plants, incinerators, cement kilns, and more. I conducted compliance inspections and monitoring at more than 200 industrial plants annually.
3. During this time, I worked on enforcement actions against industrial plants that were in violation of their air permits. I wrote up investigation reports about violations.
4. Since 1992, I have spent 22 years working in environmental regulation and policy implementation primarily in Texas with non-governmental organizations, including Sierra Club’s Lone Star Chapter.
5. My work for TCEQ and non-governmental organizations like Sierra Club has made me aware of the strong need for adequate enforcement of the Clean Air Act and air permits and the difficulties in achieving it. Texas has a huge number of plants subject to the Act, and for enforcement of the Clean Air Act to mean anything, it is vital that citizens be able to aid the government in holding industry to the law.
6. During my time working with Sierra Club’s Lone Star Chapter, I have been actively involved in all the citizen suit enforcement actions that Sierra Club has brought against plants in Texas that violated regulatory requirements.
7. The suits in which I have been involved in this capacity for Sierra Club include:
 - A suit filed in 1997 against Crown Central Petroleum Corporation for 15,000 violations at its Pasadena, Texas refinery (suit was settled in 2001) that for excessive and repeat sulfur dioxide (7,500 hourly violations) and hydrogen sulfide (7,500 hourly violations) emissions;

- A suit filed in 2004 against American Electric Power for thousands of smoke and soot violations at its Welsh coal-fired power plant it owned (suit was settled around 2008);
- A suit filed in January 2008 against Shell Oil Company and two affiliates for hundreds of air violations at a Deer Park refinery and chemical plants they owned (suit was settled in April 2009);
- A suit filed in August 2009 against Chevron Phillips Chemical Company for many air violations at a Houston/Cedar Bayou chemical plant it owned (suit was settled in November 2010);
- Two suits commenced in September 2010 and May 2012 against Energy Future Holdings Corp. and Luminant Generation Company (“Luminant”) for 20,000 violations at its Big Brown Steam Electric Station and thousands of violations at its Martin Lake Steam Electric Station—both coal-fired power plants (suits are ongoing); Luminant’s Monticello Steam Electric Station had 18,000 violations and a CAA Notice letter has been filed on this plant; and
- A suit commenced in December 2010 against ExxonMobil Corporation and two subsidiaries for hundreds of violations at a Houston/Baytown, Texas refinery and chemical plant complex they own (suit is ongoing). Emissions involve upset incidents releasing illegal levels of benzene, hydrogen sulfide, sulfur dioxide, particulate matter, nitrogen oxides, carbon monoxide, and other harmful chemicals.

None of this legal action would have been necessary if the TCEQ had been properly enforcing the law and protecting the citizens of Texas. It appears from the title of the hearing and the makeup of those invited by the Committee to testify that the hearing is going to be yet another one-sided affair to attack by certain members of Congress on the EPA. I submit these comments to provide you and the Committee with a more complete picture of environmental protection in Texas and the vital role that EPA plays. In contrast to the views expressed by many in Congress, the Sierra Club endorses strong enforcement of our public health laws in Texas. Our state

agencies, unfortunately, often fail to perform the actions required under the federal programs they are delegated or authorized to implement. EPA action is sometimes necessary to assure that Texans benefit from the same public health and economic benefits that other citizens in other states enjoy. When those EPA actions require polluters in our state to have to pay to clean up their messes, some members of Congress, regrettably chose sides with the polluters rather than with the people.

Part 1 - EPA Action in Texas is Needed, Overdue, and Vital in Saving Lives and Protecting Ecosystems. - As you know EPA is charged through federal statutes like the Clean Air Act and Clean Water Act with protecting public health and the environment across the United States - even in Texas. The Agency's actions are not optional for the EPA Administrator or the Agency employees, they are mandated by federal statutes and the deadlines imposed by law and regulation. Since the creation of the EPA in 1970, there has been important improvements in certain environmental metrics, like urban ozone air pollution, the availability and quality of drinking water, and proper management and disposal of highly toxic industrial waste. We still have a long way to go to achieve a clean and safe environment, but it is undeniable that EPA and statutes such as the Clean Air Act and Clean Water Act have made incredible progress over the last 40 years. Congress should be proud of and congratulatory to the long record of achievement of EPA. Recent polling by the American Lung Association and others demonstrates that the American people certainly are.^{1 2}

Unfortunately, many of the steps taken to ensure progress happened with state regulators in Texas kicking and screaming and having to be dragged every step of the way. It is regrettable but all too often the case that environmental improvements have happened in spite of, and not with the cooperation of, the individuals responsible for leading state regulatory agencies in Texas.

¹ <http://grist.org/climate-policy/2011-02-16-public-trusts-epa-loves-clean-air-act-wants-congress-to-butt-out/>

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² <http://www.nrdc.org/media/2013/131017.asp>

The simple fact of the matter is that if state agency heads in Texas were doing their jobs, it would be unnecessary for EPA to step in and be active in enforcement or regulatory actions in Texas. But because of the lack of regulatory enforcement by agencies such as the Texas Commission on Environmental Quality and the Texas Railroad Commission, the EPA has all too often had to step in as the regulator of last resort to protect lives and to assure that Texans were protected from pollution. EPA has often acted via its offices in Dallas and Houston, leading to the irony of Texans working as federal regulators from those two cities having to protect Texas families when state regulators in Austin failed to do enforce the law.

Part 2 - State Agencies Are Often Captured by the Industries They Are Supposed to Regulate.

Many of the federal environmental statutes have an important role for state agencies. The state agencies are the front-line regulators and enforcers of federal statutes (through delegation and authorization), with EPA or other federal agencies acting as backstops and providing support or assistance. Unfortunately, time after time agencies in Texas have shown themselves unable or unwilling to properly enforce critical provisions of federal statutes like the Clean Air Act or Clean Water Act, putting EPA in the position of choosing to either step in or allowing Texas families to be exposed to unsafe levels of pollution.

For example, EPA has a 14 year old program called the National Petroleum Refinery Enforcement Initiative to bring refineries across the country into compliance with major provisions of the Clean Air Act.³ Leading up to the start of the initiative in 2000, EPA was repeatedly finding problems with Clean Air Act compliance at facilities, in particular noncompliance with (i) the New Source Review/Prevention of Significant Deterioration (NSR/PSD) provisions for units such as fluidized catalytic cracking units and heaters and boilers, (ii) with New Source Performance Standards (NSPS) on units such as flares, sulfur recovery units, and fuel gas combustion devices, (iii) problems with leak detection and repair requirements, and (iv) problems demonstrating compliance with the National Emissions

³ <http://www2.epa.gov/sites/production/files/documents/refineryinitiative-powerpoint021111.pdf>

Standards for Hazardous Air Pollutants (NESHAP) regulations for benzene, a known human carcinogen.⁴

The enforcement initiative has had bipartisan support and it has been a great success. The program began at the end of the Clinton Administration, but it picked up steam and existed for 8 years under the Republican administration of George W. Bush, and it has continued under President Obama. Since March 2000, EPA has entered into 32 settlements with U.S. companies that refine over 90 percent of the Nation's petroleum. These settlements covered more than 100 refineries in 32 states and territories, and resulted in annual emissions reductions of more than 93,000 tons of nitrogen oxides and more than 256,000 tons of sulfur dioxide. Settling companies have agreed to invest more than \$6.5 billion in control technologies and pay civil penalties of more than \$93 million.

Approximately half of the refinery capacity now under settlements with EPA are in Region 6 of EPA which includes Texas, Louisiana, and Oklahoma. Major refineries in Texas and neighboring states who have reached settlements with EPA and have made investments to reduce pollution include Citgo, Conoco, Exxon Mobil, Koch Industries, Marathon, Shell, Total, Valero, and Western Refining. It is without exaggeration that the environmental benefits of the EPA settlements are savings lives in cities like Houston, Corpus Christi, and Port Arthur. There would have been more Texan families rushing their children in the middle of the night to emergency rooms for asthma attacks, more elderly Texans suffering heart attacks and strokes, and more pollution leading to school absenteeism and a weaker economy but for the hard and dedicated work of EPA. I have included an Appendix to this letter that includes more detail about the toxic emissions from refineries, demonstrating the need for vigorous law enforcement to protect Texas families.

For all its success, the refinery initiative shows, regrettably, the lack of enforcement of the federal Clean Air Act that existed at the state level in Texas and neighboring states for many

⁴ <http://www2.epa.gov/enforcement/petroleum-refinery-national-case-results>

years. *If state agencies had been properly reviewing permits, enforcing regulations, and issuing fines sufficient to incentivize compliance instead of rewarding noncompliance, there never would have been a need for a federal enforcement initiative.* State regulators at the TCEQ should be embarrassed that such a widespread level of noncompliance was found by EPA in the refinery sector. If the TCEQ had any shame it would formally apologize to the thousands of hard working Texas families that were exposed to illegal levels of pollution and were made to suffer years of breathing fumes and benzene vapors before EPA got engaged. I would suggest that a better use of Committee time would be to hold hearings about the lack of enforcement of delegated federal programs by certain state agencies, and the public health impacts of that lack of performance. If there is criticism to be leveled at EPA, it is perhaps best directed at the tendency of the Agency to look the other way for years or decades while knowing full well that state agencies are failing to perform fundamental enforcement responsibilities in federal programs.

Finally, it is interesting to note that in contrast to the rhetoric that we sometimes hear from the trade associations who want us to believe the environmental compliance hurts the economy, our country is refining more petroleum today than we did just a few years ago or at the start of the enforcement initiative. EPA knows how to enforce the law, it enforces the law in Texas for the sake of Texans, and it does so with the necessary skill to keep the economy growing.

Part 3 - EPA Makes Decisions Based on Best Available Science. A Case Study of Ozone Smog.

Ozone is a chemical compound that can form in the air around our cities and oil/gas fields. It is produced when other pollutants, namely hydrocarbons and nitrogen oxides, react in the presence of sunlight. The orange and red alert days that we see in Texas cities like Dallas, Fort Worth, Houston, and San Antonio are largely the result of higher than safe levels of ozone. Texas has had unsafe levels of ozone in its cities for many decades and some of the earliest work of state and federal environmental agencies in Texas in the 1960's and 1970's was dedicated to understanding and solving the ozone smog problem in cities like Dallas, Houston, and El Paso⁵.

⁵ <http://www.tceq.texas.gov/airquality/sip/siplans.html>

Unfortunately, recent policy and actions by TCEQ show that the leadership of the Agency is now more interested in sowing doubt and questioning the science of ozone toxicity, rather than solving the problem of ozone pollution once and for all.

EPA is charged by Congress in the federal Clean Air Act with determining the level of ozone and other pollutants in the ambient air that is safe to breathe with an adequate margin of safety. These safe levels are known as the National Ambient Air Quality Standards (NAAQS). Congress wisely gave EPA the responsibility for establishing a single national standard, rather than having states determine their own standards which quickly could have devolved into a race to the bottom in public health.

The NAAQS are promulgated by the EPA to meet requirements set forth in Sections 108 and 109 of the CAA. Sections 108 and 109 require the EPA Administrator (1) to list widespread air pollutants that reasonably may be expected to endanger public health or welfare; (2) to issue air quality criteria for them that assess the latest available scientific information on nature and effects of ambient exposure to them; (3) to set “primary” NAAQS to protect human health with adequate margin of safety and to set “secondary” NAAQS to protect against welfare effects (e.g., effects on vegetation, ecosystems, visibility, climate, manmade materials, etc); and (5) to periodically review and revise, as appropriate, the criteria and NAAQS for a given listed pollutant or class of pollutants.⁶ With this structure, the EPA is tasked by Congress in reviewing the scientific literature to determine the level of ozone pollution in the air that will be protective of public health, and then, setting a standard that is *even tighter* than that by including “an adequate margin of safety.”

The process that EPA conducts for setting of NAAQS is incredibly rigorous and an example of how important sound science is to the work of the Agency. The core document representing EPA’s scientific evaluation of the medical evidence related to air quality standards is known as

⁶ U.S. EPA. Air Quality Criteria for Ozone and Related Photochemical Oxidants (2006 Final). U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-05/004aF-cF, 2006.

the air quality criteria document (AQCD), or just the criteria document. The criteria document from the most recent update of the ozone NAAQS is a large volume that includes numerous chapters on the science, toxicology, and atmospheric chemistry and physics of ozone⁷. Most importantly, it provides a scientific assessment of the latest medical, toxicological, and epidemiological evidence from the peer-reviewed scientific literature.

According to EPA, the purpose of the air quality criteria document for the last update to the ozone standard in 2008 was to critically evaluate and assess the latest scientific information published since the previous review in 1996, with the main focus being on pertinent new information useful in evaluating health and environmental effects data associated with ambient air ozone exposures. Other scientific data are also discussed in order to provide a better understanding of the nature, sources, distribution, measurement, and concentrations of ozone and related photochemical oxidants and their precursors in the environment.⁸

The most recent criteria document for ozone underwent multiple levels of scientific and public review. A First External Review Draft (dated January 2005) was released for public comment and was reviewed by the Clean Air Scientific Advisory Committee (CASAC) in May, 2005. The CASAC is the independent scientific advisory committee created by Congress in the Clean Air Act to advise the EPA Administrator on setting the appropriate level of the NAAQS. Public comments and CASAC recommendations were then taken into account in making revisions to the document for incorporation into a Second External Review Draft (dated August, 2005), which underwent further public comment and CASAC review. Public comments and CASAC advice derived from review of that Second External Review Draft were considered in making revisions incorporated into the third and final version of the document (dated February, 2006). That final document was used by EPA staff and the EPA Administrator in the updating of the standard.

⁷ Ibid.

⁸ Ibid.

The ozone criteria document included numerous chapters on ozone measurement, monitoring, ozone formation, and other matters important to the science of the pollutant. However, the review of health-related toxicological and epidemiological studies were in Chapters 5, 6, and 7.

Chapter 5, titled “Toxicological Effects in Laboratory Animals and In Vitro Systems” was written by a combination of EPA and independent scientists from the U.S. and around the world, and then reviewed by additional scientists, including:

- Dr. Lori White—National Center for Environmental Assessment (B243-01), U.S. Environmental Protection Agency, Research Triangle Park, NC 27711
- Mr. James Raub—National Center for Environmental Assessment (B243-01), U.S. Environmental Protection Agency, Research Triangle Park, NC 27711 (retired)
- Dr. Deepak Bhalla—Department of Occupational and Environmental Health Sciences, Wayne State University, Detroit, MI
- Dr. Carroll Cross—School of Medicine, University of California, Davis, CA
- Dr. Mitch Cohen—NYU School of Medicine, New York University, New York, NY
- Dr. Steven Kleeberger—National Institute of Environmental Health Sciences, Research Triangle Park, NC 27711
- Dr. George Liekauf—Department of Environmental Health, University of Cincinnati, Cincinnati, OH
- Dr. David Basset—Department of Occupational and Environmental Health Sciences, Wayne State University, Detroit, MI
- Dr. E.M. Postlethwait—Department of Environmental Health Sciences, University of Texas Medical Branch, Galveston, TX
- Dr. Kent Pinkerton—Center for Health and the Environment, University of California, Davis, CA
- Dr. Edward Schelegle—Department of Anatomy, Physiology, and Cell Biology, University of California, Davis, CA
- Dr. Judith Graham—American Chemical Council, Arlington, VA
- Dr. Paul Reinhart—National Center for Environmental Assessment (B243-03), U.S. Environmental Protection Agency, Research Triangle Park, NC 27711

Chapter 6, titled “Controlled Human Exposure Studies” was written and reviewed by numerous additional scientists, including:

- Dr. James S. Brown—National Center for Environmental Assessment (B243-01), U.S. Environmental Protection Agency, Research Triangle Park, NC 27711
- Mr. James Raub—National Center for Environmental Assessment (B243-01), U.S. Environmental Protection Agency, Research Triangle Park, NC 27711 (retired)
- Dr. William C. Adams—Human Performance Laboratory, University of California, Davis, CA, (retired)
- Dr. Milan J. Hazucha—Center for Environmental Medicine, Asthma, and Lung Biology, University of North Carolina, Chapel Hill, NC
- Dr. E. William Spannake—Department of Environmental Health Sciences, Johns Hopkins University, Baltimore, MD
- Dr. Edward Avol—Department of Preventive Medicine, University of Southern California, Los Angeles, CA
- Dr. Jane Q. Koenig—Department of Environmental and Occupational Health, University of Washington, Seattle, WA
- Dr. Michael Madden—National Health and Environmental Effects Research Laboratory, U.S. Environmental Protection Agency, Chapel Hill, NC
- Dr. William McDonnell—National Health and Environmental Effects Research Laboratory, U.S. Environmental Protection Agency, Chapel Hill, NC

Chapter 7, titled “Epidemiological Studies of Human Health Effects” was written and reviewed by a group that included:

- Dr. Dennis Kotchmar—National Center for Environmental Assessment (B243-01), U.S. Environmental Protection Agency, Research Triangle Park, NC 27711
- Dr. Jee Young Kim—National Center for Environmental Assessment (B243-01), U.S. Environmental Protection Agency, Research Triangle Park, NC 27711

- Dr. David Svendsgaard—National Center for Environmental Assessment (B243-01), U.S. Environmental Protection Agency, Research Triangle Park, NC 27711
- Dr. Kazuhiko Ito—New York University School of Medicine, Nelson Institute of Environmental Medicine, Tuxedo, NY
- Dr. Patrick Kinney—Columbia University, Mailman School of Public Health, New York, NY
- Dr. Richard Burnett—Health Canada, Ottawa, CN
- Dr. Vic Hasselblad—Duke University, Durham, NC
- Dr. Lucas Neas—National Health and Environmental Effects Research Laboratory, U.S. Environmental Protection Agency, Chapel Hill, NC

Clean Air Science Advisory Committee created an Ozone Review Panel to review and provide comment on the criteria document. The Ozone Review Panel was comprised of:

- Chair, Dr. Rogene Henderson*, Scientist Emeritus, Lovelace Respiratory Research Institute
- Dr. John Balmes, Professor, Department of Medicine, University of California San Francisco,
- Dr. Ellis Cowling*, University Distinguished Professor-at-Large, North Carolina State University, Colleges of Natural Resources and Agriculture and Life Sciences
- Dr. James D. Crapo*, Professor, Department of Medicine, National Jewish Medical and Research Center
- Dr. William (Jim) Gauderman, Associate Professor, Preventive Medicine, University of Southern California
- Dr. Henry Gong, Professor of Medicine and Preventive Medicine, Medicine and Preventive Medicine, Keck School of Medicine, University of Southern California, Environmental Health Service
- Dr. Paul J. Hanson, Senior Research and Development Scientist , Environmental Sciences Division, Oak Ridge National Laboratory (ORNL)

- Dr. Jack Harkema, Professor, Department of Pathobiology, College of Veterinary Medicine, Michigan State University
- Dr. Philip Hopke, Bayard D. Clarkson Distinguished Professor, Department of Chemical Engineering, Clarkson University
- Dr. Michael T. Kleinman, Professor, Department of Community & Environmental Medicine, 100 FRF, University of California - Irvine
- Dr. Allan Legge, President, Biosphere Solutions, 1601 11th Avenue NW, Calgary, Alberta
- Dr. Morton Lippmann, Professor, Nelson Institute of Environmental Medicine, New York University School of Medicine
- Dr. Frederick J. Miller*, Consultant, 911 Queensferry Road, Cary, NC
- Dr. Maria Morandi, Assistant Professor of Environmental Science & Occupational Health, Department of Environmental Sciences, School of Public Health, University of Texas - Houston Health Science Center
- Dr. Charles Plopper, Professor, Department of Anatomy, Physiology and Cell Biology, School of Veterinary Medicine, University of California - Davis
- Mr. Richard L. Poirot*, Environmental Analyst, Air Pollution Control Division, Department of Environmental Conservation, Vermont Agency of Natural Resources, Bldg. 3 South, 103 South Main Street, Waterbury, VT
- Dr. Armistead (Ted) Russell, Georgia Power Distinguished Professor of Environmental Engineering, Environmental Engineering Group, School of Civil and Environmental Engineering, Georgia Institute of Technology
- Dr. Elizabeth A. (Lianne) Sheppard, Research Associate Professor, Biostatistics and Environmental & Occupational Health Sciences, Public Health and Community Medicine, University of Washington
- Dr. Frank Speizer*, Edward Kass Professor of Medicine, Channing Laboratory, Harvard Medical School
- Dr. James Ultman, Professor, Chemical Engineering, Bioengineering program, Pennsylvania State University

- Dr. Sverre Vedal, Professor of Medicine, Department of Environmental and Occupational Health Sciences, School of Public Health and Community Medicine, University of Washington
- Dr. James (Jim) Zidek, Professor, Statistics, Science, University of British Columbia
- Dr. Barbara Zielinska*, Research Professor , Division of Atmospheric Science, Desert Research Institute

The EPA staff and outside scientists who authored the criteria document reviewed thousands of peer reviewed papers. To illustrate, the team that worked on Chapter 5 on animal and in vitro toxicology reviewed approximately 260 scientific studies. The group that wrote and reviewed Chapter 6 on controlled human exposure reviewed 160 studies, and the group that worked on Chapter 7 on ozone epidemiological studies reviewed over 360 scientific papers on the topic.

I encourage the committee to familiarize itself with the process that EPA undergoes as it develops the criteria documents that are the foundation for national standards like the NAAQS. While no scientific review and distillation process is perfect, and no scientific conclusions ever unchangeable given the incremental nature of science, I have no doubt that in any fair assessment the Committee will see that EPA determines the standards in a manner that is transparent, exhaustive, and conducted by subject matter specialists drawn from all across the country. Those experts review and assess thousands of peer reviewed scientific papers before drawing their conclusions and recommendations. In addition, the process is informed by the expert assessments of the Clean Air Science Advisory Committee, the independent scientific body that was created by Congress to provide EPA with the best recommendations on air quality matters.

A sampling of some of the conclusions of the ozone criteria document includes the following statements:⁹

⁹ Ibid.

Results from controlled human exposure studies and animal toxicologic studies provide clear evidence of causality for the associations observed between acute (#24 h) O₃ exposure and relatively small, but statistically significant declines in lung function observed in numerous recent epidemiologic studies. Declines in lung function are particularly noted in children, asthmatics, and adults who work or exercise outdoors.

The epidemiologic evidence shows significant associations between acute exposure to ambient O₃ and increases in a wide variety of respiratory symptoms (e.g., cough, wheeze, production of phlegm, and shortness of breath) in asthmatic children. Epidemiologic studies also indicate that acute O₃ exposure is likely associated with increased asthma medication use in asthmatic children.

The extensive human clinical and animal toxicological evidence, together with the limited available epidemiologic evidence, is clearly indicative of a causal role for O₃ in inflammatory responses in the airways.

Aggregate population time-series studies observed that ambient O₃ concentrations are positively and robustly associated with respiratory-related hospitalizations and asthma ED visits during the warm season. These observations are strongly supported by the human clinical, animal toxicologic, and epidemiologic evidence for lung function decrements, increased respiratory symptoms, airway inflammation, and airway hyperreactivity.

Taken together, the overall evidence supports a causal relationship between acute ambient O₃ exposures and increased respiratory morbidity outcomes resulting in increased ED visits and hospitalizations during the warm season.

Repeated O₃ exposure over several days has been shown to increase responsiveness to bronchial allergen challenge in subjects with preexisting allergic airway disease, with or without asthma. Asthmatics also show a significantly greater neutrophil response (18 h postexposure) than similarly-exposed healthy individuals.

Epidemiologic studies have reported associations with a range of respiratory health outcomes in asthmatics, from decreases in lung function to hospitalization or ED visits for asthma, thus supporting this population group as being likely to experience increased risk for O₃-induced health effects.

Part 4 - State Regulators Cherry Pick Studies and Misrepresent EPA Science. A Case Study of Ozone Smog. One might suspect that with the qualifications of the EPA and outside scientists who work on the criteria document, and the qualifications of the CASAC panel that provided the review mandated by the Clean Air Act, state regulators would be supportive of the NAAQS setting process and have some comfort that EPA is setting standards that are based on sound science.

Unfortunately, that is not the case in Texas.

The TCEQ, under the leadership of Chairman Shaw and his predecessors Buddy Garcia and Kathleen White, has repeatedly attacked the EPA ozone standard and the other NAAQS that have been updated. Chairman Shaw and his staff submit comments to EPA, letters to newspapers, and make statements in public meetings that are critical of the EPA standard setting process and that cast doubt on whether ozone smog is toxic at all. They do so by cherry picking the one or two studies that run counter to the scientific consensus and then presenting those one or two studies to the public as the definitive and most scientific work that has been published and the only ones that are important in Texas. They also repeatedly misrepresent the process that EPA follows, which is truly amazing given the exhaustive scientific review that EPA performs,

the number of outside experts from medical schools and universities around the world that are brought in to provide assistance, and the rigorous review provided by the Clean Air Science Advisory Committee. Hopefully, the brief synopsis and listing of experts provided in this short letter demonstrates to your Committee the level of scientific rigor that EPA follows, and the misguided nature of TCEQ's attacks on EPA science.

For example, the good people at the Environmental Defense Fund (EDF) wrote about TCEQ attacks on the ozone standard.¹⁰ According to EDF, testimony of Mike Honeycutt, TCEQ chief toxicologist, to EPA about the ozone standard in 2011 included this distortion: "These studies are based on the supposition that the majority of people breathe outside air 8 to 24 hours each day while the scientific data clearly show this is not the case." In actual fact, the hundreds of studies that EPA reviews include a full range of exposures, from short term 1-hr exposures to examine acute effects, to studies that examine year and multiyear exposures and differences in ozone between metropolitan areas where people live for decades. As EDF notes, Mr. Honeycutt's comments also seem to suggest that Texans who do spend long hours outdoors – construction workers, carpenters, utility workers, lifeguards and athletes – don't deserve protection by the EPA from the health impacts of ozone.¹¹

Mr. Honeycutt also demonstrates what can only be described as a complete lack of understanding of the most basic tenets of epidemiology when he attempts to use the excuse that asthma attack incidents are higher in the winter (when ozone levels are low) than in the summer (when ozone levels are high) as an excuse not to regulate ozone. The state has even gone so far as to suggest that perhaps ozone exposure is protective of human health, in complete and total contradiction to the consensus of the hundreds of scientists who study ozone toxicology and epidemiology for a living and publish peer-reviewed papers on the subject.

¹⁰ <http://blogs.edf.org/energyexchange/2010/02/11/tceq-at-it-again/>

¹¹ U.S. EPA. Air Quality Criteria for Ozone and Related Photochemical Oxidants (2006 Final). U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-05/004aF-cF, 2006.

According to EDF, Mr Honeycutt said, “We hear anecdotally that hospital visits for asthma rise when ozone levels rise, but hospital admissions data show this is not the case. Texas Inpatient Hospital Discharge data on numbers of hospital visits for asthma between 1999 and 2001 actually show that fewer children in Texas visit the hospital for asthma during peak summer ozone season as compared to wintertime. Results from a 4-year (2000-2003) air quality study conducted by Texas A&M University and Driscoll Children’s Hospital indicate hospital admissions to be weakly correlated with ambient daily maximum ozone levels. The Kaiser Permanente Report and the Gauderman study in 2004 found no increased hospital admissions in elderly patients and health effects in children due to ozone alone.”¹²

Perhaps Mr. Honeycutt is unable to grasp the basic concept that complex diseases like asthma can and do have multiple triggers, like ozone (which is higher in the summer) or viral infections (which are higher in the winter).¹³

The TCEQ Commissioners also show no embarrassment about stepping out of their fields of expertise, and making statements about ozone and public health that fly completely against the medical consensus of the hundreds of scientists and the thousands of papers that formed the recent EPA criteria document.

When a group of Dallas County doctors recently petitioned the TCEQ to take steps to reduce ozone in Dallas-Fort Worth to bring the area into compliance with the NAAQS, the Dallas Morning News reported this response from Chairman Shaw:¹⁴

¹² <http://blogs.edf.org/energyexchange/2010/02/11/tceq-at-it-again/>

¹³ http://science.house.gov/sites/republicans.science.house.gov/files/documents/hearings/100411_Honeycutt.pdf

¹⁴ <http://thescoopblog.dallasnews.com/2013/10/texas-rejects-dallas-county-doctors-bid-to-cut-coal-pollution-as-premature-still-seeing-harm-to-our-patients-doctor-says.html/>

Describing the doctors' request as premature, commissioners said they could address any concerns about pollution in the next scheduled update of the state's Dallas-Fort Worth clean-air plan, due for a commission vote in December 2014.

They also questioned the role of ground-level ozone, or smog, in public health. Chairman Bryan W. Shaw said studies suggest that cutting ozone alone might not prevent asthma attacks. "I'm convinced that it doesn't make sense to get ahead of the science," Shaw said. He later added, "I don't want there to be this knee-jerk reaction."

New Commissioner Toby Baker, who seems to be an honorable official, is nonetheless not a research scientist nor a physician. His science background consists of a bachelors degree in poultry science from Texas A&M University. Despite his lack of direct scientific training on ozone epidemiology, he took the lead from Chairman Shaw and himself recently opined against the overwhelming expertise of the hundreds of doctors and scientists who worked on the EPA criteria document (through a review of thousands of studies):¹⁵

Commissioner Toby Baker said asthma has "a wealth of confounding factors." To assume that a correlation between high ozone and asthma hospitalizations means ozone causes asthma is "frankly irresponsible," Baker said.

Under recent TCEQ leadership, TCEQ has shown itself willing to put politics and the wishes of the polluters in the state above sound science. In an earlier era, I don't doubt that the TCEQ leadership would have been standing with the tobacco companies denying year after year that smoking caused cancer and heart disease or was addictive. The TCEQ seems determined to sow doubts about the toxicity of ozone, and in leveling baseless charges about EPA and its regulations. Unfortunately, this kind of process has real world implications. Polluters should be seeing a united front from their state and federal regulators, knowing that environmental

¹⁵ Ibid

compliance is required by both. But when polluters see the state being so highly critical of EPA processes, even if its with artificial and fabricated arguments, it creates a mixed message and an atmosphere where polluters see the state agency as an excuse not to follow federal requirements. When it comes to the TCEQ, the great people of Texas deserve much better from the state agency they have charged with protecting their health.

Part 5 - Other Examples of State Failure and The Need for EPA Intervention to Save Lives and Protect Health. There are numerous other examples of state regulatory agency failure that put lives or ecosystems at risk that then required EPA or other federal agencies to step in. They cannot be fully catalog in a short letter like this, but I am happy to provide additional information in the future if the Committee wishes. The failures include:

(a) Former TCEQ Chairman Kathleen White and TCEQ managers knowing that TCEQ staff were altering test reports mandated by the Safe Drinking Water Act of levels of radioactivity in drinking water in numerous Texas communities. EPA enforcement staff had to step in to assure that the test reports were not altered and that people were properly notified that their water was unsafe to drink.^{16 17}

(b) TCEQ failing to take steps necessary to bring ambient ozone levels in Houston down from extreme levels in the 1990's, until EPA stepped in and threatened to withhold federal highway construction funds unless TCEQ got serious. The engagement by EPA resulted in the creation of the highly successful "Texas Emission Reduction Program" which has taken thousands of old dirty diesel vehicles off the road and replaced them with cleaner vehicles, resulting in cleaner air for millions of Houstonians.¹⁸

¹⁶ "Texas politicians knew agency hid the amount of radiation in drinking water."

<http://www.khou.com/news/local/-Texas-politicians-knew-agency-hid-the-amount-of-radiation-in-drinking-water-122205439.html>

¹⁷ <http://www.texasvox.org/radiation-in-houstons-tap-water-compounded-by-tceq-lowballing-radiation-scores-in-drinking-water-throughout-texas/>

¹⁸ <http://governor.state.tx.us/news/speech/10620/>

(c) In 2011, TCEQ officials attempted to muzzle Rice University Professor John Anderson and edit a report he was writing for the state on the impacts of sea level rise in Galveston Bay and the effects that climate change are having on sea level along the Texas coast. Dr. Anderson's scientific statements about climate change are consistent with the 98% of the world's scientists who acknowledge the reality of carbon emissions changing the climate. Unfortunately, the scientific consensus and the statements of Dr. Anderson run counter to the opinions of Governor Perry and commissioners he has appointed to run the TCEQ.^{19 20}

(d) In 2010, EPA issued an imminent and substantial endangerment enforcement order against a natural gas driller in Parker County, Texas after EPA scientists concluded that natural gas in drinking water wells near a drilling operation were contaminated with natural gas from the producer and that levels were high enough to cause a risk of fire or explosion.²¹ Since EPA got involved, the contamination in Parker County has been reviewed numerous times by: 1. an geologist from the University of Wyoming/Colorado School of Mines who has worked in the past for oil/gas producers;²² 2. the Inspector General's Office²³; 3. Duke University²⁴; 4. independent consultants and scientists for an affected homeowner.^{25 26 27} All 4 outside lines of

¹⁹ <http://www.chron.com/news/houston-texas/article/Professor-says-state-agency-censored-article-2212118.php>

²⁰ http://www.ricethresher.org/censored-professor-revokes-article-1.2682502#.UvEYq_lDWS0

²¹ http://www.epa.gov/region6/6xa/pdf/range_order.pdf

²² <http://www.usatoday.com/story/news/nation/2013/01/16/epa-gas-company-protested/1839857/>

²³ <http://www.epa.gov/oig/reports/2014/20131220-14-P-0044.pdf>

²⁴ <http://www.star-telegram.com/2014/01/17/5494950/new-tests-find-more-methane-in.html>

²⁵ <http://www.eenews.net/energywire/2013/11/04/stories/1059989870>

²⁶ <http://www.eenews.net/stories/1059976604>

²⁷ http://www.eenews.net/assets/2013/02/19/document_ew_03.pdf

evidence have supported the science and law behind EPA's action in Parker County, and yet, the Railroad Commission has yet to order the driller to fix the contamination problem.

Conclusion

The sole drinking water source for 300,000 people in West Virginia was recently contaminated by a chemical spill. We now know that spill was the result of a bad corporate actor, but also enabled by the complete failure by state regulators to properly protect the public from the chemical company that contaminated the water.

Unfortunately, to the people of Texas, that kind of absent environmental enforcement is all too familiar. Failure to enforce the law and a complete lack of accountability for safety at state agencies contributed to the explosion at West Fertilizer on April 17, 2013 that left 15 Texans dead and injured another 160. On March 23, 2005, the explosions at the BP Texas City refinery left 15 dead, 170 injured. On April 16, 2013, a fire at the Exxon Mobil Beaumont complex caused 1 death, 11 injuries. And these are just a small snapshot of the kinds of accidents that government regulations are supposed to prevent.

Regrettably, even federal agencies that are either starved of resources or who develop relationships that are too close to the industries they are supposed to oversee can fail badly, resulting in tragic consequences. For example, when the Mine Safety and Health Administration failed to act, a mine collapse at the Massey Big Branch Mine in West Virginia in 2010 killed 29 miners. When the Minerals Management Service (MMS) failed to properly assure the safety of offshore drilling, the Deepwater Horizon Platform exploded in 2010 in the Gulf killing 11 workers. The MMS has rightfully been dismantled and completely replaced.

Congress should be finding ways to fully fund, empower, and support federal agencies like EPA and OSHA, not holding hearings designed to muzzle the federal agencies and prevent public health protections.

Sincerely yours,

A handwritten signature in black ink that reads "Neil J. Carman". The signature is written in a cursive, flowing style.

Neil J. Carman, Ph.D.

Clean Air Program Director

Lone Star Chapter of the Sierra Club

1202 San Antonio street

Austin, Texas 78701

cc: The Honorable Lamar Smith

Chairman

Committee on Science, Space and Technology

cc: marcy.gallo@mail.house.gov

Appendix -- Summary of Oil Refinery Air Toxics Emissions

Oil refineries even today in 2014 are allowed to emit many toxic chemicals and criteria pollutants, which is why major upset/malfunction/breakdown emissions from the oil refineries poses a concern for public health in communities nearby and downwind to these sources. Failure by state agencies to properly enforce the Clean Air Act and issue fines sufficient to create changes in corporate behavior have enabled millions of pounds of illegal emissions from refineries entering the skies of Texas the last several decades.

Most air toxics are reported in the EPA's Toxic Release Inventory (TRI) annual reporting system. But they are not separated out from annual emissions inventories that include normal operating emissions and upset emissions. In this Appendix I explain the toxic nature of emissions from refineries, showing why the lack of enforcement of environmental regulations is particularly harmful in Texas.

1. BENZENE EMISSIONS - KNOWN HUMAN CARCINOGEN: Large volumes of benzene are emitted during the refining process and may be larger than chemical plants. Benzene gas is routinely emitted as fugitive leaks from several hundred thousand pieces of equipment in benzene service, such as pumps, valves, flanges, connectors, compressors, and other equipment. Flares do not burn all benzene and excessive benzene vapors can escape especially during flare smoking events related to upset events. Refineries emit tens of thousands of pounds of benzene every year and are not yet required have the monitoring technology to precisely measure 100% of the benzene fugitive and stack emissions they release, and so the benzene emissions are reported as estimates.

2. AIR TOXIC EMISSIONS - CARCINOGENS, TERATOGENS, MUTAGENS, and other health effects result from a soup of air toxics. Air toxics include Benzene, 1,3-Butadiene, Diethanolamine, Dioxin, Methyl Tertiary Butyl Ether, several Polycyclic Organic Compounds (PAHs), Styrene; Carbon disulfide, Carbonyl sulfide, Cyclohexane, Hydrofluoric acid, Methyl

Ethyl Ketone, Naphthalene, Phenol, Propylene, Sulfuric acid, 1,2,4-trimethylbenzene; Biphenyl, Cumene, Dioxin, Ethylene, Ethylbenzene, and Xylenes;

3. HYDROGEN SULFIDE (H₂S) EMISSIONS - NEUROTOXIN: Tar sands crude is a dirty feed stock containing H₂S gas and sulfur compounds. H₂S is a potent neurotoxin and genotoxin. This a prime reason refineries stink.

4. SULFUR & SULFUR COMPOUND EMISSIONS - CHRONIC AND ACUTE TOXINS: Emissions profile includes lots of toxic sulfur compounds such as sulfur dioxide (SO₂), sulfur trioxide (SO₃), sulfurous acid (H₂SO₃), sulfuric acid (H₂SO₄), carbonyl sulfide (COS), carbon disulfide (CS₂), hydrogen sulfide (H₂S), and others. Sulfur compounds are typically stinky compounds and several are toxic chemicals like H₂S, COS, and CS₂.

5. FINE PARTICLES EMISSIONS - CHRONIC AND ACUTE TOXINS: Cracking units such as the fluid catalytic cracker (FCCU) emit large volumes of toxic PM_{2.5} (fine particulate matter or fine particles) compared to chemical plants which will have less PM_{2.5} and have no similar catalytic crackers. Ultrafine particles less than one micron are not currently regulated or controlled. Polycyclic Aromatic Compounds (PAHs) or Polycyclic Organic Matter (POMs) are multiple benzene-containing toxins like benzo-alpha-pyrene (BAP), which is a more powerful human cancer-causing agent than benzene. Dozens of PAHs are considered as recognized or suspected human carcinogens.

6. CATALYSTS - ACUTE AND CHRONIC TOXINS: Catalysts contain different toxic heavy metals such as vanadium, etc. used in cracking units and alkylation catalysts such as HF or H₂SO₄. Catalysts are emitted as PM_{2.5} fine particles and ultrafines.

7. KEY AIR TOXIC SUBSTANCES EMITTED FROM OIL REFINERIES:

* 7 refinery Carcinogens: Benzene, 1,3-Butadiene, Diethanolamine, Dioxin, Methyl Tertiary Butyl Ether, several Polycyclic Organic Compounds (PAHs), Styrene;

* 14 refinery Acute Toxins: Ammonia, Carbon disulfide, Carbonyl sulfide, Cyclohexane, Hydrogen sulfide, Hydrofluoric acid, Methyl Ethyl Ketone, Methyl Tertiary Butyl Ether, Naphthalene, Phenol, Propylene, Sulfur trioxide, Sulfuric acid, 1,2,4-trimethylbenzene;

* 22 refinery Chronic Toxins: Ammonia, Benzene, Biphenyl, 1,3-Butadiene, Carbon disulfide, Carbonyl sulfide, Cumene, Cyclohexane, Dioxin, Ethylene, Ethylbenzene, Hydrogen sulfide, Hydrofluoric acid, Methyl Ethyl Ketone, Methyl Tertiary Butyl Ether, Naphthalene, Styrene, Propylene, Styrene, Sulfur trioxide, Sulfuric acid, 1,2,4-trimethylbenzene, Xylenes;

* 8 refinery Developmental Toxins: Benzene, Biphenyl, 1,3-Butadiene, Dioxin, Ethylbenzene, Phenol, Toluene, Xylenes

* 1 refinery Mutagenic Toxin: Styrene

* 3 refinery Neurotoxins: Cumene, Hydrogen sulfide, Mercury,

* 6 refinery Reproductive Toxins: Benzene, 1,3-Butadiene, Dioxin, Ethylbenzene, Toluene, Xylenes

* 8 refinery Toxic Metals from tar sands crude oil: Mercury, Zinc (zinc oxide), Lead, Nickel, Chromium, Boron, Arsenic, and Vanadium, as well as organocomplexes of those metals

List of refinery air toxics including Hazardous Air Pollutants:

Ammonia - AT, CT

Benzene - C, BD, R, CT - ***

Biphenyl - BD, CT - ***

1,3-Butadiene - C, BD, R, CT - ***

Carbon disulfide (CS₂) - AT, CT - ***

Carbonyl sulfide (COS) - AT, CT - ***

Cumene - CT, N - ***

Cyclohexane - AT, CT
Diethanolamine (DEA) - C - ***
Dioxin (TCDD) - C, BD, R, CT - ***
Ethylene - CT
Ethylbenzene - BD, R, CT - ***
Hydrogen sulfide (H₂S) - N, AT, CT
Hydrofluoric acid (HF) - AT, CT - ***
Mercury (Hg) - N - ***
Methyl Ethyl Ketone (MEK) - AT, CT - ***
Methyl Tertiary Butyl Ether (MTBE) - C, AT, CT - ***
Naphthalene - AT, CT - ***
Phenol - BD, AT - ***
Polycyclic Organic Compounds (PAHs) - C - ***
Propylene - AT, CT
Styrene - C, M, CT - ***
Sulfur trioxide (SO₃) - AT, CT
Sulfuric acid (H₂SO₄) - AT, CT - ***
1,2,4-trimethylbenzene - AT, CT - ***
Toluene - BD, R - ***
Xylenes - BD, R, CT - ***

AC = ACUTE TOXIN

BD = DEVELOPMENTAL TOXIN (causes birth defects)

C = CARCINOGEN, or known human cancer-causing agent

CT = CHRONIC TOXIN

M = HERITABLE MUTAGEN (causes genetic changes to DNA or genes)

N = NEUROTOXIN

R = REPRODUCTIVE TOXIN

***HAP = HAZARDOUS AIR POLLUTANT - the most toxic air pollutants and are deemed to be "hazardous" under the 1990 Clean Air Act (list of 188 HAPs is in Title III of 1990 Federal Clean Air Act Amendments, November 15, 1990)

Benzene-containing "aromatics" compounds include: Toluene, Xylenes, Benzene, Ethylbenzene, Naphthalene, Phenol, Cumene, Polycyclic Aromatic Hydrocarbons (PAHs), Cresols, Styrene, Biphenyl, Dibenzofuran, Acetophenone, Quinoline, Chlorinated Dibenzofurans, and Chlorinated Dioxins.