

**IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF INDIANA**

| | | |
|--|---|-----------------------------|
| THE SIERRA CLUB; THE CHEMICAL WEAPONS |) | |
| WORKING GROUP; CITIZENS AGAINST |) | |
| INCINERATION AT NEWPORT (CAIN); |) | |
| COMMUNITY IN-POWER DEVELOPMENT |) | |
| ASSOCIATION (CIDA); SARA MORGAN; |) | |
| LEONARD AKERS; HILTON KELLEY; |) | |
| MOYA GREEN; AND ANISHA SWALLOW, |) | |
| |) | |
| Plaintiffs, |) | |
| |) | |
| v. |) | Case No.: |
| |) | 2:07-cv-0101 LJM-WGH |
| DR. ROBERT M. GATES, SECRETARY OF |) | |
| DEFENSE; PETE GEREN, SECRETARY OF THE |) | |
| ARMY; UNITED STATES DEPARTMENT OF |) | |
| DEFENSE; UNITED STATES DEPARTMENT OF |) | |
| THE ARMY; VEOLIA ENVIRONMENTAL |) | |
| SERVICES, INC., |) | |
| |) | |
| Defendants. |) | |

DECLARATION OF NEIL J. CARMAN

I, Neil Carman, hereby declare as follows:

1. I have personal knowledge of the following and could competently testify if called as a witness.
2. My principal place of residence is 2 Crystal Creek Trail in Austin, Texas 78737-9067.
3. I have 27 years combined experience in the field of air pollution control including modern incinerators similar to the Veolia hazardous waste incinerator at Port Arthur, Texas.
4. I served 12 years (1980-1992) as a state environmental regulatory official at the Texas

Air Control Board (now the Texas Commission on Environmental Quality), which has federal regulatory oversight of industrial plants in Texas. More recently, I have 15 years working in environmental regulation and policy implementation primarily in the state of Texas with non-governmental organizations, including the Sierra Club's Lone Star Chapter, and nearly ten years with the Galveston-Houston Association for Smog Prevention.

5. Since 1992, I have frequently provided technical support and consultation to dozens of communities next to industrial sites, including many with waste incineration facilities in the U.S. (Arkansas, California, Florida, Michigan, Ohio, Pennsylvania, Texas, and others) and to a lesser extent in Canada, and Europe (Belgium, France, United Kingdom, and Italy). Citizens in waste incineration communities seek my expertise regarding types of air emissions, stack air monitoring, ambient air monitoring, regulatory standards, permits, compliance, and fuel use to help them find solutions to continuing pollution problems.

6. My years at the Texas Air Control Board (TACB) were spent entirely in the field inspecting, for the state and federal air regulatory program compliance, a broad range of industrial plant sites such as Portland cement kilns, industrial waste incinerators, hospital waste incinerators, burn out ovens, oil refineries, chemical plants, petrochemical plants, power plants, natural gas processing plants, asphalt plants, secondary steel processing facilities, pipe coating operations, and others.

7. At the Texas state air agency, I served as a regional TACB investigator conducting compliance inspections at more than 200 industrial plants annually and participating in stack testing and fence line monitoring activities in addition to being an observer in stack testing and stack continuous emissions monitor performance certifications.

8. I was involved in responding to more than 1,000 citizen complaints of air pollution

around major and minor industrial facilities, and, as a consequence, became aware of emissions problems associated with different types of industrial facilities including incinerators. As a result of non-compliance investigations and serious violation confirmation at large and small sources, I have testified as a state expert in enforcement cases in trials held in state district court, including several cases involving waste incinerator problems and violations.

9. I have inspected waste incinerators similar to the Veolia toxic waste incinerator at Port Arthur and am aware of operating problems in incinerators such as rotary kiln upset conditions, kiln refractory degradation, kiln hot spots, thermal couple failure, temperature control problems, pollution system control problems, and excess emissions events.

10. My state TACB duties included serving as chief of the regional stack testing program with the responsibility to conduct major source stack testing, observing contractors performing stack testing, and analyzing stack test reports at sources like incinerators. I performed ambient air monitoring at industrial sites for pollutants such as hydrogen sulfide, sulfur dioxide, hydrogen chloride gas, particulate matter, and volatile organic compounds.

11. In 1993 I was appointed and served as a member of the Texas Air Control Board's multi-stake holder Task Force on Nuisance Odors to assess how the state agency might better address nuisance air pollution problems across the state since the TACB receives more than 6,000 air pollution complaints annually. I served as an independent technical advisor to an innovative Houston-Channelview Source Reduction Project set up by citizens living near Lyondell Petrochemical and Equistar Chemical (two of largest chemical mfg. complexes along the Houston Ship Channel) to cut toxic air pollution by over one million pounds by working together with officials from the two chemical companies on a voluntary basis.

12. I currently serve as clean air program director for Sierra Club in Texas and review

compliance at industrial sources, including waste incinerators. I prepare assessments of compliance with regulatory requirements as well as health and environmental impacts of emissions, which has led to work in waste incinerator communities in many states. A copy of my CV is attached as Exhibit "A."

13. Incineration as conducted at the Veolia Environmental Services commercial hazardous waste incinerator is far from a perfect technology and pollutants are continuously released to the atmosphere in stack gases, ashes, other residues, and fugitive emissions. The pollutants released contain an extensive array of toxic substances, including innumerable chemicals that currently remain unidentified. Chemicals released may also be in concentrations below the minimum detection limits of the laboratory analyzers and yet may increase the exposures of local community members to toxic air pollution.

14. Chemicals released include chlorinated and other halogenated dioxins and dibenzofurans, polychlorinated biphenyls (PCBs), polychlorinated naphthalenes, chlorinated benzenes, polycyclic aromatic hydrocarbons (PAHs), numerous volatile organic compounds (VOCs), and heavy metals including mercury, lead, cadmium, chromium, and arsenic. Chemicals are released as a result of standard combustion disposal operations in incinerators when waste materials are being burned. Modern incinerators like Veolia's are designed and operated with several inherent flaws in the combustion technology, since they are large machines prone to certain types of malfunctions, breakdowns and failures resulting in higher rates of chemicals being released than assumed or allowed by the permit.

15. I observed inherent design and operational flaws in incinerator combustion technology while working as a state air pollution regulatory official in Texas inspecting incinerators in the 1980-1990s. Every incinerator experienced malfunctions and combustion

problems such that emissions of toxic substances exceeded permit allowable limits and violations were issued. State administrative enforcement actions and even legal actions in state district court were pursued in several cases in response to local community complaints about the illegal levels of air pollution being emitted.

16. Many chemicals released by incinerators are known to be persistent (highly resistant to biological breakdown in the environment and inside human tissues), bioaccumulative (concentrations increase over time with repeated exposure in tissues of the biological organism including humans), and toxic (display one or more of a multitudinous array of health effects). The classes of toxic chemicals released include mutagens, carcinogens, teratogens, neurotoxins, immunotoxins, endocrine toxicants, kidney-liver toxicants, respiratory toxicants, poisons of the blood-cardiovascular system, developmental toxicants, and others. The U.S. EPA terms such chemicals as PBT's with "P" for persistence, "B" for bioaccumulative, and "T" for toxic. The three properties of PBT's make them clearly the most problematic chemicals to which biological systems can be exposed.

17. Permitted stack emissions and inadequately monitored emissions raise many community health concerns. Incineration technology is subject to numerous problems which may impact the quality of the air in an impacted community such as Port Arthur. For example, all modern waste incinerators are granted state and federal environmental permits that allow certain volumes of toxic stack gaseous and particulate matter emissions to occur during waste treatment. The emissions are assumed to be safe if the incinerator is operating properly within its limitations. Yet the fact is that many toxic substances are not continuously monitored during combustion disposal. Some of the stack gases are monitored but certainly not 100% of the toxic compounds. The permits indicate that toxic substances will be released on a routine daily basis

24/7 when the incinerator is being fed with solid and/or liquid waste materials. Normal incineration allows routine toxic emissions from the stack.

18. Incineration technology is prone to experience various problems including equipment malfunctions and breakdowns like any high temperature thermo-mechanical-electrical device. See attached Exhibit B, a preliminary list I prepared of potential upset conditions in modern state-of-the-art incinerators. Several of these are applicable to Veolia's incinerator.

19. Modern incinerators are equipped with standard bypass dump stacks to circumvent the air pollution control systems during upset events. See attached Exhibit C, a preliminary stack bypass emissions list I prepared based on potential specific upset conditions that may occur in modern incinerators including Veolia's incinerator.

20. Serious environmental concerns have been expressed about the Port Arthur hazardous waste incinerator and similar incinerators. See attached Exhibit D of a copy of an affidavit prepared by U.S. EPA Dallas Regional Administrator Adlene Harrison prepared in 1993 over her concerns in modern state-of-the-art hazardous waste incinerators, including the facility at Port Arthur, Texas.

21. The burning of VX waste containing detectable concentrations of the highly toxic organic chemical by the name O-ethyl-S-(2-diisopropylaminoethyl) methyl phosphonothiolate poses serious community health concerns in Port Arthur given the proximity of the Veolia hazardous waste incinerator to the community and the heavy chemical pollution burden already experienced by Port Arthur residents, who have been living for decades under toxic low flying clouds of harmful gases and particulate matter drifting through their air supply on a regular basis. The National Research Council's (NRC) 2000 report "Review and Evaluation of Alternative Technologies for Demilitarization of Assembled Chemical Weapons" confirms that

chemical reformation of agent VX in the hydrolysate is expected if the pH drops (or is caused to drop) after the initial treatment. The NRC report in Appendix D "Agent Neutralization by Hydrolysis" (p 206) describes the hydrolysis of VX utilizing sodium hydroxide (NaOH) in a strong basic solution at a high pH. However, the NRC report confirms that if pH is allowed to drop, VX will reform. VX will reform in the treated NaOH solution if the pH is allowed to drop and the Army has provided no information on the pH levels of the hydrolysate during transport from Newport, Indiana to Port Arthur, Texas, and no pH measurements have been provided on the hydrolysate being stored at Port Arthur, Texas. Veolia is not required to conduct pH measurements before disposal by incineration. VX reformation is a serious public health issue in Port Arthur, Texas and the public would be gravely concerned in Port Arthur if they knew that VX reformation was possible at a lower pH than treatment.

22. The burning of one million to two million gallons of VX-containing liquid wastes in the Veolia incinerator has a potential to result in the stack gas release of unburned VX nerve agent into the atmosphere of Port Arthur because the incinerator does not achieve 100% destruction and removal efficiency of organic compounds. Trace concentrations of a broad array of chemicals are frequently detected during periodic incinerator stack tests and continuous monitoring of certain stack emissions from incinerators. When no wastes are being burned in an incinerator, such as during start-up on 100% natural gas, toxic emissions are normally substantially reduced. Then, primarily carbon dioxide and water vapor are being released along with traces of sulfur dioxide, some nitrogen oxides, and traces of a few other pollutants.

23. The danger from incineration of VX hydrolysate liquid waste is especially egregious because the Port Arthur incinerator facility is not required to use or equipped with a stack VX continuous emissions monitoring system (CEMS) that detects the chemical agent VX at

detectable concentrations if unburned VX molecules are present in the stack escaping into the atmosphere. Without operating a stack VX CEMS during VX disposal, unburned VX nerve agent may escape without being detected by Veolia and without the Veolia incinerator operators taking immediate action to abate the release of unburned VX nerve agent.

24. Incineration of VX hydrolysate liquid waste is further egregious because the Port Arthur incinerator facility is not required or equipped to perform community ambient air monitoring to measure and track if detectable levels of the chemical agent VX, or toxic byproducts, have escaped unburned into the Port Arthur community air supply. Without such a VX community ambient air monitoring system, the Veolia incinerator operators have no way to alert local Port Arthur residents if unburned VX chemical agent is released and drifting through Port Arthur exposing residents.

25. The local officials with the City of Port Arthur, Jefferson County Health Department, the state Texas Commission on Environmental Quality, and other regulatory agencies are also not prepared, trained or equipped to conduct VX community ambient air monitoring to measure and track if detectable levels of the chemical agent VX are present in Port Arthur.

26. The VX remaining in the liquid waste, according to the Army's own admissions, may be as high as 20 parts per billion and there is information suggesting that records exist showing VX at higher concentrations than 20 parts per billion. The higher the concentration of VX in the waste, the greater the potential for the release of larger amounts of unburned VX from the Veolia incinerator.

27. Army ACAMS and minicams can detect VX at some concentrations in air, as can Fourier Transform Infrared technology (FTIR), but there is no indication that such technology is in place at the Veolia facility. Current Army incineration facilities for destruction of chemical

warfare agents at Tooele, Utah, Anniston, Alabama, Pine Bluff, Arkansas, and Umatilla, Oregon rely on air monitoring systems specifically intended to detect agent VX and the other agents. At these Army facilities, the local population is provided training and safety equipment for use in a chemical emergency. None of these protective measures are available Port Arthur, Texas for incineration of the VX hydrolysate at the Veolia incinerator.

28. Port Arthur, Texas is an environmental justice community that already has been disproportionately impacted by oil refinery, chemical plant pollution, and hazardous waste incinerator emissions. The VX liquid waste shipment consisting of one million to two million gallons of VX waste presents a clear case of greater environmental injustice to the Port Arthur community.

29. According to the most currently available Texas state environmental agency air pollution database inventory that was prepared by the Texas Commission on Environmental Quality (TCEQ), Jefferson county ranks near the top in Texas in terms of the number of major industrial sources. The TCEQ's 2004 Criteria Air Emissions summary inventory of approximately 1800 Texas major industrial plants sorted by County, Jefferson County is listed with 72 plants and ranked #2 among 254 Texas counties, second only to Houston-Harris County (with 283 major plant sites), the latter being the most heavily industrialized region in the US for oil refining and chemical manufacturing plants.

30. The TCEQ's 2004 air pollution inventory summary data supports how high ranking Jefferson County and the Port Arthur area each are in numbers of major plant sources. The Texas counties with the largest numbers of major industrial plants are the following: 1.) Harris County - 283 major source plants; 2.) Jefferson County - 72 major source plants; 3.) Brazoria County - 67 major source plants; 4.) Galveston County - 40 major source plants; 5.) Chambers

County - 40 major source plants; 6.) Harrison County - 35 major source plants; 7.) Nueces County - 31 major source plants; 8.) Fort Bend County - 30 major source plants; 9.) Orange County - 28 major source plants; and 10.) Montgomery County - 26 major source plants.

31. Environmental pollution issues are a primary public concern in the Port Arthur-Golden Triangle along the Texas Gulf Coast.

32. The reason for public concerns over environmental pollution is that the Gulf Coast community of Port Arthur, Texas sits within one of the most heavily industrialized and chemically polluted corridors of the U.S. in Jefferson County, Texas.

33. Jefferson County has several large clusters of major petroleum refineries, chemical plants, petrochemical plants, miscellaneous other industrial plants, abandoned toxic waste sites, and hazardous waste incinerators.

34. The Jefferson County industrial region including Port Arthur is collectively known as the “Golden Triangle” for the fiery glow of the night sky from dozens of burning waste gas flares operating night and day at the refining, chemical and petrochemical plants, a majority of which plants fit generally into a triangular-shaped area.

35. The massive Jefferson County industrial corridor extends from Port Arthur on the south to adjacent Port Neches-Groves (the northeast side of Port Arthur) and up to Beaumont roughly ten miles to the north where Exxon Mobil has one of the largest oil refineries and chemical plant complexes in the nation.

36. Several additional large chemical plants are close by like the major EI DuPont DeNemours & Company Beaumont Works and Du Pont Dow Elastomers Beaumont plant that sit between Port Arthur and Beaumont.

37. Port Arthur, and West Port Arthur in particular, contain the largest single

concentration of major polluting industrial plants within Jefferson County.

38. The oil refineries, chemical and petrochemical plants are large manufacturing facilities each containing extensive chemical production-process units and sprawling tank farms with dozens of large tanks for storage of feedstocks and products. There are many feedstock and product pipelines that leak from time to time. Each plant covers several hundred acres in most cases.

***39. The Port Arthur industrial facilities are located primarily in two major complexes at opposite ends of the city. The West Port Arthur complex includes Valero's petroleum refinery, Motiva Enterprises's petroleum refinery, Huntsman's petrochemical plant, Chevron Phillips Chemical Company's chemical plant, the Great Lakes Carbon Corporation's petroleum coke plant, Equistar chemicals LP's PD Glycol chemical plant, Afton Chemical Additives, Air Products separation plant, several large crude oil and product tank farms, Veolia Environmental Services' commercial hazardous waste incinerator, and a number of smaller industrial sites with some not listed in the TCEQ's inventory since only major sources are shown. The East Port Arthur complex includes two large plants, BASF Fina Petrochemicals LP's petrochemical plant and Total Petrochemicals USA Inc.'s petroleum refinery.

40. Another industrial community adjacent to the northeast side of Port Arthur, Port Neches, is home to a large industrial complex with four major plants: 1) Huntsman' propylene oxide/MTBE petrochemical plant, 2) Huntsman' C4/Olefins & Oxides petrochemical plant, 3) Texas Petrochemicals 1,3-butadiene plant, and 4) Ameripol Synpol's synthetic rubber manufacturing plant. Adjacent to Port Arthur is Groves also on the northeast side of Port Arthur that contains the Southern Manufacturing plant.

41. Port Arthur contains three federal Superfund sites: Palmer Barge Line,

Star Lake Canal, and State Marine of Port Arthur. See

<[http://www.scorecard.org/community/cmy-npl-](http://www.scorecard.org/community/cmy-npl-sites.tcl?dw=f&fips_county_code=48245&zip_code=77640&name=JEFFERSON)

[sites.tcl?dw=f&fips_county_code=48245&zip_code=77640&name=JEFFERSON](http://www.scorecard.org/community/cmy-npl-sites.tcl?dw=f&fips_county_code=48245&zip_code=77640&name=JEFFERSON)>

42. Accompanying the operations of such large Port Arthur industrial facilities is an exceptionally high volume of toxic chemical air pollution and criteria air pollution. Criteria pollutants classified by the U.S. Environmental Protection Agency (EPA) include sulfur dioxide, particulate matter ten microns or less in aerodynamic diameter, particulate matter two and one half microns or less in aerodynamic diameter, nitrogen dioxide, carbon monoxide, lead and ozone. In fact, the U.S. EPA has officially designated the Beaumont-Port Arthur area as an eight-hour ozone nonattainment area (Jefferson, Orange and Hardin Counties) due to significant ground level ozone-smog problems attributed largely to industrial emissions of ozone-forming precursors like nitrogen oxides and volatile organic compounds. The Beaumont-Port Arthur area was previously designated by U.S. EPA as a one-hour ozone nonattainment area for more than a decade.

43. The U.S. EPA recognizes 666 toxic chemicals listed at <<http://www.epa.gov/tri/chemical/index.htm>> as toxic substances under its Toxic Release Inventory (TRI) program. In fact, based on the U.S. EPA's annual TRI database of the most polluted communities in the nation, the Port Arthur (zip code 77640) community and Jefferson County have frequently ranked among the top 10-20 areas in the U.S. for the highest volumes of toxic substances released into the environment between 1988-2004, especially releases to the air.

44. In 2002, TRI reporting plants in Jefferson County, Texas reported 25,167, 891 pounds of toxic substances released to the environment and ranked #3 in Texas after Brazoria and Harris Counties. Jefferson County had 11,035,685 pounds of TRI air releases and ranked #2

in Texas after Harris County. Jefferson County, Texas ranked #21 nationally in 2002 for TRI air releases and #18 in total TRI environmental releases. The TRI air releases raise serious community health concerns since the toxic emissions routinely waft through and over the city of Port Arthur often exposing thousands of residents to daily pollution assaults.

45. Toxic chemicals routinely released in Port Arthur itself (zip code 77640) involve several million pounds of TRI air pollution including a multitude of organic chemicals and inorganic chemicals such as the following emitted by oil refineries, petrochemical and chemical plants [Note: this TRI data does not include chemical releases from the Veolia incinerator listed in paragraph 46]:

A) Recognized carcinogenic organic compounds such as benzene, 1,3-butadiene, lead, ethylbenzene, naphthalene and others;

B) Suspected carcinogens such as styrene [vinyl benzene], polycyclic aromatic compounds, and mercury compounds;

C) Suspected cardiovascular or blood toxicants such as 1,3-butadiene, benzene, 1,2,4-trimethylbenzene, phenol, lead, mercury compounds, chlorine, toluene, xylene (mixed isomers meta-, para- and ortho-), ethylbenzene, naphthalene, hydrofluoric acid, polycyclic aromatic compounds and styrene;

D) Recognized developmental toxicants such as benzene, 1,3-butadiene, lead, mercury compounds and toluene;

E) Suspected developmental toxicants such as N-hexane, xylene (mixed isomers meta-, para- and ortho-), ethylbenzene, methanol, naphthalene, phenol, hydrofluoric acid and styrene;

F) Suspected endocrine toxicants such as benzene, ethylbenzene, lead and

styrene;

G) Suspected immunotoxicants such as lead, benzene, toluene, xylene (mixed isomers meta-, para- and ortho-), hydrochloric acid and styrene;

H) Suspected kidney toxicants such as lead, chlorine, toluene, xylene (mixed isomers meta-, para- and ortho-), ethylbenzene, phenol, methanol and styrene;

I) Suspected gastrointestinal or liver toxicants such as lead, 1,3-butadiene, benzene, chlorine, toluene, xylene (mixed isomers meta-, para- and ortho-), ethylbenzene, methanol, naphthalene, dicyclopentadiene, phenol, cumene, hydrofluoric acid, hydrochloric acid, polycyclic aromatic compounds, ammonia and styrene;

J) Suspected neurotoxicants such as mercury compounds, phenol, lead, ethylene, N-hexane, 1,3-butadiene, benzene, 1,2,4-trimethylbenzene, chlorine, cyclohexane, toluene, xylene (mixed isomers meta-, para- and ortho-), ethylbenzene, methanol, naphthalene, ethylene, dicyclopentadiene, hydrofluoric acid, cumene, ammonia and styrene;

K) Recognized reproductive toxicants such as 1,3-butadiene, hydrofluoric acid, lead and benzene;

L) Suspected reproductive toxicants such as phenol, N-hexane, toluene, xylene (mixed isomers meta-, para- and ortho-), ethylbenzene, polycyclic aromatic compounds, ammonia and styrene;

M) Suspected respiratory toxicants such as phenol, propylene, ethylene, lead, N-hexane, 1,3-butadiene, benzene, 1,2,4-trimethylbenzene, chlorine, toluene, xylene (mixed isomers meta-, para- and ortho-), ethylbenzene, methanol, naphthalene, ethylene, propylene, sulfuric acid, hydrofluoric acid, hydrochloric acid, polycyclic aromatic compounds, ammonia and styrene;

N) Suspected skin or sense organ toxicants such as phenol, 1,3-butadiene, lead, benzene, chlorine, toluene, xylene (mixed isomers meta-, para- and ortho-), ethylbenzene, methanol, naphthalene, cumene, hydrochloric acid, sulfuric acid, hydrofluoric acid, polycyclic aromatic compounds, ammonia and styrene; and finally

O) Suspected musculoskeletal toxicants such as sulfuric acid, hydrofluoric acid and hydrochloric acid.

46. Veolia's TRI chemicals released into the air of Port Arthur comprised 17,828 pounds of highly toxic air pollution including a multitude of organic chemicals and inorganic chemicals such as the following:

A) Recognized carcinogenic (38 substances totaling 2,783 pounds) organic compounds such as 1,2-dichloroethane, tetrachloroethylene, benzene, dichloromethane, naphthalene, chloroform, formaldehyde, trichloroethylene, carbon tetrachloride, diaminotoluene (mixed isomers), 1,1-dimethyl hydrazine, 2-nitropropane, nickel compounds, ortho-toluidine, epichlorohydrin, acetaldehyde, 1,3-dichloropropene (mixed isomers), pyridine, 1,1,2-trichloroethane, ethyl acrylate, creosotes, dimethyl sulfate, dimethylcarbamoyl chloride, urethane, propane sultone, hydrazine, chloromethyl methyl ether, methyl hydrazine, benzyl chloride, N-nitrosomethylvinylamine, cadmium compounds, ethylbenzene, polychlorinated biphenyls (PCBs), 2,4-diaminotoluene, 1,3-butadiene, 3,3'-dimethoxybenzidine, (1,1'-biphenyl)-4,4'-diamine, 3,3'-dimethyl-3,3'-dichlorobenzidine;

B) Suspected carcinogens (10 chemicals totaling 704 pounds) such as mercury compounds, vinyl acetate, styrene [vinyl benzene], arsenic (organic or inorganic compounds), dichlorobenzene (mixed isomers), polycyclic aromatic compounds, allyl chloride, crotonaldehyde, diethanolamine, and chromium compounds;

C) Suspected cardiovascular or blood toxicants (49 chemicals totaling 8,316 pounds) such as methyl ethyl ketone, phenol, 1,2-dichloroethane, Freon 113, mercury compounds, benzene, dichloromethane, toluene, chlorobenzene, naphthalene, N-butyl alcohol, xylene (mixed isomers meta-, para- and ortho-), chloroform, allyl alcohol, ethylene glycol monomethyl ether, trichloroethylene, carbon tetrachloride, 1,1-dimethyl hydrazine, 2-nitropropane, nickel compounds, Ortho-toluidine, styrene, ethylene glycol, hydrofluoric acid, epichlorohydrin, arsenic compounds (organic or inorganic compounds), 1,1,1-trichloroethane, polycyclic aromatic compounds, formic acid, 1,1,2-trichloroethane, dimethylamine, dimethyl sulfate, N,N-dimethylaniline, methyl chlorocarbonate, propane sultone, hydrazine, chloromethyl methyl ether, propargyl alcohol, methyl hydrazine, benzyl chloride, cresol (mixed isomers), diethanolamine, ethylbenzene, 1,-chloro-1,1-difluoroethane, 2,4-diaminotoluene, and 1,3-butadiene;

D) Recognized developmental toxicants (8 chemicals totaling 1,028 pounds) such as mercury compounds, benzene, toluene, ethylene glycol monoethyl ether, urethane, N-methyl-2-pyrrolidone, polychlorinated biphenyls (PCBs), and 1,3-butadiene;

E) Suspected developmental toxicants (30 chemicals totaling 14,633 pounds) such as methanol, methyl ethyl ketone, N-hexane, phenol, 1,2-dichloroethane, tetrachloroethylene, chlorobenzene, naphthalene, xylene (mixed isomers meta-, para- and ortho-), chloroform, trichloroethylene, carbon tetrachloride, diamonotoluene (mixed isomers), 2-nitropropane, nickel compounds, styrene, ethylene glycol, hydrofluoric acid, arsenic (organic or inorganic compounds), 1,1,1-trichloroethane, acetaldehyde, tertiary-butyl alcohol, ethyl acrylate, allyl chloride, methyl methacrylate, hydrazine, benzyl chloride, methyl isocyanate, cadmium compounds, and ethyl benzene;

F) Suspected endocrine toxicants (14 chemicals totaling 1,055 pounds) such as benzene, dichloromethane, chloroform, ethylene glycol monomethyl ether, trichloroethylene, carbon tetrachloride, styrene, epichlorohydrin, 1,2-dichlorobenzene, N,N-dimethylaniline, hydrazine, 2-methylacetonitrile, ethyl benzene, and polychlorinated biphenyls (PCBs) ;

G) Suspected immunotoxicants (25 chemicals totaling 1,249 pounds) such as benzene, toluene, xylene (mixed isomers), formaldehyde, trichloroethylene, nickel compounds, styrene, hydrochloric acid, epichlorohydrin, acetaldehyde, 1,3-dichloropropene (mixed isomers), pyridine, 1,2-dichlorobenzene, maleic anhydride, acrylic acid, ethyl acrylate, creosotes, dimethyl amine, hydrazine, methyl isocyanate, chromium compounds, polychlorinated biphenyls (PCBs), 2,4-diaminotoluene, and 3,3'-dichlorobenzidine;

H) Suspected kidney toxicants (38 chemicals totaling 12,740 pounds) such as methanol, methyl ethyl ketone, phenol, 1,2-dichloroethane, tetrachloroethylene, dichloromethane, toluene, chlorobenzene, xylene (mixed isomers), chloroform, trichloroethylene, ethylene glycol monoethyl ether, carbon tetrachloride, ortho-toluidine, styrene, ethylene glycol, epichlorohydrin, formic acid, acetaldehyde, 1,3-dichloropropene (mixed isomers), tertiary butyl alcohol, 1,1,2-trichloroethane, ethyl acrylate, ethyl acrylate, malonitrile, dimethyl sulfate, allyl chloride, N,N-dimethylaniline, urethane, hydrazine, propargyl alcohol, methyl hydrazine, N-methyl-2-pyrrolidone, chlorine, 2-methylacetonitrile, diethanolamine, chromium compounds, cadmium compounds, ethylbenzene, and 3,3'-dichlorobenzidine;

I) Suspected gastrointestinal or liver toxicants (53 chemicals totaling 13,744 pounds) such as methanol, methyl ethyl ketone, phenol, 1,2-dichloroethane, tetrachloroethylene, benzene, dichloromethane, toluene, chlorobenzene, naphthalene, N-butyl alcohol, xylene (mixed isomers), chloroform, allyl alcohol, formaldehyde, trichloroethylene, carbon tetrachloride, 1,1-dimethyl

hydrazine, 2-nitropropane, styrene, ethylene glycol, hydrofluoric acid, hydrochloric acid, epichlorohydrin, arsenic (organic or inorganic compounds), 1,1,1-trichloroethane, polycyclic aromatic compounds, formic acid, 1,3-dichloropropene (mixed isomers), pyridine, 1,1,2-trichloroethane, 1,2-dichlorobenzene, ethyl acrylate, malonitrile, cumene, dimethylamine, dimethyl sulfate, N,N-dimethylaniline, methyl methacrylate, urethane, hydrazine, propargyl alcohol, methyl hydrazine, benzyl chloride, chlorine, 2-methylactonitrile, diethanolamine, ethylbenzene, polychlorinated biphenyls (PCBs), 2,4-diaminotoluene, 1,3-butadiene, and 3,3'-dichlorobenzidine;

J) Suspected neurotoxicants (66 chemicals totaling 17,427 pounds) such as methanol, methyl ethyl ketone, N-hexane, phenol, 1,2-dichloroethane, tetrachloroethylene, Freon 113, mercury compounds, benzene, dichloromethane, toluene, chlorobenzene, aluminum oxide (fibrous forms), naphthalene, vinyl acetate, N-butyl alcohol, xylene (mixed isomers meta-, para- and ortho-), chloroform, allyl alcohol, formaldehyde, ethylene glycol monoethyl ether, trichloroethylene, carbon tetrachloride, 1,1-dimethyl hydrazine, 2,-nitropropane, cyclohexane, ethyl benzene, methanol, naphthalene, ethylene, dicyclopentadiene, hydrofluoric acid, cumene, ammonia and styrene, 1,2-dichloroethane, tetrachloroethylene, benzene, dichlormethane, toluene, chlorobenzene, aluminum oxide (fibrous forms), naphthalene, vinyl acetate, N-butyl alcohol, xylene (mixed isomers), chloroform, allyl alcohol, formaldehyde, ethylene glycol monoethyl ether, trichloroethylene, carbon tetrachloride, 1,1-dimethyl hydrazine, 2-nitropropane, cyclohexane, Ortho-toluidine, styrene, ethylene glycol,.hydrofluoric acid, epichlorohydrin, arsenic (organic or inorganic compounds), 1,1,1-trichloroethane, paraldehyde, formic acid, acetaldehyde, 1,3-dichloropropene (mixed isomers), pyridine, tertiary butyl alcohol, 1,1,2-trichloroethane, 1,2-dichlorobenzene, ethyl acrylate, malonitrile, cumene, creosotes,

dimethyl sulfate, allyl chloride, N,N-dimethylaniline, methyl methacrylate, propane sultone, hydrazine, propargyl alcohol, quinone, methyl hydrazine, benzyl chloride, cresol (mixed isomers), 2-methyl-2-pyrrolidone, diethanolamine, ethylbenzene, polychlorinated biphenyls (PCBs), 2,4-diaminotoluene, 1,3-butadiene, and 3,3'-dichlorobenzidine;

K) Recognized reproductive toxicants (4 chemicals totaling 426 pounds) such as benzene, ethylene, glycol monoethyl ether, epichlorohydrin, and 1,3-butadiene;

L) Suspected reproductive toxicants (29 chemicals totaling 9,220 pounds) such as methyl ethyl ketone, N-hexane, phenol, 1,2-dichloroethane, tetrachloroethylene, dichloromethane, toluene, chlorobenzene, xylene (mixed isomers meta-, para- and ortho-), chloroform, formaldehyde, trichloroethylene, carbon tetrachloride, 2-nitropropane, nickel compounds, cyclohexane, ethyl benzene, methanol, naphthalene, ethylene, dicyclopentadiene, hydrofluoric acid, cumene, ammonia and styrene, 1,2-dichloroethane, tetrachloroethylene, benzene, dichloromethane, toluene, chlorobenzene, aluminum oxide (fibrous forms), naphthalene, vinyl acetate, N-butyl alcohol, xylene (mixed isomers), chloroform, formaldehyde, trichloroethylene, carbon tetrachloride, 2-nitropropane, nickel compounds, styrene, ethylene glycol, hydrofluoric acid, 1,1,1-trichloroethane, 1,3-dichloropropene (mixed isomers), methyl methacrylate, hydrazine, N-methyl-2-pyrrolidone, ethylbenzene, polychlorinated biphenyls (PCBs), and 2,4-diaminotoluene;

M) Suspected respiratory toxicants (65 chemicals totaling 16,640 pounds) such as methanol, methyl ethyl ketone, N-hexane, phenol, 1,2-dichloroethane, tetrachloroethylene, Freon 113, benzene, dichloromethane, toluene, naphthalene, vinyl acetate, N-butyl alcohol, xylene (mixed isomers), chloroform, allyl alcohol, formaldehyde, ethylene glycol monoethyl ether, trichloroethylene, carbon tetrachloride, 1,1-dimethyl hydrazine, 2-nitropropane, nickel

compounds, Ortho-toluidine, styrene, ethylene glycol,.hydrofluoric acid, hydrochloric acid, epichlorohydrin, polycyclic aromatic compounds, formic acid, acetaldehyde, 1,3-dichloropropene (mixed isomers), pyridine, maleic anhydride, acrylic acid, ethyl acrylate, malonitrile, dimethylamine, dimethyl sulfate, allyl chloride, dimethylcarbamoyl chloride, methyl methacrylate, methyl chlorocarbonate, propane sultone, urethane, hydrazine, chloromethyl methyl ether, methyl hydrazine, benzyl chloride, cresol (mixed isomers), chlorine, crotonaldehyde, methyl isocyanate, 2-methylactonitrile, cumene hydroperoxide, diethanolamine, chromium compounds, cadmium compounds, ethylbenzene, polychlorinated biphenyls (PCBs), 2,4-diaminotoluene, 1,3-butadiene, 3,3'-dimethoxybenzidine, and 3,3'-dichlorobenzidine;

N) Suspected skin or sense organ toxicants (63 chemicals totaling 13,706 pounds) such as methanol, methyl ethyl ketone, phenol, 1,2-dichloroethane, tetrachloroethylene, benzene, toluene, chlorobenzene, naphthalene, vinyl acetate, N-butyl alcohol, xylene (mixed isomers), chloroform, allyl alcohol, formaldehyde, trichloroethylene, carbon tetrachloride, 1,1-dimethyl hydrazine, nickel compounds, Ortho-toluidine, styrene, ethylene glycol,.hydrofluoric acid, hydrochloric acid, epichlorohydrin, 1,1,1-trichloroethane, polycyclic aromatic compounds, formic acid, acetaldehyde, 1,3-dichloropropene (mixed isomers), pyridine, 1,1,2-trichloroethane, 1,2-dichlorobenzene, maleic anhydride, acrylic acid, ethyl acrylate, malonitrile, cumene, creosotes, dimethylamine, dimethyl sulfate, allyl chloride, dimethylcarbamoyl chloride, methyl methacrylate, methyl chlorocarbonate, propane sultone, urethane, hydrazine, chloromethyl methyl ether, propargyl alcohol, quinone, methyl hydrazine, benzyl chloride, cresol (mixed isomers), chlorine, crotonaldehyde, methyl isocyanate, 2-methylactonitrile, diethanolamine, chromium compounds, ethylbenzene, polychlorinated biphenyls (PCBs), 2,4-diaminotoluene, 1,3-butadiene, and 3,3'-dichlorobenzidine; and finally,

O) Suspected musculoskeletal toxicants (3 chemicals totaling 286 pounds) such as chlorobenzene, hydrofluoric acid, and hydrochloric acid.

47. The Port Arthur community has valid reasons to be most concerned about large volumes (two million gallons) of VX liquid waste being burned at Veolia's incinerator because the VX liquid waste will be mixed and burned with other toxic waste chemicals creating the potential for air emissions related to the VX wastes and will be emitted in complex unburned chemical mixtures with a variety of other toxic waste byproducts. This is a reason for the Army to conduct a full EIS on the incineration project at Port Arthur.

48. Veolia's Port Arthur commercial hazardous waste incinerator reported emissions of more different toxic chemicals than any refineries, chemical plants or other industrial facilities report most years due to the diversity of toxic waste being disposed of at the incinerator. Veolia reported to U.S. EPA in 2002 it had total TRI air releases of 17,828 pounds involving stack and fugitive gas air emissions; the 17,828 pounds does not include several criteria air pollutants like nitrogen oxides, carbon monoxide, particulate matter, or sulfur dioxide which are reported to the state TCEQ under a separate state reporting system. Veolia reported in 2002 under the name Onyx Environmental Services L.L.C. See Veolia's 2002 TRI chemical air release detailed information at: http://www.scorecard.org/env-releases/facility-trend-detail.tcl?tri_id=77643WSTMNHWY73&category=air_total

49. During 2002 alone, Veolia reported releasing 87 TRI-reportable substances (complete chemical list is attached as Exhibit F) into Port Arthur's air supply in the form of highly complex mixtures of the 87 toxic substances depending on the wastes being burned each day. But the actual number of individual toxic chemicals released into the air during the year likely numbers in the hundreds to thousands.

50. If the potential combinations of 87 toxic substances are calculated as different complex chemical mixtures, the number of mixtures is significant because they are inadequately evaluated in terms of health effects and toxicology. In addition to 87 reported toxic substances, the highly complex toxic chemical mixtures is even greater since it will include additional combinations of chemicals including 1) products of incomplete combustion or PICs (for example, polycyclic aromatic hydrocarbons or PAHs, numbering in the hundreds, will form from carbon and hydrogen, or from unburned organic compounds in the cooling stack gases), 2) polychlorinated biphenyls (PCBs have 204 congeners, and can form new PICs such as dioxins and dibenzofurans), 3) chlorinated dioxins (75 congeners, which form as new PICs), 4) chlorinated dibenzofurans (135 congeners, will form as new PICs), 5) creosotes (isomers of benzene-containing compounds), 6) other polycyclic aromatic compounds such as many fluorinated derivatives of PCBs, dioxins and dibenzofurans, 7) mixed isomers of 1,3-dichloropropane, 8) mixed isomers of dichlorobenzene, 9) mixed isomers of diaminotoluene, and 10) assorted metal compounds of mercury, nickel, arsenic (organic and inorganic), chromium, and cadmium. See Veolia's 2002 TRI chemical air release detailed information at: <http://www.scorecard.org/env-releases/facility-trend-detail.tcl?tri_id=77643WSTMNHWY73&category=air_total>

51. The assorted inorganic (non-carbon containing) metal compounds of mercury, nickel, arsenic, chromium, and cadmium are not destroyed during combustion.

52. Chemicals reported released at Veolia Environmental Services incinerator include:

| Chemical Name | Pounds |
|--------------------------------|--------|
| MERCURY COMPOUNDS | 375 |
| ALUMINUM OXIDE (FIBROUS FORMS) | 177 |

| | |
|--|----------|
| NICKEL COMPOUNDS | 55 |
| HYDROFLUORIC ACID | 46 |
| HYDROCHLORIC ACID | 40 |
| ARSENIC (ORGANIC OR INORGANIC COMPOUNDS) | 37 |
| CHLORINE | 14 |
| CHROMIUM COMPOUNDS | 10 |
| METHANOL | 4+5,705 |
| N-HEXANE | 4+2,287 |
| MALEIC ANHYDRIDE | 3+17 |
| CADMIUM COMPOUNDS | 3 |
| MALONONITRILE | 3+16 |
| METHYL ETHYL KETONE 3 | 3+448 |
| POLYCHLORINATED BIPHENYLS | 1 |
| 1,2-DICHLOROETHANE | .470+581 |
| 1-CHLORO-1,1-DIFLUOROETHANE | .360 |
| BENZENE | .230+315 |
| ALLYL ALCOHOL | .070+86 |
| ETHYLENE GLYCOL MONOETHYL ETHER | .060+72 |
| 2,4-DIAMINOTOLUENE | .050 |
| 2-NITROPROPANE | .050+61 |
| 1,1-DIMETHYL HYDRAZINE | .050+63 |
| 1,3-BUTADIENE | .030 |
| 1,1,1-TRICHLOROETHANE | .030+33 |

| | |
|--|---------|
| 1,3-DICHLOROPROPENE (MIXED ISOMERS) | .020+22 |
| ACETALDEHYDE | .020+23 |
| 1,1,2-TRICHLOROETHANE | .020+22 |
| 1,2-DICHLOROBENZENE | .020+21 |
| 2-METHYLLACTONITRILE | .010+13 |
| 3,3'-DICHLOROBENZIDINE | .010 |
| 3,3'-DIMETHOXYBENZIDINE | .010 |
| ALLYL CHLORIDE | .010+17 |
| (1,1'-BIPHENYL)-4,4'-DIAMINE, 3,3'-DIMETHYL- | .010 |
| PROPARGYL ALCOHOL | 15 |
| ETHYLENE GLYCOL | 47 |
| CHLOROMETHYL METHYL ETHER | 15 |
| VINYL ACETATE | 131 |
| TOLUENE | 235 |
| CHLOROBENZENE | 200 |
| PHENOL | 810 |
| TRANS-1,4-DICHLORO-2-BUTENE | 16 |
| CYCLOHEXANE | 55 |
| PYRIDINE | 22 |
| DIETHANOLAMINE | 11 |
| PROPANE SULTONE | 16 |
| N,N-DIMETHYLANILINE | 16 |
| PARALDEHYDE | 29 |

| | |
|---------------------------------|-----|
| DIMETHYLAMINE | 17 |
| TETRACHLOROETHYLENE | 529 |
| CRESOL (MIXED ISOMERS) | 14 |
| XYLENE (MIXED ISOMERS) | 129 |
| ETHYL ACRYLATE | 19 |
| DICHLOROBENZENE (MIXED ISOMERS) | 31 |
| DIAMINOTOLUENE (MIXED ISOMERS) | 64 |
| HYDRAZINE | 15 |
| CROTONALDEHYDE | 14 |
| N-NITROSOMETHYLVINYLAMINE | 10 |
| FORMALDEHYDE | 77 |
| URETHANE | 16 |
| CARBON TETRACHLORIDE | 68 |
| METHYL HYDRAZINE | 15 |
| METHYL ISOCYANATE | 13 |
| FORMIC ACID | 26 |
| POLYCYCLIC AROMATIC COMPOUNDS | 29 |
| CHLOROFORM | 87 |
| N-BUTYL ALCOHOL | 130 |
| DICHLOROMETHANE | 284 |
| TERT-BUTYL ALCOHOL | 22 |
| FREON 113 | 466 |
| DIMETHYL SULFATE | 17 |

| | |
|----------------------------|-----|
| TRICHLOROETHYLENE | 72 |
| ACRYLIC ACID | 19 |
| METHYL CHLOROCARBONATE | 16 |
| DIMETHYLCARBAMOYL CHLORIDE | 16 |
| CUMENE HYDROPEROXIDE | 12 |
| METHYL METHACRYLATE | 16 |
| CREOSOTES | 18 |
| N-METHYL-2-PYRROLIDONE | 14 |
| NAPHTHALENE | 171 |
| O-TOLUIDINE | 51 |
| EPICHLOROHYDRIN | 39 |
| QUINONE | 15 |
| BENZYL CHLORIDE | 14 |
| CUMENE | 18 |
| ETHYLBENZENE | 2 |
| STYRENE | 49 |

Note: Chemicals having two numbers connected with a "+" reflect the occurrence of releases of that chemical from both stack and fugitive (non-stack) locations.

53. Environmental justice is the concept that polluting industrial facilities (i.e., oil refineries, chemical plants and petrochemical plants), toxic waste incinerators, landfills and Superfund toxic waste sites tend to be disproportionately located in minority and low-income neighborhoods and communities, and therefore, these communities tend to be disproportionately impacted such as suffering more health effects and associated problems including poverty,

joblessness, and other effects.

54. I first encountered this phenomenon in 1980 working for the state of Texas by observing so many low income minority neighborhoods around large industrial operations, and have been investigating the environmental justice concept since the 1980s by responding to hundreds of complaints from minority citizens living close to major industrial plants fouling their community air supply with a complex soup of toxic chemicals.

55. Environmental justice in Texas and in the Port Arthur-Golden Triangle Gulf Coast region is a serious community concern due to the combination of minority demographics, significant numbers of low income families close to or in poverty, high concentration of large industrial plants, and high concentrations of toxic substances released every year into the community air supply. See report in Exhibit F, *Code of Silence, Toxic Tragedy of Beaumont/Port Arthur, Texas: From Birthplace of Oil to Graveyard of Refinery Communities*, 2003. This report cites upset pollution data reported by oil refineries and chemical-petrochemical plants in Port Arthur and Beaumont in 2000.

56. As a result of my environmental investigations and interactions with minority organizations in over a dozen communities in Texas with large industrial plants and other polluting facilities, I have been conducting research for more than a decade on the environmental justice (EJ) challenges in Port Arthur, Beaumont, Port Neches, El Paso, Corpus Christi, Houston, Pasadena, Texas City, East Austin, West Dallas, South Odessa, San Antonio, Winona, Lubbock, Sierra Blanca, and others. As a result of my investigations, I prepared a series of Environmental Justice Title VI administrative civil rights complaints that were filed with the U.S. EPA's Office of Civil Rights in Washington, D.C. beginning in 1994 against the Texas Commission on Environmental Quality for "skewed permitting." EPA's Office of Civil Rights accepted most of

the Title VI complaints for investigation.

57. Three local Port Arthur and Beaumont community groups have requested my technical assistance over the years to help them work on EJ issues, including Community In-Power Development Association (CIDA), People Against Contaminated Environments (PACE), and the Port Arthur branch of the National Association for the Advancement of Colored People (NAACP).

58. Demographic data on Port Arthur confirms that environmental justice is a serious community issue. This is also confirmed by communications with several local community groups including CIDA, PACE and the local NAACP. The fact is that the city of Port Arthur (57,042 people) has a large minority population containing a large African-American population at 43.7% (2000 Census Tract data).

59. The 2000 Census data analysis indicates Port Arthur's African-American population of 43.7% is disproportionately high in Texas being nearly quadruple the Texas average of 11.5%. The White population is 39.0%, which means that Port Arthur is a majority minority community at 61.0% with the African-American population being the largest minority. The West side of Port Arthur has numerous entire blocks that are 100% African-American and this area of the city has an even higher disproportionate percent versus the rest of the community.

60. Jefferson County had 33.7% African-American population in 2000 making it the highest percentage in any Texas County (254 counties). See

<<http://www.census.gov/population/cen2000/phc-t14/tab06.pdf>>, page 5 of 55.

61. Port Arthur is also a predominately low income community. The median household income in 1999 was 66% lower than the Texas average with the Port Arthur average at \$26,455 per year compared to \$39,927 statewide. Per capita income is 28% lower at \$14,183 per year in

Port Arthur versus \$19,617 statewide. Persons below poverty in Port Arthur is high at 25.2% versus 15.4% statewide.

62. My opinion is that the use of the Veolia hazardous waste incinerator by the U.S. Army to dispose of the VX hydrolysate waste liquids increases the disproportionate risks to an already heavily burdened Environmental Justice community in Port Arthur that currently suffers from unacceptable industrial pollution risks on a daily basis, and has over several decades. Incineration has never been tested or proven effective or safe for destruction of chemical warfare agent hydrolysate. No trial burns have been conducted at the Veolia incinerator with VX hydrolysate to establish what the emissions will be or the safety of such incineration. Given the toxicity of the contaminants in the VX hydrolysate, the predictable release of toxic products of incomplete combustion on particulate and in vapor form, the lack of any trial burns or other demonstration that incineration of the VX hydrolysate will be safe, the lack of any air monitoring specifically set up to detect release of chemical warfare agent VX or its degradation and combustion byproducts, the failure to provide training and emergency safety equipment to citizens in the communities surrounding the Veolia incinerator, the high levels of pollution already experienced by Port Arthur area residents from existing pollution sources, and the failure of the Army to prepare an Environmental Impact Statement or thorough risk assessment addressing the toxic releases from incineration of the VX hydrolysate, I would conclude that the incineration of the VX hydrolysate at the Veolia incinerator poses an imminent and substantial danger to public health and the environment.

I, Neil J. Carman, Ph.D., hereby declare under penalty of perjury, pursuant to 28 U.S.C. § 1746, that the foregoing is true and correct.

Executed on June 13, 2007, in Austin, Texas.

Neil J. Carman

Neil J. Carman, Ph.D.

Curriculum Vitae

Neil J. Carman, Ph.D.

Birth place - Cresco, Howard County, Iowa, August 11, 1945
Graduated from Iowa City, Iowa - Iowa City High School, June, 1963

Academic Training and Honors

B.S. - Botany, State University of Iowa, Iowa City, Iowa, 1967
Performed undergraduate research in phytochemistry & floristic surveys, 1964-67
M.S. - Botany, State University of Iowa, Iowa City, Iowa, 1970
Teaching Assistant in General Botany Labs and Lectures, 1967, 1969
Research Assistant in Biochemical Systematics, 1968
National Defense Education Act IV Science Fellowship, 1968-1970
Collected Compositae in U.S. and Mexico for genetic and biochemical research
Research Associate – Univer. of Michigan's Great Lakes Research Center, 1967
Ph.D. - Botany, dissertation emphasizing phytochemistry & ecology of *Prosopis glandulosa*,
received at The University of Texas at Austin, Texas, 1973
Teaching Assistant in Botany and Biology courses, 1970 (2), 1971 (2), 1972
Welch Foundation Fellowship in Phytochemistry, 1972, 1973
National Science Foundation Research Fellowship in Systematic and
Environmental Biology, 1970, 1971
Phi Kappa Phi Honorary Society Member, 1972
Collected plants in U.S., Mexico & South America for phytochemical research

Academic Teaching Experience: 1967-1978 - University of Iowa: Master's Candidate

1. General Botany Lab instructor, Fall 1967
2. Plant Systematics Lab instructor, Spring 1968
3. Native Plants of Iowa Lab and Field instructor, Spring 1969

University of Texas at Austin: Doctoral Candidate

4. Environmental and Population Biology instructor, Biology 304, Spring 1970.
5. Cellular and Molecular Biology instructor, Biology 302, Fall 1970.
6. Native Plants of Texas Lab and Field instructor, Botany 319, Spring 1971.
7. Structure and Function in Evolutionary Biology instructor, Biology 303, fall 1971
8. Cellular and Molecular Biology instructor, Biology 302, Spring 1972.
9. Graduate Tutor for all Undergraduate Courses in Biology/Botany, 1972-1973.

University of Texas at Austin: Assistant Professor of Botany, Biology and Comparative Studies Program; faculty appointments due to vacancies and new interdisciplinary course in Comparative Studies, 1973-1976.

10. Structure and Function in Evolutionary Biology, Biology 303, Fall 1973, (received highest biology teaching evaluations, 98% and 99%, in fall term from Biology Chairman's office and Dean of Natural Science's office).

11. General Biology Labs, Biology 206, Spring 1974, developed new lab manual with experiments using natural products as biologically active chemicals.
12. Plants in Human Affairs, Botany 317, Spring 1974, co-taught two lecture sections with Drs. B. L. Turner (Dept. Chairman) and Lowell Urbatsch. Explored native and modern uses of food plants, medicinal plants, wood products, fibers, dyes, rubber, etc.
13. Plants in Human Affairs, Lectures & Field Trips, Botany 317, Summer session, 1974.
14. Environmental and Population Biology, Biology 304, Fall 1974. Examined core issues of energy, environmental pollution, population, etc.
15. Molecular Basis of Biological Processes, Botany 330, Fall 1974, co-taught with Drs. Tom Mabry and Max Summers to pre-med students; lectured on Bioenergetics section -- Photosynthesis, Carbohydrate Metabolism, Fat Metabolism, Intermediary Metabolism.
16. Environmental & Population Biology at UT Extension Div., Biology 304, Fall 1974.
17. Physiological and Biochemical Basis of Consciousness and Human Ecology, University Course (U.C.) 372 L, two lecture sections, Spring 1975. New, unique interdisciplinary science course exploring the physics, physiology, biochemistry, psychology and sociology of states of awareness, including states of least excitation of consciousness based in quantum field theory. Taught at student request in Comparative Studies Prog. of Division of General & Comparative Studies, approval of Dean Elspeth Rostow and University Professor Ralph James Kaufmann (Chair Comparative Studies).
18. Physiological and Biochemical Basis of Consciousness and Human Ecology, U.C. 372 L, Spring 1976.
19. Lecturer in Environmental and Population Biology, Biology 304, Fall 1977.

Austin Community College Continuing Education Program

- 20.-25. TMT Program in Overcoming Stress, June 1976 - January, 1978 (6). American Foundation for the Science of Creative Intelligence.
26. Introductory Course: The Science of Creative Intelligence, fall 1976 McLennan Community College Continuing Education Program
27. TMT Program in Overcoming Stress & Developing Creative Intelligence, June 1976.
28. Lectures in science and consciousness in Austin and central Texas in various classes. Lectures to many university classes on air quality, environmental pollution and related topics 1976-2007.

Academic Research Experience: 1965-1976 at three Universities: Iowa, Michigan, Texas

I. The University of Iowa: 1965-1970

Undergraduate Research Projects: Two Year Floristics Survey of a Virgin Maple-Basswood Climax Community in Southeastern Iowa, the Cone Tract. 1965-1966. The Cone Tract is a large forest reserve donated to the Iowa Nature Conservancy in 1965 for preservation of native plant and animal species.

Biochemical Survey of Cornus Species Utilizing Secondary Plant Chemistry as Identification Markers. 1965-1966.

Undergraduate Research Assistant, 1965-1967. Botanical Labs and Herbarium.

Biochemical systematics research and field assistant, traveled extensively in all states of Mexico collecting new world sunflower species for genetic and biochemical studies of Cosmos, Bidens,

Dahlia, etc., 1968.

Master's degree research project on biochemical systematic and genetics on New World sunflowers, *Bidens* species, 1967-70, Dr. Tom E. Melchert & National Science Found grant.

II. The University of Michigan at Ann Arbor: 1967

Great Lakes Research Division. Research Associate to Dr. Eugene Stoermer, monitoring and assessing the industrial waste water pollution on Lake Michigan. Emphasized the comparative analysis of fresh water phytoplankton populations entering the polluted lake water to population gradients across lake from areas of least pollution to those of greatest pollutant concentrations.

III. The University of Texas At Austin: 1970-1976

Phytochemical Research Projects under Dr. Tom J. Mabry in addition to doctoral research program. Resulted in four chemical publications and two presentations at society meetings, supervised multiple chemical research projects, 1970-1974. Research carried out in Mabry's biological chemistry labs. Doctoral Research Program under Dr. Tom J. Mabry, 1970-1973. Conducted in conjunction with National Science Foundation's International Biological Program's Structure and Function of Disjunct Ecosystems in North and South America, resulted in two research presentations, three publications and one chapter contribution in book, field work in South America, 1970-1971. Dissertation completed in August, 1973 with primary emphasis on the chemistry of secondary plant compounds, biochemical systematics and chemical ecology of the genus *Prosopis*, common mesquite.

Summary of Interdisciplinary Scientific Research Interests in Plant Biology:

Several scientific research interests pursued during undergraduate, graduate, and post-graduate studies, which resulted in more than ten years of chemical laboratory experience at three major universities. Numerous undergraduate and graduate courses, as well as seminars and scientific conferences were devoted to these major research interests.

I. Chemical Ecology - the study of the ecological role of biological and manmade chemicals in natural communities where plant-plant, plant-animal, animal-animal, plant-microorganism and man-environment interactions occur continuously and on subtle levels. The secondary compounds in plants, for instance, are especially important in ecosystem unity and diversity since they play a major role in all interactions, occur ubiquitously in all the major plant groups, and substantial energy resources are expended in their biogenesis on a continuous basis. Thus, the chemical nature of the environment is an important factor in species survival and ecosystem structure and diversity. Chemicals have environmental interactions.

II. Biochemistry - the biosynthesis, metabolism and catabolism of natural plant products from primary metabolic pathways. Like other metabolic products, which are not necessarily excreted as waste products or sequestered, secondary chemicals are also subject to constant metabolic turnover as are primary products of metabolism. This refined aspect of secondary plant chemistry becomes relevant when one is investigating genetic, enzymatic and metabolic processes controlling the production of these chemicals in plants.

III. Biochemical Systematics - the taxonomic utility of biochemical markers, comparative biochemistry, and genetics in investigating evolutionary relationships in plants. Plant species have developed a high molecular diversity of biochemical profiles and this field ranges from the

micromolecular, non-polymeric levels to the macromolecular, polymeric ones involving both primary and secondary products of plant metabolism.

IV. Chemistry of Secondary Plant Compounds - methods of chemical analysis involve extraction, isolation (chromatographic techniques), purification, crystallization, and structural elucidation of mainly three categories of secondary plant organic chemicals: phenolics, alkaloids and terpenoids. Structural methods of analysis include nuclear magnetic resonance spectroscopy, ultraviolet spectroscopy, infrared spectroscopy, gas chromatography, liquid chromatography, mass spectrometry, and combined gas chromatography-mass spectrometry (GC-MS). Secondary plant compounds, or natural products, occur by the tens of thousands in nature. They have become well known today as common sources of foods, dyes, perfumes, and also medicinal, herbal, and pharmaceutical remedies. Examples include penicillin, quinine, and salicylic acid (acetylsalicylic acid in aspirin).

Scientific Publications & Presentations of Scientific Research at Conferences: 1967-1977

Scientific Research Publications

1972a. A General NMR Spectroscopy Procedure for Locating Methoxyl Groups in all Flavone and Flavonol Aglycones and Some Glycosides Utilizing Trimethylsilyl Ethers and Benzene-Induced Shifts. *Phytochemistry* 11: 409-410. (with E. Rodriguez & T. J. Mabry).

1972b. A New Flavonoid from *Ambrosia Dumosa*. *Phytochemistry* 11: 2626-2627. (with F. Seaman, E. Rodriguez and T. J. Mabry).

1972c. 6-methoxyapigenin from Thirty-four species of Compositae. *Phytochemistry* 11: 3271-3272. (with TJ Watson, J Averett, MW Bierner, S Sanderson, F Seaman and TJ Mabry).

1972d. Methoxylated Flavonoids from *Artemisia*. *Phytochemistry* 11: 3509-3514. (with E. Rogriguez, G. Vander Velde, J. H. McReynolds, T. J. Mabry at UT Austin, and M. A. Irwin and T. A. Geissman at UCLA Chemistry Department).

1974. A Populational Survey of Non-protein Amino Acids in *Prosopis* Species from North and South America. *Biochemical Systematics* 2: 73-74. (with S. I. Dossaji and T. J. Mabry).

1975a. Disjunction of *Prosopis reptans*, and the Origin of the North American Populations. *Biochemical Systematics and Ecology* 3: 19-23. (with T. J. Mabry).

1975b. *Prosopis palmeri*: A Relict of an Ancient North American Colonization. *Madrono* 23:220-227. (with B. B. Simpson and A. Burkart)

1977. Patterns of Variation, a chapter in *Mesquite, Its Biology in Two Desert Ecosystems*, ed. by B. B. Simpson, published by Dowden, Hutchinson & Ross, Inc., 1977, pp. 44-60, with O. T. Solbrig, K. Bawa, J. H. Hunziker, C. A. Naranjo, R. A. Palacios, I. Poggio and B. B. Simpson).

After Great Lakes Research Division environmental work experience and completion of education, decided to pursue an environmental career based on education, teaching, research and career interests, including more than nine years teaching experience and ten years research in chemical laboratories.

Professional Research Presentations

1967. Populational Studies of Phytoplankton Species in Lake Michigan: Polluted versus

Relatively Non-polluted Populations. (with E. F. Stoermer et al of Great Lakes Research Division, U. of Michigan). Great Lakes Research Conference, Chicago.

1970. Biochemical Systematic Studies of the Genus *Plummera* (Compositae-Helenieae). Abstr. Am. J. Bot. 57: 764, 1970. (with T. J. Mabry and B. L. Turner). 21st Annual American Institute of Biological Science meeting, University of Indiana.

1971. Distributional Studies and NMR Analysis of Methoxylated Flavonols from *Parthenium* (Compositae). 22nd Annual AIBS meetings. Canada. (with E. Rodriguez and T. J. Mabry).

1972. Biochemical Systematic Studies of the Flavonoids in *Prosopis* species from North and South America. International Biological Program Meetings, University of Arizona, Tucson.

1973. Free Amino Acids and Flavonoids in the leaves of *Prosopis*. International Biological Project Meetings, San Diego State University, San Diego.

Environmental Consultant work and Expert Witness Testimony in State District Court and Air Permit Hearings depending on time - numerous legal projects, 1975-2007.

Expert testimony provided in the Mitsui and ASARCO (2005) Contested Case Permit Hearings.

TACB Civil Enforcement Cases from 1980-1992:

1980-1992: Texas Air Control Board & Texas Attorney General air pollution lawsuits, temporary restraining orders (TRO) and temporary injunction orders (TIO) -

* Suit filed in 1981 in State District Court in Ector County against Permian Chemical Company, Inc's East Odessa Potassium Sulfate Fertilizer-Hydrochloric Acid plant for several hundred violations of the Texas Clean Air Act resulting in TRO, TIO and permanent injunctive relief.

* Suit filed in 1989 in State District Court in Ector County against Dynagen-General Tire's South Odessa Synthetic Rubber mfg. plant for dozens of violations of the Texas Clean Air Act resulting in TRO, TIO and permanent injunctive relief. Industrial waste incinerator, the synthetic rubber process units, wastewater evaporation ponds, etc.

* Suit filed against HDH Inc.'s San Angelo wool processing plant for numerous violations of Tex. Clean Air Act.

* Suit filed in 1990 against Spincote Coating Division in Odessa, Texas for Texas Clean Air Act violations. Industrial incinerator violations.

* Suit filed in 1990 against American Central Gas Companies East Odessa, Texas natural gas sweetening plant for Texas Clean Air Act violations.

* Suit filed in 1991 against Lee Co Coating Enterprises in Midland, Texas for Texas Clean Air Act violations.

Consultant in civil court cases: 1975-2005:

* East Austin bulk gasoline storage tank farm operated by Chevron Oil in neighborhood contamination suit.

* Melendez vs Exxon in Houston on whistleblower case at a chemical plant.

* Plant patent dispute case on novel bio-fuels from desert shrubs.

* Nuisance air pollution damage case on Formosa Plastic's Vinyl Chloride plant at Point Comfort.

* DeGussa's Aransas Pass, Texas Carbon Black plant for nuisance carbon black air pollution problems.

* New York PIRG's permit suit against New York's Department of Environmental Conservation

over permit concerns.

* Vertac's Dioxin Superfund incinerator case in Jacksonville, Arkansas.

Sierra Club litigation: 1992-2006:

* Suit under the Clean Air Act Citizens' enforcement provision against Crown Central Petroleum Refinery in Pasadena, Texas for 15,000 violations of federal New Source Performance Standards (SO₂ & H₂S) filed in 1998 and settled in 2001.

* Appeals case filed in 1996 against the EPA rule change to allow PCB waste importation in US for disposal from over seas.

* Suit under the Clean Air Act against major petrochemical plant for illegal upset violations in 2005-2006.

* Appeals suit filed against EPA over numerous deficiencies in the Texas Title V Federal Operating Permit program during 2002-2003.

* Petition filed for Environmental Protection Agency's failure to apply federal law on oil refinery hazardous waste. Filed in 1998 in Federal Court of Appeals (Washington, DC) over EPA's failure to list as hazardous two refinery wastes under the Federal Resource Conservation and Recovery Act (RCRA). Suit also challenged an exemption from RCRA regulation EPA issued in the same regulatory package.

* Appeals cases filed in numerous instances against EPA regarding MACT standards for Medical Waste Incinerators, Municipal Waste Incinerators, Hazardous Waste Incinerators, Chemical plants, Portland Cement Kilns, Chlor-Alkali plants, Power Plants, and others.

* Filed petition for review against EPA over final Beaumont-Port Arthur Ozone SIP; Specifically, in opposition to illegal plan to avoid reclassification from "moderate" to "severe" status and delay clean up to November 2007 the ground level ozone air quality problems in a three county Beaumont-Port Arthur area of Jefferson, Hardin and Orange Counties.

* Filed petition for review against EPA over the Houston-Galveston Ozone SIP plan as deficient; Specifically, in opposition to illegal plan to require all needed NO_x and VOC reductions in meeting the ground level ozone air quality problems in a eight county HGA region.

* Filed petition for review against EPA over failure to approve an Ozone SIP for the Dallas-Fort Worth Serious Ozone Nonattainment Area in 2005.

* Appeals suit vs. EPA for Texas having a non-compliant Title V Federal Operating Permit Prog. in 2005.

* Suit filed under Clean Air Act Citizens' enforcement provision at American Electric Power's Welsh coal-fired power plant near Mt. Pleasant, Texas for over 2,000 violations of EPA permit Standards filed in 2005.

* Suit filed under federal RCRA Citizens' enforcement provision against American Electric Power's Knox Lee gas-fired power plant near Mt. Pleasant, Texas for numerous violations of RCRA regulations by alleging illegal burning of hazardous waste filed in 2005.

* Consulted with attorneys on several additional cases as pro bono expert.

State TACB Administrative Enforcement Cases 1980-1992: several dozen cases were worked on and penalties resulted in several millions of dollars in fine assessed.

Texas Air Control Board's Air Quality Control Region 6 in Odessa: 1980-1992:

Hired into technical position in 1980, based on background and work experience including

analytical chemistry, as supervisor of Odessa Regional Stack Sampling program. Responsible for TACB stack testing of industrial chemical plants in four West Texas air quality regions: Region 1 Abilene; Region 2 Lubbock, Region 6 Odessa and Region 11 El Paso. In this capacity, served as chief technical person in the TACB's Odessa Region 6 field office. Additional duties included working as regional field investigator inspecting industrial plants.

TACB stack sampling program ended in late 1980s due to shift in enforcement emphasis to require companies to hire independent stack testing contractors. However, duties continued as chief technical person in Region 6 and as field investigator inspecting industrial sources in 29 counties. Region 6 was largest air quality control region by area in Texas until 1986 when 4 counties transferred to other regions in central Texas.

Since TACB Region 6 consisted of a small staff, investigators generally tended to be cross-trained with specialty varying according to Regions. Basic job duty -- to protect and to defend the air resources of the state of Texas in accord with the statutory provisions of the Texas Clean Air Act and the mandates of the Texas Legislature, through the following primary duties:

1) Technical reviews and evaluations of Region 6 plants with continuing air pollution problems; served as chief technical staffer in Region 6 on facilities with air pollution problems; technical responsibilities, knowledge and effectiveness in finding plant pollution problems resulted in being assigned lead role in all the difficult air pollution enforcement cases by Regional Director James Draper in 1981 and continued by Charley Sims 1982-1992 (Permian Chemical Co., Dunes Chemical, DynaGen, Rexene, Fina refinery, etc.);

2) Inspections conducted under federal NESHAP (National Emission Standards for Hazardous Air Pollutants) air program relating to asbestos, benzene, arsenic, vinyl chloride and beryllium; inspections under federal NSPS (New Source Performance Standards) program relating to VOC sources such as gas plants, chemical plants, refineries, etc.; NESHAPs violations such as benzene leak detection and repair programs (LDAR) documented and cited at major industrial sources including chemical-refining plants;

3) Conducted Field Investigations in response to Citizen Complaints of Air Pollution, which are assigned highest priority by TACB, and subsequently confirm and recommend air pollution violations, as necessary, to achieve compliance; hundreds of air pollution violations issued as a result of more than 1,000 citizen complaints over twelve years;

4) Stack sampling of major sources in West Texas: Fina Oil & Chemical's Big Spring refinery's CO Boiler stack for compliance with criteria pollutant emission rates; Georgia Pacific's Acme Gypsum plant (Electrostatic precipitator on calcining kettles emitting calcium sulfate PM), ASARCO Smelter in El Paso (828' lead blast furnace baghouse stack and zinc plant baghouse stack) for lead and criteria emissions, El Paso Natural Gas Plant at Goldsmith (175' sulfur recovery unit stack) for SO₂, Whites Mines Brownwood (hot mix asphalt plant) for criteria pollutants, and San Angelo hot mix asphalt plant for criteria pollutants.

5) Carried out after hours Source Surveillance of facilities on list of high priority sites for possible violations of the Texas Clean Air Act included carrying out evening and weekend Surveillance;

6) Identified facilities with significant air pollution violations and assisted in compliance plans for administrative board orders and judgments in lawsuits; reviewed company submitted compliance plans including modeling, sampling and other tests.

7) Performed Annual Plant Inspections [over 200 each year] and reports under a federal State Implementation Plan (called SIP's), which generally involved an annual review (or every five years) of the Compliance status, Process and Operations, and Permits of major A1 and A2 facilities (classified according to EPA criteria); since 1984, responsibility for SIP's on A1 and A2 facilities determined by Regional Director as the most technically complex plants, such as Shell Oil Company's Odessa Refinery, Rexene Products Company's Olefins, Styrene and Polyolefins plants, Fina Oil and Chemical Company's Big Spring Refinery, DynaGen's Odessa Synthetic Rubber Plant, Western Iron Works, Inc.'s San Angelo Gray Iron Foundry, Sid Richardson Gasoline and Carbon Black Company's Big Spring Carbon Black plant, Texaco's East Vealmoor Gas plant, Power Resources Big Spring Cogeneration plant, and other plants in Ector, Tom Green, Howard, Loving, Reeves, Pecos, and Irion counties; cited numerous violations and pursued enforcement action stemming from annual SIP inspections;

8) Types of facilities annually inspected included chemical and petrochemical plants, synthetic rubber plants, olefins-polyolefins plants, styrene plants, petroleum refineries, oil field chemical mfg plants, crude oil tank farms, natural gas processing plants, natural gas liquids plants, oil & gas production storage batteries, Portland cement kilns, electric utility power plants, iron foundry's, fertilizer plants, carbon black plants, pipe coating facilities, industrial waste incinerators, medical waste incinerators, municipal waste incinerators, oil field pipe burn-out ovens, pipe stress ovens, asphalt plants, concrete batch mix plants, spray painting operations, plastics materials assembly plants, rendering plants, sandblasting facilities, wastewater treatment facilities, municipal landfills, certain large agricultural operations, and others.

9) Reviewed New Construction and Operating Permit applications and helped draft special conditions for permits; example was DynaGen's major permit modification for new crumb rubber dryer ovens and issues concerning effects screening level for styrene. The DynaGen permit allowed too much styrene and nuisance conditions continued to persist around the plant and in the populated south side Odessa neighborhoods.

10) Carried out Technical Reviews and made numerous Stack Test observations as required for facilities operating under the New Source Performance Standards and TACB permits; and prepared technical reports on stack test reviews; served as Region 6's chief stack test observer from 1980 - 1992;

11) Summary of Ambient Air Monitoring Activities (see detailed list on next page): Performed UW/DW Property Line Air Sampling to determine compliance with National Ambient Air Quality Standards (for six criteria pollutants: CO, NOx, SO2, Particulate Matter, Ozone, Hydrocarbon's), Permit Maximum Allowable Emissions Rates, and standards established by the Rules and Regulations of the TACB;

12) Certified 1980 by TACB Central Lab to conduct analysis in Regional lab of air samples (hydrogen chloride, hydrogen sulfide, sulfur dioxide, particulate matter, etc);

13) Excess air emissions events at industrial plants were reviewed from major upset incidents to determine if a National Ambient Air Quality Standard (NAAQS) was exceeded or state standards; modeling and screening were conducted;

14) Accompany EPA Region VI inspectors from Dallas on annual TACB Oversight Inspections of Major Sources in West Texas;

15) Assisted the TACB Austin Central lab staff on the 1988 TACB Mobile Lab trip in September for 6 days and Mobile Van trip in November, 1988 for several days. Purpose of the trip was sampling for benzene primarily and secondarily for all other air pollutants, including

styrene, toluene, xylenes, and sulfur dioxide. Sources sampled included Rexene Products, Shell Refinery, Dynagen's synthetic rubber plant, Champion Chemicals and Fina's Big Spring Refinery.

16) Provided expert witness testimony in legal proceedings (temporary injunctions hearings, contempt hearings, etc.) against facilities under lawsuits filed by the Texas Attorney General's Office of Environmental Protection Division; prepared evidence and gave several depositions as necessary for such lawsuits; cases involved Permian Chemical Co. 1981 - 1987, Dynagen 1989 - 1991 and Lee Co Coating 1992.

Secondary duties: 1) made complaint referrals to other local, state and federal agencies such as Ector County Health Department, Texas Water Commission, Texas Railroad Commission, Texas Department of Health, US EPA Region 6, and the Department of Labor's Occupational Safety and Health Administration office in Lubbock; 2) developed special sampling and air monitoring techniques; 3) provided information to the public in lectures and seminars on Air Quality Programs in Texas; 4) made available public TACB information when subpoenaed in citizen lawsuits against several industrial facilities.

TACB List of Specific Ambient Air Monitoring and Plant Air Monitoring Activities

* Lead TACB's efforts in the 1980s on the siting and operation of real-time ambient air monitoring station for tracking Sulfur Dioxide (SO₂) emissions released from a large oil refinery in response to citizens complaints about SO₂ pollution in Big Spring, Texas; no violations observed.

* Collected Sulfur Dioxide (SO₂) real-time ambient air monitoring data at refineries via mobile sampling van to measure violations of permit conditions and state regulations in the 1980s; no violations discovered.

* Coordinated and performed (1980-1988) extensive compliance air monitoring program at a local hydrochloric acid-potassium sulfate fertilizer plant to document hydrogen chloride (HCl) gas emissions in violation of permit HCl limits and state regulations; compliance plant and ambient air monitoring activities involved property line HCl ambient air monitoring, fence line HCl grab samples, and fugitive and stack HCl gas monitoring; extensive private property corrosion monitoring orchestrated and carried out resulting in numerous violations, permit amendments, third-party HCl stack gas testing, legal actions and contempt of court citations; additional numerous violations resulted from fugitive potassium chloride dust sampling. HCl ambient air concentrations were often below the agency's effects screening level and toxicology staff was interested in health effects experienced by the Odessa regional investigators exposed to the plant's HCl emissions. Plant permanently closed in 1988 due to inability to operate in continuous compliance. Plant came under Texas Superfund Program due to discovery of extensive contamination after bankruptcy.

* Carried out property line ambient air monitoring for volatile organic compounds (VOCs) and hydrogen sulfide (H₂S) at a styrene-butadiene synthetic rubber mfg plant to document violations of permit conditions and state regulations (1987-1991); numerous violations confirmed through UW/DW sampling and enforcement action initiated.

* Conducted hydrogen sulfide (H₂S) property line ambient air monitoring at numerous local oil field tank batteries with H₂S fugitive emissions in order to respond to public complaints and

document violations of the Texas 30-minute, net-ground level property line standard (0.08 ppm) for hydrogen sulfide gas (1980-1992); numerous violations confirmed through UW/DW sampling and enforcement action initiated.

* Initiated sulfur dioxide (SO₂) property line ambient air monitoring at oil refineries to document violations of permit conditions and state SO₂ regulatory standards (1981-1992); no SO₂ violations documented.

* Performed two-three hour long particulate matter property line sampling at rock crushers to document violations of permit conditions and state dust regulatory standards (1980-1992); numerous violations confirmed through UW/DW sampling and enforcement action initiated.

* Tested fertilizer plant's property line for excessive ammonia (NH₃) and sulfur dioxide (SO₂) emissions with ambient air monitoring equipment (1985) leading to temporary revocation of plant's air permit and cessation of fertilizer mfg; numerous violations confirmed by UW/DW sampling and enforcement action initiated..

* Ambient air monitoring conducted for VOCs from large oil field sludge pits due to public complaints from a nearby neighborhood; violations confirmed.

* Responded to citizens' complaints about obnoxious chemical odors from a specialty oil field-treating chemical plant by conducting ambient air monitoring for VOCs at property line and tracing them back to poorly controlled plant process units and leaking storage tanks; violations cited and enforcement initiated.

* Launched air monitoring activities for foundry dust emissions around old, poorly controlled steel foundry in response to citizens complaints and sampling investigations resulted in violations and enforcement action to require foundry dust controls.

* Worked with the agency's mobile laboratory team visiting the region and conducting ambient air monitoring and real-time testing at major petrochemical plants and oil refineries to measure VOCs and sulfur compounds; no violations discovered.

* Participated in ambient air toxics monitoring project at Hays elementary school near petrochemical plants to measure styrene, benzene, 1,3-butadiene and other VOCs using carbon molecular sieve tubes on a 20% sample duty cycle.

* Collected and analyzed air samples to measure the concentrations of sulfur compounds during part of state transportation agency's experimental tests using sulfur-containing asphalt on public highways.

* Responded to citizens' complaints about obnoxious sulfur and rotten egg odors from a sour natural gas processing plant due to frequent upset incidents by performing ambient air monitoring around the plant to measure sulfur dioxide and hydrogen sulfide, which revealed exceedances of state standards and enforcement action where necessary to achieve compliance.

* Ambient air monitoring carried out for VOC emissions at 163 acres of solar wastewater evaporation ponds at a large petrochemical plant due to citizen complaints and measuring detectable levels of aromatic hydrocarbons. Solar ponds eventually closed and removed.

* Participated in changing out PM filter paper in the Total Suspended Particulate Ambient Air Monitoring Network for TACB Odessa Region 6, which included monitors at Midland, Big Spring and San Angelo, Texas from 1980-88. Lab support provided by handling the PM filter paper with desiccation and pre- and post weighing.

* Additional miscellaneous ambient air monitoring activities.

Texas Air Control Board Partial Training History: 1980-1992

1980 - TACB Certification Course in Visible Emissions Evaluation, 3 days, Odessa.
 1980 - TACB Laboratory Analytical Methods Certification - 5 days, Austin.
 1980 - TACB Stack Sampling Seminar and Lab, 5 days, Austin.
 1981 - TACB Recertification Course in Visible Emissions Evaluation, spring & fall.
 1981 - TACB New Source Performance Standards Workshops, 2 days, Austin.
 1981 - US EPA: Sources & Control of Volatile Organic Air Pollution, 4 days, Austin.
 1981 - US EPA: Quality Assurance in Air Pollution Measurement Programs, 4 days.
 1981 - US EPA: NESHAP Workshop on Asbestos, 1 day, Dallas.
 1982 - Texas Consultant: Hazards of Hydrogen Sulfide Gas
 1982 - TACB New Source Performance Standards Workshops, 2 days, Austin.
 1982 - TACB Recertification Course in Visible Emissions Evaluation, spring & fall.
 1982 - US EPA: Control of Gaseous Emissions, 4 days, Austin.
 1983 - US EPA: Source Sampling for Particulate Pollutants, 5 days, Dallas.
 1983 - TACB New Source Performance Standards Workshops, 2 days, Austin.
 1983 - TACB Recertification Course in Visible Emissions Evaluation, spring & fall.
 1983 - US EPA: Advanced Statistical Methods in Air Quality Programs, 5 days, Dallas.
 1983 - US EPA: Continuous Emissions Monitoring Systems, 5 days, Austin.
 1983 - US EPA: Evaluation of Stationary Performance Tests, 3 days, Austin.
 1983 - US EPA: Plant Inspection Workshop, 4 days, Austin.
 1984 - US EPA: Air Surveillance at Hazardous Materials Incidents, 4.5 days, Austin.
 1984 - TACB Recertification Course in Visible Emissions Evaluation, spring & fall.
 1984 - US EPA: Understanding and Coping with Electrostatic Precipitators, Austin.
 1984 - US EPA: Asbestos Demolition & Renovation Inspect. Workshop, 1 day, Austin.
 1985 - TACB Recertification Course in Visible Emissions Evaluation, spring & fall.
 1985 - How to Work with People, Fred Pryor seminar, 1 day, Midland.
 1986 - TACB Recertification Course in Visible Emissions Evaluation, spring & fall.
 1986 - TDH: Procedures & Practices of Asbestos Abatement, 4 days, Austin.
 1987 - TACB Recertification Visible Emissions Evaluation Course, spring & fall.
 1988 - TACB Recertification Visible Emissions Evaluation Course, spring & fall.
 1988 - TACB Training on Toxic Materials, 1 day, Odessa.
 1989 - TACB Recertification Visible Emissions Evaluation Course, spring & fall.
 1989 - TACB Regional Investigators Workshop, 2 days, Austin.
 1990 - TACB Recertification Visible Emissions Evaluation Course, spring & fall.
 1991 - TACB Recertification Visible Emissions Evaluation Course, spring & fall.
 1991 - 1990 Federal CAAA Regional Conference sponsored by EPA, Houston.

Participated in TACB's Abrasive Blast Regulation Development Committee in 1990-91 to help develop new regulations on sandblasting of municipal water towers under Regulation I in order to protect public from lead paint particles and sand blast residues. Need for agency Regulation I revisions arose after two celebrated cases in San Angelo and Cedar Park, in which million gallon water storage towers were sandblasted in residential neighborhoods and the primer coat contained lead residue resulting in widespread lead contamination. San Angelo case served as chief TACB investigator.

Lone Star Chapter of the Sierra Club in Austin, Texas Office - 1992 to present

Hired (half-time) as clean air program director: Involvement in all clean air activities (federal CAA and Texas CAA) of the Sierra Club in Texas with a focus on major air pollution problems associated with industrial sources and mobile sources, because both types are causing serious urban pollution in major population areas of the state. Involved in Houston-Galveston Nonattainment Area (NA), Beaumont-Port Arthur NA, Dallas-Ft. Worth NA, and El Paso NA; recently the Near Nonattainment Areas of Austin, San Antonio and East Texas. Air quality issues in all major metropolitan areas of Texas including Amarillo, Austin, Beaumont-Port Arthur-Orange, Brownsville-Harlingen-San Benito, Corpus Christi, Dallas-Ft. Worth, El Paso, Galveston-Texas City, Houston, Killeen-Temple, Laredo, Lubbock, Odessa, San Antonio, Tyler, and Wichita Falls.

Attend TACB (1992-1993), TNRCC (1993-2002) and TCEQ (2002-present) monthly Stakeholder Committee Meetings and Board Meetings to present public testimony and participate in Task Force meetings (Penalty and Enforcement Policy, Compliance History, etc.). Attend Regulation Development meetings to submit public testimony and comments (Hearings Oversight Committee, Banking Emissions, NOx RACT. Evaluate permit applications on major facilities and provide input to make special provisions more stringent in the public interest. Review Monthly Enforcement Report and submit public comments concerning proposed agreed board orders and court orders. Appointed to the TACB Task Force on Nuisance Odors in 1993. Testimony (1993) to the TACB/TWC Joint Environmental Justice & Equity Task Force on clean air act, solid and hazardous waste issues at each meeting of the Task Force, which was the first of its kind in the nation. Comments on the TACB's ESL use in permitting as an example of inequities in environmental justice communities. Submitted several affidavits on permits and public comments to the TACB/TNRCC/TCEQ on community concerns on the use of Effects Screening Levels as having a weak scientific basis in protecting communities against air toxics exposures.

Attend TNRCC policy and agenda meetings. Appointed to TNRCC's Data Management Task Force in 1993-97. Gave testimony and comments on new rules. Work on Texas air quality policy issues to improve public health and environmental protection. Draft technical comments on Federal & Texas Clean Air Act rules; reviews pending enforcement actions, networks with grassroots citizens and community groups needing technical support; raise environmental justice concerns in Texas public issue in Corpus Christi's refinery and petrochemical plant cluster 1992-2007 such as Citgo Refining, Coastal Refining, Valero Refining, Southwestern Refining and Koch Refining; Lake Charles, La. chemical and refining plants such as Conoco; Houston Ship Channel industrial plants 1993-2005 including Crown Central Petroleum's Pasadena Refinery; Valero's Texas City Refinery; citizens' technical advisor on innovative

Conducted toxic tours of industrialized Houston Ship Channel for citizens and officials. Conducted tours in Corpus Christi, Texas City, Beaumont-Port Arthur and other communities.

Technical Assistance Projects in Low Income Communities and EJ Communities

* Inspected ASARCO's El Paso copper smelter in April 2005 and observed numerous toxic dust-corrosion problems at smelter for lead, cadmium, arsenic & PCBs.

* Channelview Source Reduction Project set up by citizens living near Lyondell Petrochemical

and Equistar Chemical (two of largest chemical mfg. complexes in Houston Ship Channel) to cut toxic air pollution by over one million pounds 1992-2006;

* Assisted minority communities concerned with Beaumont-Port Arthur oil refineries & chemical-petrochemical plants 1995-2007;

* Technical advisor to EJ residents in E. Austin on East Austin Tank Farm 1992-93; * Impacts on minority neighborhoods of Odessa's DynaGen synthetic rubber plant 1992-1998 and petrochemical plants 1997-2003;

* South Odessa's General Tire & Rubber's synthetic rubber plant 1992-98 and Huntsman's Petrochemical plant 1997-2001;

* Bryan's Elf Atochem arsenic acid-pesticide plant 1992-97 leading to permanent closure from high arsenic contamination; * Numerous cement kilns in Texas 1992-2005 such as at Midlothian;

* Winona's Gibraltar Chemical Resources/American Ecology's commercial hazardous waste fuel blending & deep well injection facility 1993-98;

* Ferris's Skyline municipal landfill run by Waste Management of Texas 1993-97, San Antonio's Waste Management's regional landfill, and other sites disproportionately impacting poor communities and EJ neighborhoods.

* Helped citizens defeat air permits for American-Envirotech's Houston commercial hazardous waste incinerator permit 1993-96; *

Withdrawal of permit application for Norit Americas's new commercial hazardous waste incinerator at Marshall, Tx, and EnviroGuard's new commercial medical waste incinerator permit in Waller County stopped; * Assisted

minority residents halt permit at Mitsui's aluminum die-casting plant in San Antonio due to hydrofluoric acid pollution, helped citizens defeat permit for commercial medical waste incinerator at Poteet, Tx, and dozens of projects too numerous to list.

Advise Sierra Club Texas state chapter's eighteen regional groups on several dozen local air pollution issues and ambient air monitoring (East Austin Tank Farm and miscellaneous facilities like Tokyo Electron America Inc. and Photonics permit applications, EnviroWaste Management and Austin Liquid Disposal, the city's Holly Street Power Plant, city's Hargrave Solid waste transfer facility - Austin group; Border environmental issues with Brownsville group such as sugarcane burning, pesticides, air toxics and hazardous waste across the US border; Midlothian cement kilns burning hazardous waste and RCRA issues with three DFW-north Texas regional groups; Dynagen issues with Permian Basin group in Midland/Odessa; East Texas issues with Brazos Valley group (such as the Gibraltar Chemical Resources Winona hazardous waste fuel blending and deep well injection facility now owned and operated by American Ecology); and south Texas with Corpus Christi's Coastal Bend group. Working with training Houston area citizens in ambient air monitoring methods such as bucket grab samples.

Submitted extensive comments in September 2002 to the EPA Docket on proposed rules to allow refinery hazardous waste gasification for oil bearing residuals. Commented on numerous EPA rule package on MACT standards including hazardous waste combustors, medical waste combustors, cement kilns, petroleum refineries, and others.

Assisted citizens in filing administrative Title VI civil rights complaints over failed

environmental protection policies of TACB/TWC/TNRCC on Corpus Christi's refineries and other industrial sites in Texas like Pasadena, Beaumont, East Austin, Winona, Lubbock, Sierra Blanca and others. Several Title VI complaints were accepted and investigated by EPA Office of Civil Rights in Washington, DC.

Houston's American EnviroTech's newly permitted commercial hazardous waste incinerator, Gibraltar's hazardous waste facility, East Austin's Tokyo Electron America permit and other facilities, Lubbock's West Texas Wilbur Vault facility, and additional sites. Regional landfills at Ferris by Waste Management of Texas and East San Antonio operated by Browning Ferris Industries; Sierra Blanca sludge dump in Hudspeth County operated by Merco Joint Ventures. Prepare reports on air quality issues in Texas; submit articles to SC's news publications: Capitol Report & Lone Star Sierran, monthly and bimonthly.

Canada: Technical assistance to citizens in Kirkland Lake, Ontario province from 1999-2002 with technical concerns about a PCB incinerator proposal by Bennett Environmental Inc. to build a new commercial waste incinerator at Kirkland Lake in northern Ontario. Spoke four times in public meetings to community members and officials during January and June, 2002 on the hazards posed by incineration. Participated in public debate at Kirkland Lake in January 2002 with Bennett Environmental officials and experts. Assisted citizens in Belledune, Prince Edward Island over concerns with a new proposed Bennett Environmental Inc. toxic waste incinerator proposed for Belledune in 2005. Sydney Tar Ponds clean up testimony. Supplied technical information to Sierra Club of Canada on the proposed Sydney Tar Ponds PCB cleanup.

* Participated on several US EPA panels on hazardous waste combustion in Houston, Texas 1994 and Arlington, Virginia. Submitted technical comments to EPA on Portland Cement MACT standards for both conventional fueled and hazardous waste fired kilns.

* Works as a technical advisor with communities in several dozen states concerning toxic air pollution from cement kilns (nearly 120 nationwide) burning hazardous waste, tire-derived fuel, petroleum coke, coal and other fuels including Arkansas, California, Colorado, Florida, Idaho, Indiana, Maryland, Michigan, Mississippi, Missouri, Montana, Nebraska, New York, North Carolina, Ohio, Oklahoma, South Carolina, Pennsylvania, Texas, Belgium, France, United Kingdom, and others. Provided technical assistance to communities in Alabama, Arkansas, California, Delaware, Florida, Georgia, Louisiana, Michigan, New Mexico, New York, North Carolina, Pennsylvania, South Carolina, Oklahoma, Washington, Belgium, United Kingdom, France, Italy, and others.

* Assisted EarthJustice Legal Defense Fund in litigation against EPA over the federal Clean Air Act in numerous delayed rule promulgations by EPA, TSCA challenges for PCB rule changes, and others. Represented by the Environmental Technology Council on RCRA challenges to EPA rules on waste issues since 1995. Citizen suits under the Clean Air Act with various attorneys.

* RCRA and CAA issues of MACTs (maximum achievable technology standards) for RCRA regulated hazardous waste combustors, including sending comments to EPA since 1995-2001.

* SARA Title III, CERCLA and EPCRTKA comments to EPA since 1994 concerning rule changes proposed by EPA. Helped win victory in suing EPA in 5th Circuit Court of Appeals case over a weak Beaumont-Port Arthur Ozone SIP suit in 2001-2002.

Sierra Club - Ambient air monitoring projects & technical efforts with citizens living in industrial fence line communities since 1992-2007 involved several dozen projects:

National Ambient Air Quality Standards (NAAQS) in Texas: Extensive involvement for over ten years with NAAQS monitoring in Texas and Ozone and PM10/PM2.5 NAAQS issues with four one-hour ozone nonattainment regions (Houston-Galveston is “severe” II, Dallas-Fort Worth “serious”, Beaumont-Port Arthur “moderate”, and El Paso serious) and three more near-nonattainment areas under new eight-hour ozone NAAQS. El Paso is nonattainment for PM10 and there may be new PM2.5 nonattainment areas depending on monitoring. In Texas, involved from 1995-97 with the development of the new EPA Ozone and PM2.5 NAAQS since Texas (TNRCC) submitted a weak proposal to allow multi-monitor averaging in existing nonattainment areas for ozone; such mathematical averaging schemes would have allowed an area like Houston to become attainment by averaging out high monitor values with low monitor values, a scheme rejected by EPA in final NAAQS determination. Another component of NAAQS attainment process is development and approval of State Implementation Plans or SIPs to bring nonattainment areas into compliance with EPA air quality standards. Extensive comments submitted to state and EPA on SIPs.

* Technical assistance (1992) to people of color residents around East Austin, Tx bulk gasoline tank farm (operated by six major oil firms) on upset releases and fugitive VOC emissions such as Benzene from 43 bulk fuel storage tanks with ten million gallons of gasoline and jet A fuels; helped pressure TACB into conducting first ever cumulative benzene air modeling in Texas that predicted maximum 240 ppb of Benzene and 24 times above agency’s short-term ESL from six tank farms modeled as a single large complex. One other ESL concern is benzene is a recognized human cancer-causing agent which indicates zero is the only safe exposure level despite agency suggesting certain low levels as acceptable exposure.

* Prepared a petition for rulemaking to the TACB in 1993 on Hydrogen Sulfide gas to address citizens concerns that the existing Texas 30-minute net ground level concentration standard of 0.080 parts per million was outdated and needed to be lowered to 0.010 ppm.

* Helped Point Comfort, Texas (1994) community residents successfully negotiate a state-of-the-art, real-time FTIR (Fourier Transform InfraRed) property line ambient air monitoring system at Formosa Plastics Vinyl Chloride-Ethylene Dichloride-Polyvinyl Chloride Point Comfort mfg. complex; first citizen request for FTIR in Texas.

* Reviewed emissions monitoring documents on the Elf Atochem N.A. Arsenic Acid-pesticide plant at Bryan, Tx on behalf of local residents to identify releases of arsenic acid and related compounds; air modeling predicted arsenic emissions fallout over all of Bryan community. Plant tour revealed violations of permit and Texas laws.

* Advised Odessa, Tx Branch of the NAACP in successfully negotiating first ever state-of-the-art, real-time auto-GC (gas chromatograph) ambient air monitoring system for community downwind of major inland petrochemical complex due to concerns on benzene emissions and air toxics; July 1999 auto-GC data measured for first time in Texas high ground level impacts of Benzene and olefins compounds in parts per billion escaping from Olefins plant flaring events.

* Provided technical support comments for Corpus Christi refinery row residents to request more ambient air monitoring on Benzene, Sulfur Dioxide, Hydrogen Sulfide, PM10, Methyl Tertiary Butyl Ether, and VOCs, resulted in additional monitors and mobile monitoring by TNRCC that

discovered exceedances of ambient air standards and health effects screening guidelines for Benzene, SO₂, H₂S, MTBE and others.

- * Technical assistance on ambient air monitoring given to Midlothian, Tx residents concerned with toxic air emissions and particulate matter from local steel mill and cement kiln complex where hazardous waste incineration is occurring; suma canister sample had hit of Carbon Disulfide in 1994.

- * Worked closely with Winona, Tx community members near a commercial hazardous waste blending and deep well injection facility in order to address accidental toxic releases of complex air toxics mixtures and pressured state agency to require a state-of-the-art, real-time FTIR ambient air monitoring system around the plant's perimeter.

- * Supported community efforts in Lubbock, Tx to review air monitoring data, stack opacity and related information because of residents' concerns with air emissions from a local wood waste incinerator at a local factory.

- * Met with Pearland, Tx (S. Houston) residents to present ambient air monitoring issues and videotaping of smoke plume next to problem-plagued commercial medical waste incinerator, and investigated property damage and environmental damage caused by large scale acid gas emission releases (mainly Hydrogen Chloride gas) during illegal bypass vent openings; incinerator shut down by state district judge due to inability to pass a stack test and persuasive citizen evidence.

- * Investigated toxic release of Hydrogen Fluoride (HF) after major refinery fire and explosion in alkylation unit in May 1996 at Corpus Christi and confirmed community impacts from refinery HF releases by finding HF residue evidence on vehicles and vegetation countering refinery expert's claim of no HF impacts beyond refinery fence line.

- * Citizens requested technical assistance to review dust sampling evidence, photographs and conduct sampling for particulate matter at concrete batch plants in Texas.

- * Reviewed ambient air monitoring reports, Toxic Release Inventory data, plant VOC (LDAR) fugitive leak monitoring data, permit maximum allowable rates, excess air emissions from upsets, and air dispersion modeling reports for numerous fence line communities in Texas, Louisiana and other states.

- * Initiated first outreach efforts to train Texas fence line communities in performing their own ambient air monitoring with chemical detector tubes, corrosion monitors, bucket grab sampling devices and canisters.

- * Provided technical ambient air monitoring assistance to Texas City, Tx residents living downwind near major oil refining and petrochemical complex whereas upset events are routine.

- * Consulted with New Mexico residents regarding dust pollution from nearby mining operations who are opposing a permit renewal for the facilities due to dust problems.

- * Participated in toxic tour and community meetings on emissions from maquiladoras plants in Mexico to assess ambient air monitoring options and analyze sampling results for air toxics; worked with experts to conduct air toxics sampling. Issues on pesticides, landfill fires, dust and others.

- * Communicated technical information with several citizens' group involved in ambient air monitoring of petroleum coke dust emissions in their communities in Texas and Louisiana.

- * Discussed ambient air monitoring needs and protocols for citizens evaluating odors and dust from sludge disposal farming operations.
- * Prepared a Title III Clean Air Act petition to the U.S. EPA in 1999 on Hydrogen Sulfide gas to have the pollutant designated as a Hazardous Air Pollutant since it was excluded as a HAP in 1990.
- * Responded with technical assistance to Austin area residents to address concerns with smoke emissions from a wood waste incinerator operating close to an elementary school.
- * Explored and discussed ambient air monitoring and grab sample options with residents living near Alcoa's large aluminum smelter at Rockdale, Texas concerned with metallic dust, SO₂, HF, HCl, and other toxic emissions; met with local farmers and ranchers to discuss their concerns with smelter emissions and reviewed SO₂ stack test reports and ambient monitoring data. Filed referral air pollution complaint in 1993 on Alcoa for local residents.
- * Reviewed citizen ambient air monitoring efforts and stack monitoring reports through Health Care Without Harm's community coalition evaluating air emissions from numerous commercial and private medical waste incinerators in the USA.
- * Researched and presented technical information to minority community regarding potential emissions impacts of hydrogen fluoride gas from a proposed aluminum die-casting plant in their San Antonio neighborhood since the Mitsui company was seeking an air permit to operate in the people of color neighborhood; facility prevented from siting near the community primarily over HF emissions
- * Analyzed jet A fuel fugitive emissions at a San Antonio military base for people of color community experiencing adverse health effects.
- * Networked with neighborhoods concerning ambient monitoring of ground level fugitive VOC emissions from Houston Ship Channel industrial facilities 1993-2002, including serving as citizens technical adviser on innovative Channelview Source Reduction Project with Lyondell Petrochemical Company and Equistar Chemical to successfully cut toxic air pollution.
- * Evaluated air toxics data generated from citizens' ambient air grab sampling collected around numerous oil refineries and chemical plants in Texas and Louisiana.
- * Worked with local, state and national groups to assess coal-fired power plant emissions to develop ambient air monitoring and grab sampling strategies to measure ground level impacts from stack emissions.
- * Networked with citizens living near sour natural gas treating plants having releases of hydrogen sulfide gas in order to help find strategies for collecting grab samples to document H₂S releases.
- * Provided technical comments on fence line and community ambient air toxics monitoring plan for EJ community in Spartanburg, SC next to Rhodia chemical factory with ethylene oxide and propylene oxide.
- * Commented on benzene ambient air monitoring near Texas refineries.
- * Additional monitoring projects in Texas and other states.
- * Supported efforts in 2003-04 to obtain funding to EJ community group in Port Arthur, Texas to purchase at a cost of \$80,000 two new, state-of-the-art UV CEREX Hound laser air toxics monitoring systems to measure air pollution from Gulf Coast Region oil refineries and chemical-petrochemical plants.
- * Developed technical information in 2004-05 for community group in Riesel-Waco, Texas air to formally request ambient air monitoring technology prior to construction of a new 800 MW

coal-fired power plant in their community by LS Power called the Sandy Creek Power Plant fueled by coal.

* Developed appropriate technical information in 2004-2005 for community group in San Antonio, Texas air to formally request ambient air monitoring technology prior to addition of an additional 750 MW coal-fired power plant in their community by City Public Service called Spruce II, a coal-fired boiler.

* Developed appropriate technical information in 2005 for community members in Robertson County, Texas air to formally request ambient air monitoring technology prior to addition of an additional 1720 MW coal-fired power plant in their community by Texas Utilities called Oak Grove, a coal and lignite-fired power plant. Sempra Energy has also proposed a new coal/lignite fired boiler at Twin Oaks 3 in the same area and filed similar comments.

* Provided technical comments (2006) on results of fence line and community ambient air toxics monitoring data for community of color in Spartanburg, SC next to a chemical factory with ethylene oxide and propylene oxide.

* Developed appropriate technical information in 2006 for community members in McLennan County, Texas air to formally request Radionuclide-Radon-Polonium 210-Lead 210 ambient air monitoring technology prior to addition of an additional 800 MW coal-fired power plant in their community by Texas Utilities at coal-fired power plants at the plant sites known as Tradinghouse, Lake Creek, Monticello, Martin Lake, Big Brown, Valley, Fannin and others.

Selected Sierra Club Publications:

* “A Study of Upset Incidents of Industries in Texas,” co-authored with Marianne Brain, 1992.

* Technical contributor on report: “The Most Powerful Polluters in Texas: Understanding and Solving the Power Plant Threat to Public Health and Meeting Air Quality Standards,” SEED Coalition, Sierra Club and Texas Public Citizen, Austin, Texas, Spring 1996.

* Report: “Grandfathered Air Pollution: The Dirty Secret of Texas Industries.” March, 1998. Sierra Club and Galveston-Houston Association for Smog Prevention.

* Co-authored: “A is for Air Pollution: How the Grandfather Loophole Threatens Texas Schoolchildren.” January 1999. With the SEED Coalition.

* Technical consultant on report: “The TNRCC Complaint Process: Is Anybody Listening?”, Public Research Works, Austin, Texas, August 2000.

See additional reports under GHASP.

* Drafted Petition for Rulemaking: 1994 Petition to the Texas Natural Resource Conservation Commission requesting that it revise the Texas Regulation II’s 30-minute ambient air quality standard for hydrogen sulfide from 0.80 parts per million to 0.05 parts per million.

* Drafted Petition for Rulemaking: 1994 Petition to the Texas Natural Resource Conservation Commission requesting that it revise the Texas Regulation I (Control of Air Pollution from Visible Emissions and Particulate Matter) outdoor burning rules to prohibit sugarcane burning as an unnecessary and unsafe air pollution practice.

* “Smokestack Rollback: How the Bush Administration’s Clean Air Act proposals will increase toxic refinery air pollution and jeopardize public health,” February 2002 with EarthJustice LDF, SEED, Public Citizen/Texas, and Louisiana Bucket Brigade.

Prepared testimony and assisted technical document presentation to US Congressional Hearings on the Clean Air Act during 2001-2002: “Systemic State and U.S. EPA Enforcement Failures

Have Resulted in Several Decades of Routine High Air Pollution Levels and Air Pollution Episodes (Excess Air Emissions), Caused by Repeated Operating Problems and Upset Incidents at Oil Refineries Reflecting a Critical Need for Increased Penalties and Aggressive Enforcement,” July 2002.

* Provided technical reviews and comments (2005-06) on too many public advocacy reports to list such as permits, rules, air pollution levels such as NAAQS and ESLs.

Federal and State Government Citizen Advisory Committee’s and Public Advocacy groups (note list not inclusive of participation on all state and federal regulatory agency work groups):

- * Appointed to the Texas Air Control Board Task Force on Nuisance Odors, January 1993 - August 1993.
- * Appointed to Texas Natural Resource Conservation Commission’s Data Management Task Force in 1993-1997.
- * M.D. Anderson Cancer Research Center Community Advisory Outreach Com. member 1997-2005.
- * Sierra Club’s national Polychlorinated Biphenyl (PCB) Working Group (to encourage alternative disposal technologies for safe PCB destruction) (1996-2000);
- * Presented comments on hazardous waste incineration to two U.S. Environmental Protection Agency’s panels on Hazardous Waste Combustion Strategy, 1994 in Houston and Arlington, Virginia.
- * Participated on U.S. Environmental Protection Agency’s working group on Public Participation in RCRA Permitting, 1996 addressing hazardous waste policy issues.
- * Adviser to the Sierra Club’s national Air Quality Committee (1996-present).
- * Committee member on U.S. Environmental Protection Agency’s petroleum refining work group termed the National Advisory Council for Environmental Protection Technology (NACEPT). 1998-2000.
- * Member American Lung Association of Texas Intergovernmental Regulation Affairs Com. 1997-present.
- * Member of Texas Parks & Wildlife advisory panel on Aquatic Herbicides and Noxious Weeds, 1998-1999.
- * Scientist on Sierra Club’s national Genetic Engineering Committee 1999-present.
- * Technical advisor (1998-2001) to landmark citizen lead SOURCE REDUCTION PROJECT-Channelview, Tx.
- * Board member of the Hays County Water Planning Partnership in 2000-2005.
- * Board member of the Environmental Background Information Center in 2002-2004.
- * Air subcommittee member on U.S. Environmental Protection Agency’s National Environmental Justice Advisory Council (NEJAC). 2002-2004.
- * Cumulative Risk subcommittee member on U.S. Environmental Protection Agency’s National Environmental Justice Advisory Council (NEJAC). 2002-2004.
- * Advisory member of Texas Commission on Environmental Quality’s Science Coordinating

Committee. The SCC is TCEQ's advisory group on air quality research to improve understanding air quality in Texas and insure effective State Air Plan. SCC is composed of over 200 researchers from universities, governmental agencies, industry, and environmental organizations from throughout the country. One primary research project is TexAQS II Air Quality Field Study in 2005-06. SCC has Executive Committee and several Work Groups that specialize in various technical fields. Work Groups conduct conference calls and report back to entire SCC at conferences & meetings.

* Board member of the Corinne Irwin Foundation to assist individuals dealing with mercury poisoning, 2004-present.

* Board member of the local community group Friendship Alliance in Hays County, 2005-present.

* Participation in numerous stakeholder and community panels. Recent stakeholder in the Texas Commission on Environmental Quality's East Texas Electric Generating Facilities Stakeholder meetings to help address smog pollution in the north Texas Dallas-Fort Worth ozone nonattainment area by curbing NOx emissions from large coal-fired and lignite-fired power plants.

Technical Advisor - Galveston-Houston Association for Smog Prevention (GHASP): 1995 to 2003

Half-time technical consultant on ozone, particulate matter, air toxics, general air quality and hazardous waste issues in the eight county nonattainment area. Comments on EPA changes to the ozone standard. Organized Houston Round Table on health and air pollution focusing on fine particle pollution which was held December 1995. Title III and V issues of the Federal Clean Air Act Amendments of 1990 including review and critique of the proposed Texas Title V program under review by EPA.

GHASP Publications:

* Co-authored book "Danger in the Air: Toxic Air Pollution in the Houston-Galveston Corridor" (December 1996) on industrial air toxics and smog problems in the Houston-Galveston industrial corridor of the Houston Ship Channel. See GHASP website at <<http://www.ghasp.org>>

* Co-authored report: "Trees and Our Air: The Role of Trees and Other Vegetation in Houston-Area Air Pollution," January 1999 at GHASP's website. See GHASP website at <<http://www.ghasp.org>>

* Drafted Petition for Rulemaking to the US Environmental Protection Agency Administrator in January 1999: Petition to classify Hydrogen Sulfide as a hazardous air pollutant under Title III of the Clean Air Act and request to require annual reporting of Hydrogen Sulfide under the EPA's Toxic Release Inventory system. Petition to EPA on behalf of 150 grassroots organizations.

* 2002 Report: "How Bad is Houston's Smog?" Report compares Houston to many other US cities for hourly ozone exceedances from 1999-2001. See GHASP website at <<http://www.ghasp.org>>

13 Environmental awards for work as State of Texas Air Quality Regulator, Sierra Club and GHASP :

- * 1991 - Sierra Club's Permian Basin group Certificate of Appreciation award in 1991 for work as a State air pollution control official in West Texas.
- * 1992 - Environmental justice award for 1992-1993 efforts for technical assistance to minority community groups on the East Austin Bulk Gasoline Tank Farm co-led by Latino community group PODER (People Organized to Defend Earth & her Resources). Tank farm closed down.

- * 1993 - Environmental justice award for 1992-1993 efforts for technical assistance to minority community groups on the East Austin Bulk Gasoline Tank Farm co-led by East Austin African-American community group EAST (East Austin Strategy Team). Tank farm closed down.
- * 1993 - Environmental justice award for 1992-93 efforts that were honored by the Odessa, Texas Branch of the NAACP for technical work to strengthen a state court order on S. Odessa, Tx General Tire & Rubber Company's synthetic rubber plant and prevent General Tire from weakening the court order in 1992-93. Work led to closure of 164 acres of waste water ponds.
- * 1993 - Texas Conservation Award from the Lone Star Chapter Sierra Club honoring work in numerous Texas communities and overall air quality efforts.
- * 1994 (Environmental Justice) - Awarded Certificate of Appreciation 1994 by Mothers Organized to Stop Environmental Sins for technical assistance on the Gibraltar Chemical Resources hazardous waste blending and deep well injection facility at Winona, Texas.
- * 1994 - City of Austin Environmental Board's Environmental Awareness Award in recognition of outstanding achievement in Environmental Protection.
- * 1996 (Environmental Justice) - PODER's East Austin EJ awards for 1994-96 efforts on Holly St. Power Plant, City of Austin's Hargrave solid waste transfer facility, etc.
- * 1997 - Award from Houston's Citizens Environmental Coalition for producing 1996 GHASP report "Danger in the Air: Toxic Air Pollution in the Houston-Galveston Corridor" (Dec. 1996).
 - 1997 - Award from Houston's Clean Air Coalition for producing 1996 GHASP report "Danger in the Air: Toxic Air Pollution in the Houston-Galveston Corridor" (December 1996).
 - 1998 – Award from Channelview, Texas citizens in recognition of personal dedication and selfless contributions to the Health and Wellness of Citizens.
- * 2000 - Award from Citizens Environmental Coalition of Houston for innovative air quality work on Houston-Galveston smog problems.
- * 2000 - Texas Forest Service award for 1999 GHASP report "Trees and Our Air."
- * 2001 - National Arbor Day Foundation award for 1999 GHASP report Trees and Our Air."