

Written Testimony
March 12, 2009
Subcommittee on Investigations and Oversight
Committee on Science & Technology
U.S. House of Representatives
Sal Mier, Midlothian, Texas

We are on a treadmill to nowhere. Our community's human and animal health issues have been "festering" for a long time. Time and time again the Texas Department of State Health Services (TDSHS) tell citizens of Midlothian the Texas Commission on Environmental Quality (TCEQ) affirms toxic emissions from industries are too low to endanger public health – hence there is no point in looking at their health issues. **Pleas for help die at EPA, TDSHS and TCEQ doorsteps.**

In my 37-year public health career -- most of which was with the Centers of Disease Control (CDC) -- I never experienced such a reluctance or lack of will to determine sources of illnesses. There was never a quarrel about finding the source when you were dealing with a bacteria or a virus. But when the potential source involves an industry, dynamics change drastically. This is why I decided to look back towards my prior employer (CDC) for answers. Thus, we turned to ATSDR, the purported ultimate environmental public health agency, for help.

Instead of getting help promised by ATSDR in their mission statement, we found ourselves catapulted right back on to that treadmill and further from the truth.

ATSDR has demonstrated they either do not want the responsibilities inherent in their mission statement or they do not have the will and commitment to overcome external pressures and act independently to abide by the promises of this mission statement.

The Industries

Midlothian, Texas, has the largest concentration of cement manufacturing in the United States. The town and schools are nestled amid three cement manufacturers -- Dallas-based TXI's Midlothian cement plant, with five kilns, boasts to be the biggest in the U.S.; Ash Grove of Kansas, with three older wet kilns and Swiss company Holcim, with two kilns, are nearby. Limestone, cement's main component, is mined locally. Cement kiln dust is buried in local unlined quarries. These industries incinerate, among traditional fuels and other refuse, petroleum coke, whole and shredded tires, and hazardous waste – tons of hazardous waste -- in kilns never designed to burn hazardous waste.

Adjacent to TXI, Brazilian-owned Gerdau Ameristeel, one of the largest steel mills in North America, melts trainloads of scrap metal and crushed cars into new structural steel.

Daily, tons of toxic emissions pour out of ten cement kilns and two steel industry stacks.

In late 1980 TXI became one of the nation's largest hazardous-waste-combustion facilities accepting commercial hazardous waste. Cement kilns were authorized by EPA in a 1996 MACT rule to operate under weaker, less protective MACT standards for Hazardous Waste Combustors (HWC) compared to hazardous waste incinerators.

In a statement (attached) Dr. Neil Carman, Ph.D, comments:

“Cement kilns burn up to 1,000 degrees hotter than incinerators and a concern is they may burn too hot for metals causing higher mass emissions due to greater metal volatility at higher temperatures. ...Exposure to toxic metals is consistent with some health problems reported at Midlothian.”

Contradictions in Data

In a report “Midlothian Industrial Plant Emission Data,” Amanda Caldwell and Susan Waskey, two University of North Texas (UNT) graduate students added up all emission reports submitted to state and federal government by the three cement plants and adjacent steel mill in Midlothian. They spotlighted differences in reported volumes of air pollution when industry submits emissions reports to the State versus the Federal government. These students discovered:

“A cursory examination of EPA air release data in Figure 56 (Total Air Releases per Firm 1990-2006) and TCEQ air release data in Figure 60 (Total Hazardous Air Pollutants per Firm 1990-2006), show strikingly different results. For this reporting period, the EPA data shows TXI to be the firm with the largest amount of toxic chemicals released to the air (5,287,384 lbs.), while the state’s data show Holcim to be the largest emitter of hazardous air pollutants (1,507,663 lbs).

According to the plants’ TRI [Toxic Release Inventory] reports, there were almost **48,000 pounds of lead** air pollution released by all four facilities over the entire 16 years, versus the over **90,000 pounds of lead** the same plants reported sending up their stacks to the TCEQ and its predecessors during the same period.

According to the plant’s TRI reports, there were approximately **5000 pounds of Mercury** air pollution released by all four facilities from 1990 to 2006 **versus** the approximately **10,000 pounds of Mercury** air pollution reported to the state over the same time.”

EPA has recently acknowledged total mercury emissions from cement plants in the U.S. are twice as high as reported to the TRI. Based on the two UNT students report, TRI emissions appear not to match state records. Differences like these should give rise to questions.

Midlothian Schools

Approximately 7,000 students attend 9 schools situated in Midlothian.

USA Today in collaboration with the University of Massachusetts, the University of Maryland and Johns Hopkins University employed EPA Model, “Risk Screening Environmental Indicators,” in an attempt to measure the extent of chemicals children were being exposed to while attending school. This model relied on EPA TRI data for calendar year 2005. In this analysis, all schools rated in Midlothian ranked in the upper third percentile of the nation’s most toxic schools. Two ranked in the first percentile of the nation’s most toxic schools, two ranked in the third percentile. Their findings “Toxic Air and America’s Schools” were published in the *USA Today* December 2008.

Risk Assessments

In order to allay community anxiety caused by the burning of hazardous waste, in November 1995, the TNRCC (now TCEQ) prepared the *Screening Risk Analysis for the Texas Industries (TXI) Facility in Midlothian, Texas* and the *Critical Evaluation of the Potential Impact of Emissions From Midlothian Industries: A Summary Report*.

The American Lung Association contracted with Dr. Stuart Batterman, PhD, Environmental and Industrial Health, University of Michigan, to do an evaluation of this risk analysis. In Dr. Batterman's 70-page de novo analyses he warns:

"...Based on risk assessment techniques, other environmental impact assessment methodologies, and an assessment of existing environmental monitoring data, we conclude that the environmental and health impacts have and are likely to occur in the Midlothian area from industrial activity, including the combustion of hazardous waste at TXI. **That TXI, the other cement kilns and steel smelter in Midlothian cause impacts is inescapable.**" [emphasis mine]

Dr. Batterman further states:

"...Some of the monitoring programs appear entirely reasonable....Others, however, are highly deficient with respect to study design, execution, data quality and data analysis. Overall, the monitoring program is not impressive given the scale of industry and waste combustion in Midlothian and the degree of public concern."

"...The serious deficiencies in the Screening Risk Analysis and Summary Report indicate that **the ability of the TNRCC to conduct an objective assessment is compromised**, and the record demonstrates significant concerns regarding the effectiveness of the TNRCC in regulating the combustion of hazardous waste at TXI."

Illness Surfacing

Beginning in the late 1980's and early 1990's, shortly after TXI started burning hazardous waste:

- Physicians began observing increases in office visits from patients complaining of upper respiratory problems.
- Ranchers started reporting breeding problems, aborted fetuses and deformed offspring in both horses and cattle.
- A Statistically Significant cluster of Down syndrome babies was identified in 1995.
- A peer-reviewed study of respiratory illnesses in Midlothian, conducted by University of Texas Medical Branch and authored by Dr. Marvin Legator in 1996, concluded a 35% higher incidence of respiratory problems in Midlothian than the control group.

- Based on a study completed in 2005, the prevalence of overall birth defects from 1999 through 2003 for Midlothian was 150% that of Texas and the prevalence of hypospadias/epispadias (congenital defects in which the urinary outlet opens above or below the penis or on the perineum) in Midlothian was 350% that of the State.
- Since 1990 and continuing, Ms. Debra Markwardt, a local dog breeder experiences large numbers of illness in her animals that are related to immune system deficiency issues, aborted fetuses, failure to thrive, cancers and deformed offspring. Local veterinarians have attributed these problems to environmental factors. (See *addendum for her statement.*)
- In 1994 a group of mothers concerned for their children and the community pleaded with EPA that EPA at least do an animal health study. Poorly planned and based on a questionable methodology of execution, EPA initiated an animal health survey. Ultimately, the survey was abandoned and no conclusions drawn. The study did, however, identify an apparent high level of animal health problems in the study area in horses at one ranch. This rancher had seven to ten horses in any given year and reported between 50 – 88 % of the animals had reproductive health problems during the survey period. The majority of these horses had estrous/cyclic problems. One mare repeatedly had problems giving birth or keeping the foals after birth. This horse died shortly before the survey was conducted and a necropsy was performed. An inflamed ovary and a cyst on the ovary were discovered. There was also chronic enlargement of the lymph glands in the head, neck and under the throat. The mare exhibited a muscular line on the side of the abdomen indicative of labored breathing problems. (Note: Problems experienced by this rancher are similar to problems experienced by Ms. Markwardt and other livestock owners.)

ATSDR, TDSHS, TCEQ refuse to look at or even acknowledge the existence of any empirical evidence for fear a link may be related to industrial emissions and some responsibility may ensue. They instead take refuge in theoretical mathematical computations based on questionable air monitoring data.

Seeking Answers

For years, citizens turned to TDSHS for help. TCEQ eagerly and staunchly declared emissions from industries were safe and TDSHS used this as a refuge to look no further. **No answers came.**

Questions about a suspect air monitoring system and how air monitors not placed in predominant wind patterns could produce valid readings went unanswered. What about all the empirical evidence that was surfacing? No answers came. **Year after year this cycle kept repeating. The search for a scientifically validated response could not get off the treadmill.**

To many in the community, TCEQ's methodology for collecting air monitoring data appeared to be designed to avoid major emissions and to create an illusion of ambient air purity. Could this data's reliability to assess community impact and public health withstand the scrutiny of objective unbiased scientists? We thought we would find that objectivity when we turned to ATSDR.

ATSDR Involvement

In July 2005, our petition went before an ATSDR panel. The panel deemed it met the criteria for a public health assessment.

On August 10, 2005, we received a letter from ATSDR stating that “**they**” would be doing a Public Health **Assessment** as authorized under the CERCLA. ATSDR indicated that they planned “**to ask TDSHS for help**” responding to our concerns. This was disconcerting; however, ATSDR was a federal health-based agency with a mission statement that promised the use of the best science and to provide trusted health information—and they would be in control. “So, maybe,” we thought, “there was hope.”

Sadly, as the assessment started to slowly roll out, objectives began to morph into paths that dodged addressing critical issues such as the need for a scientific assessment of the monitoring data and an evaluation of the empirical evidence. Example:

1. Initially ATSDR promised to do a Public Health **Assessment** “to more fully characterize the emissions from multiple large industries in the area and evaluate potential health risks resulting from individual and aggregate chemical exposures.”
2. Once the State became involved, things started to morph. The “**Public Health Assessment**” changed to something new. On Sep 12, 2005, we received a letter from ATSDR stating that because of “***community health concerns**” they would be conducting instead a health **consultation**. They further implied that a health consultation would allow for a “**timely response (early 2006)**.” In this letter ATSDR indicated that they were deferring the decision back to the State. ATSDR would review and certify it. In addition (**even though one major concern we expressed was the inadequacy of the State monitoring data for evaluating public health issues**) they stated they would rely on State monitoring data to make conclusions. **It was at this point I realized we were catapulted right back on to that treadmill going nowhere.**

(*Note: I am still puzzled about what ATSDR meant by “community health concerns.” The community was concerned that no one was looking at their health issues and asking the question, “Could something be awry with the monitoring data in which TDSHS and TCEQ take refuge to declare there were no public health issues?” Obviously the community’s “health concerns” and ATSDR’s health concern did not run a parallel path.)

An **assessment** requires a closer examination of community health issues and may even entail some epidemiological activities; whereas, theoretically a **consultation** is done when time is of essence and a rapid decision is necessary. The value of a **consultation** from ATSDR’s/TDSHS’ perspective would be that if air-monitoring data did not support any adverse health effects, the job ends there. **All empirical evidence and epidemiological data can then be ignored.** All other red flags indicating health problems such as high birth defects, immune system deficiencies, animal issues, UTMB Study on Upper Respiratory illness, etc., can be dismissed as irrelevant. Since ATSDR/TDSHS were going to accept monitoring data at face value

and if this monitoring data is purported to reflect the cleanest air in Texas, the simplicity of the conclusions was promising.

3. To further simplify the task, the scope of the consultation narrows to looking at **air data only**.
4. Toxins in the air can be tricky -- entering a body in more ways than one. So to avoid any possible complications, the scope must now be further narrowed to the **“inhalation” pathway only**.

Empirical evidence and epidemiological data has been deemed non-relevant for this Consultation. It has been treated like an untouchable pariah. To include it would mean someone would have to address whether something is awry. This is a challenge that apparently ATSDR nor the State want to face.

I finally realized that regardless of what arguments are made or regardless of what empirical evidence is presented, the bottom line on this public health consultation was determined before it even began. The entire process would just be a matter of making documentation support the bottom line.

We needed input from objective unbiased reputable scientists. Shortly before the consultation was due to be released, I reached out begging for help. Six scientists responded and offered their time and skills to critique the draft consultation report.

A draft decision with an “Indeterminate Public Health Hazard” was finally posted for comments on December 11, 2007.

What The Scientists Said

The scientists who reviewed the draft were all highly critical of the product

Dr. Stuart Batterman, Ph.D, Professor of Environmental Health in the School of Public Health and Professor of Civil and Environmental Engineering at the College of Engineering, both at the University of Michigan, comments: ***“...This Health Consultation has so many omissions, inconsistencies, and inadequate, flawed, or misleading analyses and language that my best suggestion, given in advance of my comments, is that it should not be issued by ATSDR. ...The Health Consultation is biased. It contains overarching statements that discount all indications that emissions from local industry and environmental conditions might or do pose a health concern in the community. The Health Consultation should be objective yet maintain the health-protective stance which is appropriate for health-based agencies like ATSDR. ...The Health Consultation relies exclusively on air quality monitoring results measured at four monitors. It does not discuss, in any coherent way, the adequacy of the spatial and temporal coverage of this network. This includes, for example, the ability to***

identify hotspots, the appropriateness of the network, the adequacy of the monitored parameters, the quality of the data, and the need for additional monitoring sites. ...There is little mention of meteorology. The area shows very persistent and directional winds, which means that monitors that are not directly downwind are likely to not show impacts from local sources. The Health Consultation should include appropriate wind roses and other analyses that indicate the likely impact areas vis-à-vis monitoring sites. ...In its present form, however, I find so many biases and deficiencies that I do not believe that the Health Consultation achieves its aims and, as stated above, I would urge that ATSDR reconsider its issuance.

I do hope that ATSDR sponsorship and oversight provides a means to correct these problems...”

Dr. Peter L. deFur, Ph.D. and Kyle Newman, Environmental Stewardship Concepts, comment: *“...ATSDR’s classification of this site as an “Indeterminate Public Health Hazard” is in direct contradiction with the data the Agency presents in the report. Throughout the document, ATSDR attempts to marginalize or disregard data that indicate that compounds produce human health risks. ATSDR has more than enough data to classify the site as a “Public Health Hazard. ...The problems with this assessment are numerous, and the most serious problem with the interpretation is that ATSDR discounts their own metrics of health effects, ignoring the data that exceed health levels.*

For a number of chemicals, the air concentrations are in excess of the health levels, but ATSDR dismisses the excess toxic chemicals as not a problem because the number or people harmed is small, despite the fact that the risks exceed the levels used to protect people from environmental threats (i.e. 1 in a million)...”

Dr. Neil Carman, Ph.D, Program Director, Lone Star Chapter of Sierra Club and former employee of the Texas State environmental agency, comments: *“I find the report highly inadequate for a variety of reasons [listed in full in comments] and fails to seriously acknowledge the numerous gaps in the ambient air monitoring in the Midlothian area. ...A basic concern here is that asthma, allergies, immune system deficiencies,*

and other health problems in adults and children are not being evaluated and yet these kinds of adverse health effects are being reported by Midlothian residents...”

Dr. Dennis Cesarotti, Ph.D, Northern Illinois University, comments: ***“It appears that the DSHS (State Public Health) set out to prove that there were no health issues in Midlothian, Texas.”***

Dr. Al Armendariz, Ph.D, Environmental Engineer, Southern Methodist University comments: ***“The report lacks an analysis of the impact of dioxin and furan emissions from local industry to the public health of the community...however, dioxin and furan emissions are an extremely significant component of the emissions from the local industry. ... a significant fraction of the mercury emitted by the industrial sources in the area is likely to be emitted in gaseous form, given the volatile nature of mercury, and the temperatures of the stack gases. The gaseous mercury will not be collected in the particulate filters, leading to further underestimates of the true atmospheric concentrations of mercury. In addition, the gaseous mercury will not be detected by the techniques used to identify the VOC compounds.”***

Debra L. Morris, Ph.D., Adjunct Assistant Professor in the Department of Preventive Medicine and Community at the University of Texas Medical Branch in Galveston, comments: ***“A symptom survey of residents in the geographical area that this document covers has been conducted and published (Legator et al, 1998). The results of this study showed that residents in this area had more respiratory symptoms than individuals in a control region. However, I am unaware that any attempt has been made to follow up on the results of the study using methodology that directly addresses and measures the health concerns of the community. Because the individuals in this area are exposed to a combination of chemicals, studies of health effects in this population would be much more revealing than an approach that makes mathematical approximations of the health risks based on measurements of individual chemicals.”*** [Dr. Morris was a participant in this study.]

TCEQ Response

The Texas environmental agency (TCEQ) was highly critical of the “Indeterminate” finding. In comments to EPA, posted on their website TCEQ complains:

“POTENTIAL IMPACT ON TCEQ: The Indeterminate Public Health Hazard finding regarding air toxics in Midlothian may lead citizens and elected officials to believe the air quality is causing health impacts when air toxics monitoring in the Midlothian area not only indicates acceptable air quality but also better air quality than most monitored areas of the country. This concern could lead to pressure on TCEQ to shift resources from areas of concern in order to expend more resources in the Midlothian area.”

As of this date (March 12, 2009), the public health consultation has not been finalized.

Due to this Administration’s proposed strategy to rebuild the nation’s infrastructure, the steel and cement industries are in a position to boom. In the last year, however, all local industries in Midlothian have severely cut back on production of concrete and steel. As of October 2008, TXI has temporarily, idled its four older wet kilns and has temporarily suspended burning hazardous waste. What is coming out of the industries now does not represent what the community has been exposed to or what they will be exposed to once production accelerates and once burning of hazardous waste resumes. **If you want a less than adequate picture of emissions to which the public has been exposed and to which they will be exposed -- now is the time to monitor.**

In an effort to get the “Indeterminate Public Health Hazard” lifted, TCEQ embarked on a \$349,000 project purportedly to “answer some of the community’s questions” and determine the percent of chromium-6 in the identified chromium emissions (a major unknown factor that lead to the indeterminate finding).

The first of 4 five-day monitoring periods scheduled over a year took place in December 2008 -- **right after TXI temporarily idled its 4 older wet kilns and temporarily suspended incineration of hazardous waste.** *“TXI’s status might affect the chromium’s numbers depending on whether the older kilns are operating during any testing,”* TCEQ officials conceded to a reporter from the *Dallas Morning News*.

Any monitoring during the time hazardous waste is not being incinerated would skew more than just the chromium numbers. It would also not capture emissions with the highest levels of concern – those resulting from the incineration of hazardous waste. What information will this data provide? Perhaps it will provide a baseline for comparison when hazardous waste incineration is revived.

The fact that this data will not be representative of actual emissions to which the public was exposed, or will be exposed, appears not to be a material consideration in the scheduling of air monitoring. **How ATSDR/TDSHS plan to retrofit this data into the conclusions of the public health consultation remains questionable.**

When ATSDR was questioned about the reliability of any data collected during the idling of these kilns, during decline in production, and during the temporary suspension of hazardous waste incineration, the response was, “We have no control over changes in plant operations due to economic conditions. Couple this with the fact that state agencies often have a limited window within which funds made available for a project must be spent.” **Spending funds seemed more important than the quality of the data and**

evaluating public health impact to real exposures. What appears to be important **is that the money be spent now.**

ATSDR critically missed the boat at step one. They failed to validate the science behind the methodology used to determine the placement of the air monitors. If they could not validate the data at the initial step, of what value are any ensuing conclusions? **The deficiencies in this consultation indicate ATSDR's ability to conduct an objective assessment is compromised.**

We never asked anyone to find a problem if one did not exist. We just wanted an unbiased objective assessment. We expected an assessment incorporating the most recent science, logic, common sense and objectivity. We did not get this.

Instead of exercising due diligence by becoming an active participant in the evaluation, ATSDR relegated their responsibility without question back to the State. The assessment of Midlothian's public health ended up back in the hands of the same decision makers who over the years staunchly and flagarantly turned a deaf ear and blind eye to the empirical evidence handed them. **Science was not going to be factored in.**

It appears ATSDR divorced themselves from their mission statement. There was no value added to ATSDR's involvement. ATSDR's involvement only served to keep the public at bay for another 4 years. It was a costly waste of taxpayers' money. This involvement only elongated a process to nowhere and gave credence to impediments in the system that block science and truth.

If ATSDR does not have the **commitment or capacity** to objectively temper and counter external forces that dissuade them from their mission to serve the public by using the best science and providing trusted health information -- then ATSDR needs to get out of the Public Health Assessment and Consultation business. Maintaining the status quo will only continue risking the public health of many U.S. communities.

U.S. communities desperately need an external environmental public health entity able to carry out the mission assigned to ATSDR. Perhaps contracting with a University or a School of Public Health would be a better alternative. We need an entity that is proactive and not just merely an acquiescing observer.

Addendum

1. Statement, March 12, 2009, by **Dr. Al Armendariz, Ph.D**, Environmental Engineer, Southern Methodist University
2. Statement March 7, 2009, by Debra Markwardt, local dog breeder experiencing health problems in her animals.
3. Comments to *Health Consultation, Midlothian Area Air Quality Part I: Volatile Organic Compounds & Metals, December 11, 2007*, by Dr. Stuart Batterman, Ph.D Professor of Environmental Health in the School of Public Health and Professor of Civil and Environmental Engineering at the College of Engineering, both at the University of Michigan,
4. Comments to *Health Consultation, Midlothian Area Air Quality Part I: Volatile Organic Compounds & Metals, December 11, 2007*, by Dr. Peter L. deFur, Ph.D. and **Kyle Newman**, Environmental Stewardship Concepts,
5. Comments to *Health Consultation, Midlothian Area Air Quality Part I: Volatile Organic Compounds & Metals, December 11, 2007* by **Dr. Neil Carman, Ph.D**, Program Director, Lone Star Chapter of Sierra Club and former employee of the Texas State environmental agency
6. Comments to *Health Consultation, Midlothian Area Air Quality Part I: Volatile Organic Compounds & Metals, December 11, 2007* by Sal and Grace Mier, Midlothian, Texas
7. Statement dated Mar 12, 2009, by Dr. Neil J. Carman, Ph.D., regarding how MACT Rule and Enforcement Failures by EPA and State of Texas are Related to Health Hazards from Toxic Waste Incineration in Cement Kilns at Midlothian, Texas
8. Document Not Just Steam, A Review of “Emissions Data from Midlothian Industry” For the Texas Senate Natural Resources Committee, September, 2008 based on a report “Midlothian Industrial Plant Emission Data,” Amanda Caldwell and Susan Waskey, two University of North Texas graduate students.
9. Executive Statement extracted from Analysis of Screening Risk Analysis for the Texas Industries (TXI) Facility in Midlothian, Texas and the Critical Evaluation of the Potential Impact of Emissions From Midlothian Industries: A Summary Report, dated May 1, 1996, written by Dr, Stuart A. Batterman, Ph.D, and Yuli Huang, M.S., Environmental and Industrial Health The University of Michigan



SMU

BOBBY B. LYLE SCHOOL OF ENGINEERING

Department of Environmental and Civil Engineering

March 5, 2009

Honorable Brad Miller
Chair, Subcommittee on Investigations and Oversight
Committee on Science and Technology
U.S. House of Representatives
2321 Rayburn House Office Building
Washington, D.C. 20515

Congressman Miller:

It is my pleasure to submit these written comments to supplement the testimony of Mr. Salvador Mier, a fellow Texan and former official with the Centers for Disease Control and Prevention (retired). My name is Al Armendariz, and I am on the faculty in the School of Engineering at Southern Methodist University (SMU) in Dallas, Texas.

I was asked by Mr. Mier to review a report published by the Texas Department of Health (TDH) in 2007, as part of an ATSDR investigation into industrial air pollution and adverse health effects in Midlothian, Texas. As part of that investigation, the Texas Commission on Environmental Quality began a program in 2008 of follow-up air sampling in Midlothian.

On my own behalf, I respectfully ask the subcommittee to consider the following recommendations, as it conducts hearings on the past and future of ATSDR.

(1) There is an obvious potential for a conflict of interest when the ATSDR contracts with state regulatory agencies to perform health assessments or to conduct follow-up environmental sampling. In Texas, the TCEQ is the state agency that grants permission to facilities (in the form of "permits") to emit pollutants to the atmosphere. In the permit writing process, the state agency is making a legal statement that a facility will not adversely impact public health. There is a very obvious potential conflict of interest when the same agency later goes into the community to do follow-up sampling in response to an ATSDR investigation. A state agency is essentially examining whether the facilities to which it granted permission to emit pollutants at an earlier date are now in fact causing an adverse public health impact. If ATSDR is going to work with other organizations to conduct assessments or do follow-up sampling, ATSDR should work with independent third parties with no obvious conflict of interest, such as state universities or schools of public health, a federal government contractor, the American Lung Association, etc.

(2) In the 2007 TDH report, assessments were made of health risk from industrial air pollution based on analyses by the TCEQ of air samples taken in Midlothian. However, inhalation is only one route through which air pollutants enter children's bodies. Air pollutants also deposit on the ground, on soils, grasses, and in playgrounds. The ATSDR and the state agencies should also have tested the soils at schools and parks and determined the levels of pollutants in the soils. Children ingest substances that are deposited via air pollution, when they play outdoors, dig in the dirt, fail to wash their hands completely before eating, etc. The ATSDR and the state agencies should have attempted to quantify the TOTAL exposure to air pollutant compounds in children and other vulnerable individuals, examining both ingestion and inhalation routes of exposure.

Thank you for the opportunity to provide these comments. Please contact me if I can be of any service.

Sincerely,



Al Armendariz, Ph.D.

*UNC-Chapel Hill
School of Public Health
Ph.D. 2002*

Statement by Debra Markwardt

Midlothian, Texas

Area Dog Breeder

March 12, 2009

I am Debra Markwardt, a professional dog breeder since 1982. When I moved my home and business to Midlothian in 1988 my animals were all thriving. Over the years my animals started manifesting health issues. They did not seem to thrive as well. Entire litters were dying. (Last year I lost 75% of my litters.) Pups were being born with strange birth defects that I had not previously seen in my animals. Birth defects such as large domed heads, external intestines, extra or missing limbs, blindness, missing testicles, distorted genitalia, no visible signs of urinary outlet, etc. became common.

Hair analysis for me and for some of my animals was done. Varying degrees of heavy metals have been identified in all of these tests. Every one of these tests reflected extremely high levels of aluminum. High aluminum in their systems causes extreme mineral imbalances depleting their body of essential nutrients. Aluminum, lead, and mercury go to the brain and nervous system, thereby poisoning every organ of the body. As the immune systems deteriorate diseases manifest.

My animals also started manifesting severe problems with their coats. They were becoming emaciated and failing to thrive. Problems were more evident in the very young and in the older animals. Pups were born with heavy metals in their system and weaker immune systems. If a pup survived past 6-8 months it survived relatively well. My vet explained that some pups had stronger immune systems than others. If their survival passed that critical period, it was an indicator of a stronger immune system. I have lost about 75 young adult dogs since I moved to Midlothian.

Ranchers in the community were having similar problems with their livestock. Efforts to get these issues addressed died at the doorsteps of EPA, Texas Department of State Health Services (TDSHS), and the Texas Commission on Environmental Quality (TCEQ). TCEQ said our environment in no way posed a problem and this was the reason TDSHS could comfortably walk away.

When ATSDR became involved we had hopes that we finally had an agency that would look at our problems and give us a scientific answer.

Midlothian is experiencing birth defects in their children at a rate 150% that of the state. They are experiencing hypospadias / epispadias at a rate 350% that of the state. I believe birth defects in my animals parallel birth defects seen in children born in Midlothian. I also felt that immune system deficiencies documented in my dogs parallel problems people in the community were alleging.

I cannot understand why ATSDR and TDSHS do not believe what is happening to my animals is relevant to the assessment of this community's public health. What is happening to my animals could be happening to the people of Midlothian. I keep getting a brush-off from ATSDR with comments like "...veterinary and animal issues are outside of our mandated domain" and "...studies involving animals, even as sentinels for human health issues, are not activities engaged in or funded by our agency" and ultimately "... ATSDR and the Texas Department of State Health Services do not have the expertise to conduct the appropriate animal studies."

I was not asking them to do an animal study. I offered my data for use in the ATSDR public health consultation as possible sentinels to what could and may be happening to the community. ATSDR firmly stated that there would be no association of these animals with the public health consultation

they were doing for Midlothian. There are children who are waiting to be born. **These animals could be a key to their future. Who will help these children?**

Below, are examples of what I have been experiencing --- different birth defects, results of immune system deficiencies, and examples of how animals with weakened immune system respond when raised away or removed from Midlothian. I too am experiencing health problems. On the last page is a statement from my doctor.

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December 12, 2008

To Whom It May Concern:

Enclosed is a picture of two young dogs. These dogs are litter mates. At weeing they were similar in weight and condition. The difference is that the dog on the right is housed at the home of Debra Markwardt in Midlothian, Texas. Over the last several years I have seen several of her dogs with similar coat conditions and posture. Some have been diagnosed with demodecosis (a mite infestation seen in dogs with impaired immune systems and secondary pyoderms-bacteria skin infection). The susceptibility to this disease is in blood lines. In Ms. Markwardt's case, the condition is not limited to a specific blood line. She has also had other instances of having the only dog out of a litter have skin disorders.

My conclusion from treating her animals over the last few years is that there is an environmental cause to the problems.

Sincerely yours,

W. E. Guthrie, Jr., DVM



These 2 animals are littermates. The one on your left was purchased and moved away shortly after weaning. The one on the right remained on my property. The picture speaks for itself. However since the 4 wet kilns were temporarily idled and are temporarily not burning hazardous waste, I have seen a significant improvement on this animal.



Above - Jake living on my property in Midlothian

**Below - Jake 6-Months Later
After Living in Another Town**





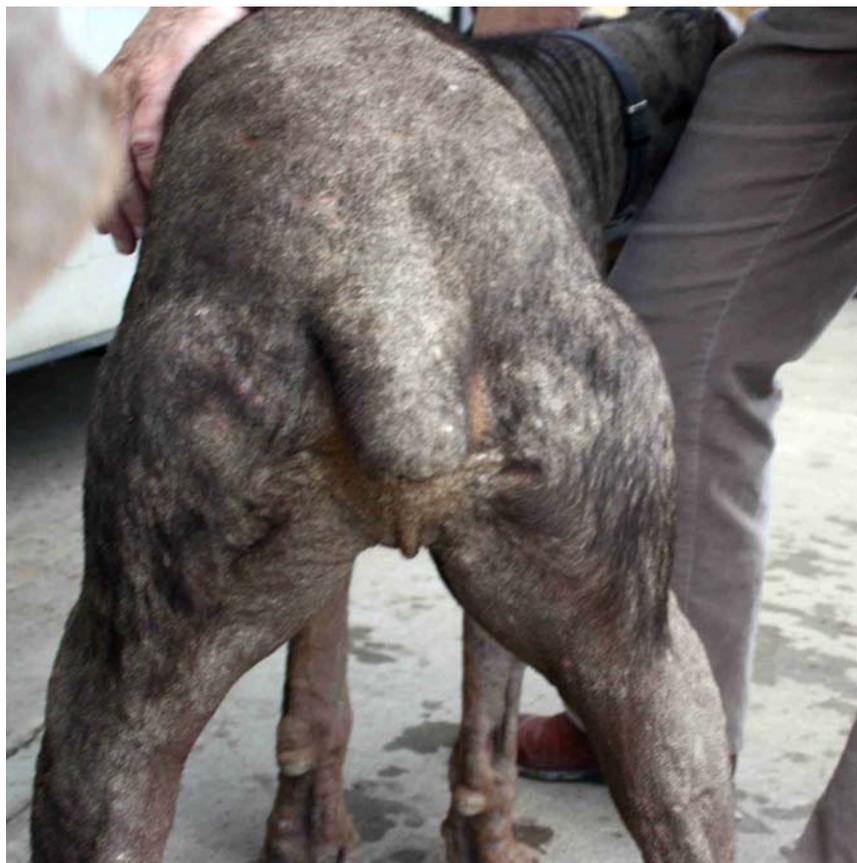
Severe immune system deficiency



Enlarged Lymph Nodes Due to Possible Hazardous Waste



Enlarged Lymph Nodes Below Jaw and Along the Neck



Male Born With No Testicles



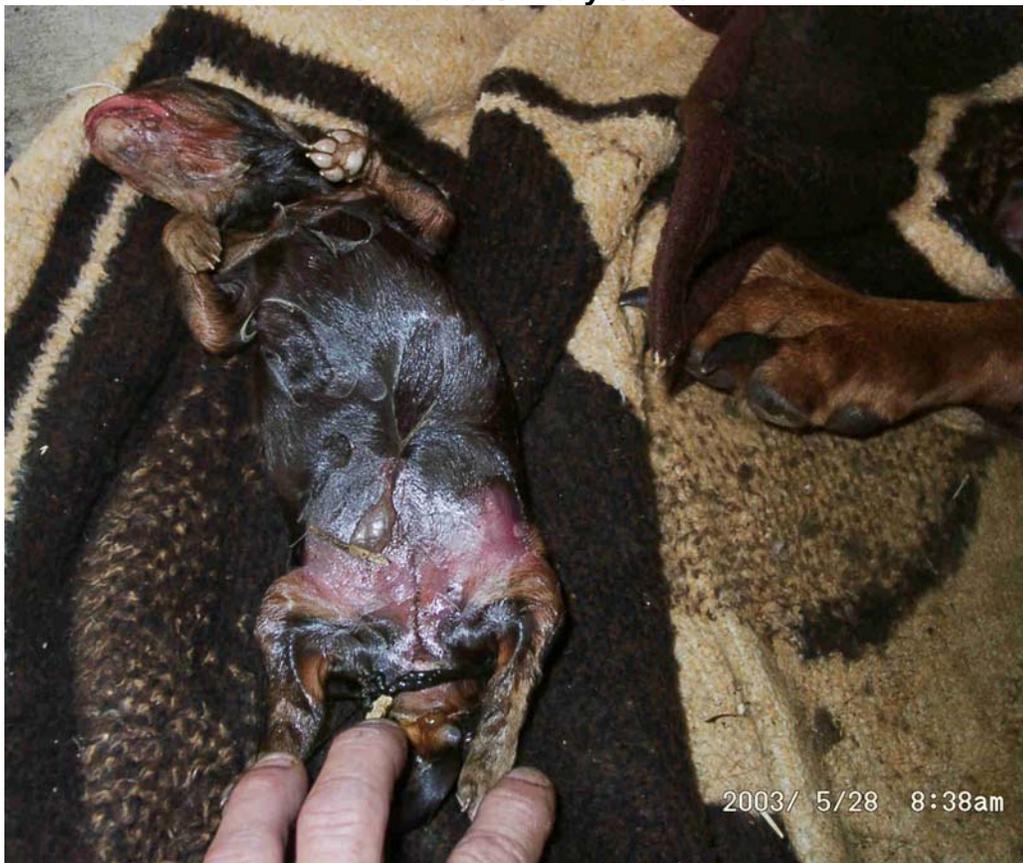
Birth Defect – Deformed Head and Face - Intestines Outside of Body



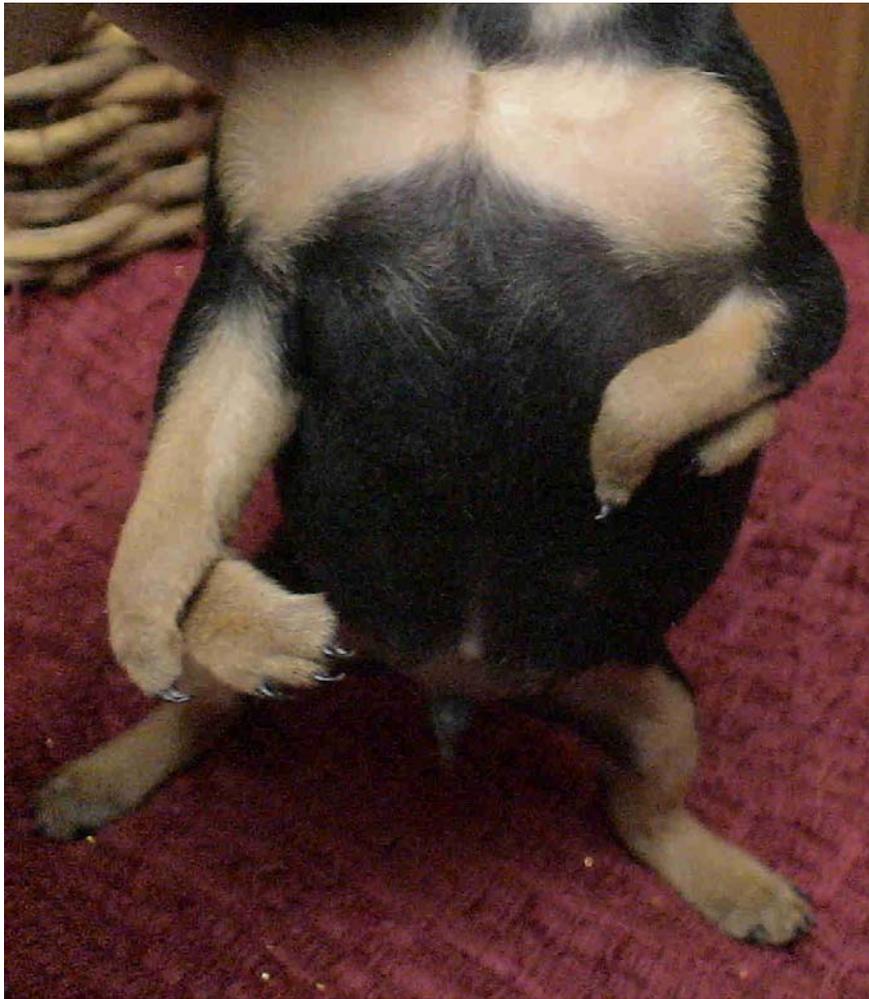
Hole on Side of Body



No Visible Urinary Outlet



Deformed Head and Face, Deformed Genitalia



Extra Paw on Right - Deformed on Left



Large Domed Head & Other Skeletal Deformities



Full term, but underdeveloped and deformed



Born with intestines outside of body



May 24, 2007

Re: **Deborah Markwardt**
Date of birth: January 10, 1962

To Whom It May Concern:

Ms. Markwardt is a long-term patient of mine who has battled significant health issues over the last five years. She has had abdominal pain, she has had neuromuscular symptoms, fatigue, headaches, nausea, most recently profound fatigue. She has had two recent CAT scans that show nonspecific granulomatous disease. She has lived in a home that has very high levels of aluminum in the soil and in the dust that is found in the home. She has had a urinalysis that shows her aluminum level to be markedly elevated and it should be zero. She also is a professional dog breeder who has noted significant skin and hair problems in the dogs that she has at her home. The veterinarian that has treated these animals has confirmed this is likely on the basis of aluminum toxicity. Today I have referred her to Dr. Craig Glazer at UT Southwestern who is a pulmonary specialist who has special interest in environmental heavy metal poisoning. I anticipate that he will confirm that Ms. Markwardt's symptoms are in fact due to aluminum toxicity. I have strongly recommended that she immediately move from her current property to minimize the health damage that has already occurred.

Sincerely

Thomas G. Ledbetter, M.D.

TGL/gm

Waxahachie

Thomas G. Ledbetter, M.D.
John A. Bousquet III, M.D.
Rhonda Walton, M.D.
Eddie R. Joslin, M.D.
David Linguist, M.D.
Peggy Linguist, M.D.
Deborah Fung, M.D.
Travis Henry, M.D.
Ransome Erindi, M.D.
Patti Powell, M.D.
Ruth Ann Adell, D.O.
Yolanda Brady, M.D.
Kimberly Sweet, M.D.
Donna Howard, F.N.P.
Christy Bentley, A.N.P.
Sara Moreland, P.N.P.

Midlothian

Jeffrey A. Astbury, M.D.
Shirley C. Joslin, M.D.
Karen Yeh, M.D.
Chad Coleman, M.D.
Leigh Nordstrom, M.D.
Matthew Moreland, D.O.
Judy Davis, F.N.P.

Red Oak

Alexander Hollub, M.D.
James L. Thomson II, M.D.
Jason Nordstrom, M.D.
Haley Wagner, D.O.

March 9, 2008

Environmental and Injury Epidemiology and Toxicology Program
Texas Department of State Health Services
1100 West 49th Street, Room T-702
Austin, Texas 78756
via email to: epitox@dshs.state.tx.us

To Whom It May Concern:

In this letter I offer some brief comments on the Agency for Toxic Substances and Disease Registry (ATSDR) report entitled "Health Consultation - Midlothian Area Air Quality Part 1: Volatile Organic Compounds & Metals," released in a public comment version dated December 11, 2007. My understanding is that this Health Consultation is an ATSDR document prepared by the Texas Department of State Health Services (TDSHS) under a cooperative agreement with ATSDR.

By way of background, I am Professor of Environmental Health in the School of Public Health and Professor of Civil and Environmental Engineering at the College of Engineering, both at the University of Michigan. I have over 25 years experience in air quality, risk assessment, environmental monitoring and assessment, environmental epidemiology, and related topics. My laboratory and field staff provide, among other research activities, field and laboratory measurements of many of the compounds in this analysis for the purpose of exposure and risk assessment, and I have broad expertise in these fields. Further, I was involved in reviewing environmental, risk and engineering data for industry in Midlothian in the mid-1990s, and am familiar with the record, local situation, and many of the public concerns that motivated this Health Consultation by ATSDR. I authored a report entitled "Evaluation of The Screening Risk Analysis for the Texas Industries (TXI) Facility in Midlothian, Texas written by the Texas Natural Resource Conservation Commission and Other Materials Related to the Texas Industries Facility," dated May 1, 1996. (I would be glad to make this report available if it has been lost.)

Although the scope of the Health Consultation is very much more limited than TNRCC's 1995 Risk Analysis (as well as the similar US EPA Risk Assessment that followed in 1996), many of the same concerns apply. This Health Consultation has so many omissions, inconsistencies, and inadequate, flawed, or misleading analyses and language that my best suggestion, given in advance of my comments, is that it should not be issued by ATSDR. Due to time constraints, I cannot provide full review, but the following list details at least some highlights.

1. ATSDR should provide a peer review on this document, and should identify the experts called upon for this purpose. The experts should include internal and external members.
2. The Health Consultation should make available all the data and calculations, including data on the background levels used for comparison. Otherwise it cannot be peer-reviewed and its archival value is extremely limited. A good example of data presentation is the recently completed Michigan Department of Environmental Quality's Detroit Air Toxics Initiative Risk Assessment, see <http://www.michigan.gov/documents/DATI - COMPLETE FINAL REPORT 11-9-05 142053 7.pdf> – but there are many other examples.
3. The Health Consultation is biased. It contains overarching statements that discount all indications that emissions from local industry and environmental conditions might or do pose a health concern in the community. The Health Consultation should be objective yet maintain the health-protective stance which is appropriate for health-based agencies like ATSDR. Also see point 12 below.
4. There is superfluous and misleading material in the Health Consultation concerning the number of measurements, compounds, and analyses conducted to date. As examples, if I take a single soil sample and analyze it for 300 compounds, that is 300 measurements. If I take a year of TEOM PM_{2.5}

measurements, that is 8760 hourly averages. This is unimportant. The bottom line is whether data are sufficient, and the Health Consultation makes clear that more data is needed to answer questions concerning risks and health impacts. Sample sizes should be discussed in the statistical analyses, and not used to exaggerate the significance of the Health Consultation.

5. The Health Consultation should make explicit at the onset that health risks from many or most of the toxics will occur via non-inhalation pathways –though ingestion, dermal contact, bioaccumulation, etc. – and that the analysis in the Health Consultation does not encompass this scope. The Health Consultation should then indicate how the analysis of these “indirect exposure pathways” is to be accomplished. This is discussed detailed in EPA’s risk assessment guidance. It is unacceptable and misleading that the Health Consultation completely excludes this discussion. Note that the argument that this is irrelevant or outside the scope cannot be made as this Health Consultation considers past environmental sampling and data reviews, including soils levels (e.g., pages 15-16.) and it makes numerous calculations and references to risks.
6. The Health Consultation relies exclusively on air quality monitoring results measured at four monitors. It does not discuss, in any coherent way, the adequacy of the spatial and temporal coverage of this network. This includes, for example, the ability to identify hotspots, the appropriateness of the network, the adequacy of the monitored parameters, the quality of the data, and the need for additional monitoring sites.
7. The risk assessment guidance from EPA makes explicit recommendations to identify and analyze risks to vulnerable and susceptible individuals. This includes individuals that are highly exposed. This is not discussed in the Health Consultation, other than a short and inadequate section on children.
8. There is little mention of meteorology. The area shows very persistent and directional winds, which means that monitors that are not directly downwind are likely to not show impacts from local sources. The Health Consultation should include appropriate wind roses and other analyses that indicate the likely impact areas vis-à-vis monitoring sites. Dispersion modeling, perhaps beyond the present scope, has been completed for all of the facilities in question, e.g., in the 1995 and 1996 risk analyses mentioned, and it could provide very useful spatial information regarding locations of local source impacts.
9. There is a lot of speculation without attribution in the Health Consultation. For example, page 7 part C.4 indicates, without evidence, that human HAC values would be equally conservative in protecting animal health. This is certainly not the case when considering, for example, deposition and ingestion uptake. As a second example, page 10, item 4 states that “we do not anticipate that air pollutant levels for much of the city would be too much higher than those observed.” This shows little understanding of dispersion from tall sources, trends in VOCs, and the representativeness and accuracy of (older) toxic measurements. Additionally, such vague and double negative statements should be removed.
10. The methodology for comparing ambient pollutant levels in Midlothian to background levels is flawed. On page 20, the comparison levels are stated to be taken from the National Ambient Volatile Organic Compound database which dates, I believe, from 1989. This is completely out of date given the long term declining trend in VOC levels. Similarly, the Hazardous Substance Data Base used for other purposes dates, I believe, from 1998, and is also outdated. I can not be sure as no citations are provided for these literature sources – they should be. It seems in the subsequent compound-specific analyses that other sources are used anyway. This is confusing and should be corrected.
11. Continuing the point above regarding background levels, it makes little sense to compare levels in Midlothian to urbanized areas where vehicle-related emissions dominate for VOCs and often other pollutants. In addition, the mixture of VOCs and other in Midlothian is likely to differ significantly from urban areas. Background comparisons should use a background site, which is also defined by EPA in their monitoring site guidance as a site unlikely to be affected by local sources. Typically, these are rural sites. This Health Consultation continues to make this mistake (I pointed this out in 1996). The sites used for comparison and their levels should be documented.

12. The effect of using highly urbanized and possibly even industrial sites as background sites is to greatly diminish or even eliminate the apparent local source impact. This is a notable bias in this report.
13. The notion of a “background quotient” (page 21) seems to be novel, but is an idea to which I would give a grade of “D”. The term implies that it is related to the hazard quotient, but it is not health based. The notion of background is flawed, as seen above. The background quotient number is biased by selective use of background sites and also the averaging of the Midlothian air quality data (see point 14 below).
14. The methodology for estimating “average exposures” is flawed. On page 19, it is stated that sample results from all sites are averaged together. This means that areas with high concentrations are averaged out by areas with low concentrations. Such averaging can be utilized for attainment demonstrations with the National Ambient Air Quality Standards, but is not appropriate for the determination of risks, susceptible populations, and local impacts. Indeed, EPA’s risk assessment guidance discusses the importance of documenting risks to the most exposed/susceptible individuals. A notion of population risk can be valid, but is done for very different purposes. Additionally, the monitors have a very unequal balance of toxics measurements available, and since few statistics are presented, it is unclear whether even the (incorrect) aim of deriving a population average has been correctly determined.
15. The Health Consultation does not summarize any of the primary information, e.g., concentrations and concentration statistics of pollutants at each monitor. This easily fits on few pages for each monitoring site. See also point 2 above.
16. The discussion on page 20 regarding an exposure period of 30 years is anecdotal in nature (e.g., no citations provided), not in EPA’s risk guidance, and should be removed.
17. The Health Consultation refers to “EPA regulatory standards for acceptable risk.” There are some guidelines, but no such standards. Further, the results in the previous cumulative risk assessments are no longer valid since some of the IRIS and other toxicity factors changed, some new data has been collected, and there is no “gold” standard for comparison which would indicate whether a risk is acceptable.
18. The Health Consultation should explain that previous analyses, e.g., the EPA and TNRCC Screening Risk Analyses, considered a cancer risk of 1 E-5 as the target risk level, while this Health Consultation has elevated the level of acceptable risk by ten times to 9.99 E-5 (page 20) which is interpreted as “no apparent public health hazard.” The reason for this change should be discussed. Further, this is a much higher risk level for a population (rather than for single individuals) than is typically and normally considered as a *de minimis* environmental risk for a population. This needs elaboration.
19. A silly point, but a cancer risk of 9.99 E-5 is acceptable, but 1.00 E-4 (0.1% more) is “an apparent hazard.” No one can estimate these risks to one significant digit, much less than three! These statements and language should be corrected.
20. More importantly, the Health Consultation should include a discussion of risk characterization, following EPA guidance. This discussion addresses issues of uncertainty, variability, and other factors that affect the interpretation of results.
21. There should have been action by the State of Texas or ATSDR to get the key data needed to evaluate potential risks highlighted by this and earlier analysis. In 1995-6 for example, my report – and others – indicated that need to measure Cr+6, the toxic form. Dioxin/furan data remain missing. This seems inexcusable. The omission of these and other hazardous compounds is one of the key reasons why this Health Consultation is so inconclusive. It would seem to be in government and industry’ interest to sponsor the funding to provide better estimates of Cr+6 content.
22. It should also be noted that air pollutant concentrations and health risk calculations in the Health Consultation do not represent nuisance impacts, ecological damage, and animal impacts. Odor, irritation-related, and breathing difficulty reports complaints are legitimate air quality issues. On this, the record over the years in Midlothian demonstrates numerous complaints, and some facilities have

many complaints regarding these issues each year. Some of these complaints have been classified by TNRCC and TCEQ as high priority, imminent threat events. However, Texas rules regarding criteria defining a nuisance are restrictive, and few of the complaints can be or have been investigated in a timely manner by officials and are able to corroborate the community-based complaints. Thus, documentation is incomplete and the facilities are not considered to be a nuisance. The Health Consultation should include a section on nuisance impacts and review the evidence.

23. The Health Consultation has no description of alleged violations, potential violations, assessed penalties, Orders by TNRCC and the US EPA, etc., regarding compliance with air quality emission standards, maintenance of air quality control equipment, and other permit conditions. These issues are not only in the legal domain as they indicate upsets, unaccounted emissions, and impacts on the communities that are not reflected in the permit conditions. Due to their short-term episodic impact, they may also not be reflected in the monitoring data. Again, none of this is mentioned in the Health Consultation, yet it strongly affects air quality impacts on the community.

Please note that the above list of deficiencies is not comprehensive. I did not have time to comment on the cancer and other registry information and analyses, and I also did not have time to provide detailed comments on most of the chemical-specific analyses.

I offer these comments in the hope of improving the relevance of this Health Consultation. In its present form, however, I find so many biases and deficiencies that I do not believe that the Health Consultation achieves its aims and, as stated above, I would urge that ATSDR reconsider its issuance. I do hope that ATSDR sponsorship and oversight provides a means to correct these problems.

I look forward to your response and wish you the best!



Stuart Batterman, B.S., M.S., Ph.D.
Professor of Environmental Health Sciences, School of Public Health
Professor of Civil & Environmental Engineering, College of Engineering
University of Michigan
Ann Arbor, MI

Midlothian, TX – Comments on ATSDR Public Health Consultation
Prepared by: Peter L. deFur, Ph.D. and Kyle Newman, Environmental
Stewardship Concepts, Richmond VA 23238
pldefur@igc.org 804-741-2922
March 11, 2008

Personal information:

We are submitting these comments on the ATSDR Public Health Consultation for Midlothian, TX out of concern for the role of scientific data in public health assessments and how data are used in environmental management. We learned of this document from colleagues in the area and reporters who asked if we had seen the report. Environmental Stewardship Concepts (ESC) provides technical consultation to citizen groups and agencies regarding the cleanup of contaminated sites across the nation. At present, our work includes Superfund sites, RCRA sites, state cleanups, contaminated rivers under TMDL cleanup, and operating permits for sites that handle contaminated materials. We are intimately familiar with CERCLA and the work the ATSDR has done regarding contaminated site health assessments. Biographical sketches for Dr. deFur and Mr. Newman are appended at the end of the comments.

Summary

ATSDR's classification of this site as an "Indeterminate Public Health Hazard" is in direct contradiction with the data the Agency presents in the report. Throughout the document, ATSDR attempts to marginalize or disregard data that indicate that compounds produce human health risks. ATSDR has more than enough data to classify the site as a "Public Health Hazard."

The problems with this assessment are numerous, and the most serious problem with the interpretation is that ATSDR discounts their own metrics of health effects, ignoring the data that exceed health levels. For a number of chemicals, the air concentrations are in excess of the health levels, but ATSDR dismisses the excess toxic chemicals as not a problem because the number of people harmed is small, despite the fact that the risks exceed the levels used to protect people from environmental threats (i.e. 1 in a million).

The most glaringly obvious example of ignoring relevant data is the disregard of aggregate exposures on cancer health effect where ATSDR claimed that even though risks exceeded the regulatory threshold, results were inconclusive since the specific species of chromium measured in the air could not be identified with any certainty. Since the cement kiln is known to utilize hazardous waste fuel in its operation, it is hardly an unreasonable assumption to assume that the more toxic forms are being released. ATSDR also provides no information to support the conclusion that if risks from chromium were excluded cancer risks would no

longer exceed the regulatory threshold. ATSDR's own data do not support this attempt at marginalizing the risks.

Non-cancer health effects are dismissed just as easily. For example, when health risks for manganese were found to be unacceptable, ATSDR concluded that actual risks were low because health screening values incorporated safety margins based on uncertainties in the toxicity data. Lowering screening values based on uncertainty is common practice at EPA and other agencies responsible for public health. Does ATSDR disagree with this approach? The rationale for dismissing risks from manganese certainly implies that ATSDR is prepared to replace EPA's official determination and EPA's scientific expertise with their own. What exactly what does ATSDR believe the purpose of incorporating uncertainty into screening values is? ATSDR was brought in to evaluate health risks to the community of Midlothian, not to evaluate how human health screening values are calculated. This dismissal, combined with the approach for evaluating the non-cancer effects of aggregate exposures that assumed compounds only target a single organ system provides further evidence that ATSDR's evaluation and conclusions are deeply flawed.

Background levels are inappropriately calculated and do not reflect true background conditions. Urban concentrations are not appropriate for a rural Texas community. ATSDR's decision to average these background concentrations from highly industrialized areas no doubt further inflated background concentrations. This error in methodology in turn led to the dismissal of risks from a number of toxic chemicals since they were "not significantly above background levels."

EPA did NOT conduct a cumulative risk assessment in the document cited by ATSDR, per EPA official methodology. The EPA conducted an exposure analysis as a case study or example for the Cumulative Risk Framework. Dr. deFur chaired the peer review of the Framework document and has subsequently worked on cumulative risk assessment implementation. The analysis at Midlothian TX did not follow the Cumulative Risk Framework, nor could it have followed the Framework because the Midlothian assessment was conducted before EPA finalized the Framework.

Cumulative risk assessment (see the May 2007 issue of Environmental Health Perspectives for a mini-monograph on cumulative risk) requires more than an attempt to combine the air emissions from four major sources. A proper cumulative risk assessment incorporates health status, community infra-structure evaluations, examination of the history of the sources and much more than was done for the exposure analysis done by EPA at Midlothian TX more than a decade ago.

The report makes no attempt to deal with the chemicals for which there are no regulatory numbers, i.e. no HAL on which to base a health evaluation. This

omission is not even handled in an uncertainty section that could be used to make up for the data gaps and weaknesses in quantitative evaluation. The report further indicates an ability to conduct an uncertainty analysis by using a Monte Carlo analysis, the software for which would provide a feature for conducting a quantitative uncertainty analysis. 59 organics and 28 metals or inorganic chemicals had no health based screen but 16 organics and 2 inorganics exceed background, per table 3a.

The report also fails to grasp the biological basis for the action of multiple chemicals acting over many years on the same people and on the same physiological systems. The metals are mostly all neurotoxins and affect the brain, especially the developing brain in fetuses and young children. ATSDR could have sought at least a qualitative analysis of the combined effects of so many neurotoxins over long periods.

It is unclear why the conventional air pollutants were not included in the analysis. These data should be available now for the area, and for all of Texas. In particular, PM_{2.5} is most significant because of the toxic chemicals associated with the particles, and because the particles themselves are deadly. Indeed, recent health investigations in the peer-reviewed literature indicate there is no threshold for PM_{2.5}, thus any exposure will cause such problems as increased heart attack, increased stroke, and increased asthma attacks with possible mortality.

The report has no data on dioxins, furans, PCB's, phthalates, pesticides, a number of other compounds and these are dismissed in the text on page 70, A4, C3 and D3 response. Cement kilns are known sources of dioxins and furans, according to the most recent EPA Dioxin Reassessment (see source and exposure section). Even if ATSDR did not bother to spend the money and take air samples, the EPA database has sufficient information on sources to make an informed estimate of dioxin and furan emissions. As for the other chemicals, if ATSDR did not take fresh samples, then they should have contacted EPA for data that could be used to make an estimate.

The Monte Carlo analysis of data is not valid and is intended to skew the interpretation of the data. I doubt that this analysis was done according to EPA guidelines for probabilistic assessments, but there are no methods given, so it is not possible to assess what ATSDR did in the Monte Carlo analysis.

Specific Comments

Fig. 1 and 2: where is the wind rose? Where are the residences? ATSDR should have used wind data from the facilities, the closest weather station or airport.

Enough time has elapsed since the beginning of the investigation that ATSDR could have installed a weather station in an appropriate location in Midlothian.

Page 22: Why is there not a single list of chemicals? Code the measured, above and below diction and which no toxicology data. Present display is too hard to interpret – What are the Region III risk based air levels and the numbers from the IRIS listing? The report needs to provide these two sets of values that are commonly accepted as applicable around the county.

Page 17: There is a big difference between ATSDR MRL values and the IRIS listings. ATSDR MRL's are always higher, less protective, less conservative than the IRIS values.

Page 19: Averaging the numbers from 4 collecting locations is NOT conservative. Taking the maximum value recorded is conservative. Taking the upper 95% C.I. of all values is OK. But the data are so oddly collected in time and space, and so skewed in distribution that some adjustments should have been made to account for these patterns and attempt to get some sense of representative data.

Tables 1a/1b show a sampling distribution that is skewed as to be bizarre. Of the 13 sites, one has 9,294 samples in 11 years and 22,956 for organics for 6 of those years and another site had 5 metal samples 1 year. Organics were sampled and measured only at 4 sites and 13 years and not all the sampling was equal. The analysis must not give all samples equivalency.

The 95% UCL of all samples is not useful when the data are so clearly skewed in sampling distribution among locations and across time (years).

The graphical depiction of actual data in Fig 3-23 is useful and when merged with data from Table 4b reveals the following information on detections and levels that exceed the HAL's:

| Chemical | 95% UCL all | HAC | ppb Max | Number exceeding HAL | HAL |
|-------------------------------|-------------|----------|---------|----------------------|------|
| Benzene | .364 | .04 | 20.57 | 926 | CREG |
| 1,3 Butadiene | .00703 | .0151 | 0.340 | 66 | CREG |
| Carbon tetrachloride | .102 | .0106 | 4.27 | 711 | CREG |
| Chloroform* | .00657 | .0089 | 0.260 | 210 | CREG |
| 1,2 dibromoethane | .00138 | .000217 | 0.12 | 407 | CREG |
| 1,2 dichloroethane | .00805 | .0095 | 0.46 | 87 | CREG |
| Methylene chloride | .0351 | .613 | 1.58 | 3 | CREG |
| 1,1,2,2 tetrachloroethane | .00158 | .00251 | 0.150 | 3 | CREG |
| 1,1,2 trichloroethane | .00101 | .0115 | 0.150 | 1 | CREG |
| 1,2,4 trimethylbenzene | .0709 | 1.22 | 7.33 | 5 | RfC |
| 1,3,5 trimethylbenzene | .0215 | 1.22 | 2.03 | 2 | RfC |
| Vinyl chloride | .00171 | .0455 | 0.120 | 7 | CREG |
| Xylene | .263 | 23 | 32.05 | 1 | RfC |
| Arsenic (PM ₁₀) | .0116 | .000233 | 0.012 | 181* | CREG |
| Arsenic (PM _{2.5}) | .0011 | .000233 | 0.00982 | 157 | CREG |
| Arsenic (TSP) | .0216 | .000233 | 0.058 | 40 | CREG |
| Beryllium (PM ₁₀) | .0005 | .000417 | 0.0005 | 181* | CREG |
| Cadmium (PM ₁₀) | .00106 | .000556 | 0.004 | 181* | CREG |
| Cadmium (TSP) | .0299 | .000556 | 0.0092 | 57 | CREG |
| Cadmium (PM _{2.5}) | .00166 | .000556 | 0.129 | 27 | CREG |
| Chlorine (PM _{2.5}) | .0113 | .232 | 0.407 | 2 | RfC |
| Chromium (PM ₁₀) | .00566 | .0000833 | 0.025 | 181* | CREG |
| Chromium (TSP) | .00577 | .0000833 | 0.0287 | 157 | CREG |
| Chromium (PM _{2.5}) | .0014 | .0000833 | 0.027 | 40 | CREG |
| Lead (TSP) | .217 | .375 | 1.51 | 65 | RfC |
| Manganese (PM ₁₀) | .0454 | .04 | 0.171 | 71 | MRL |
| Manganese (TSP) | .0446 | .04 | 0.076 | 20 | MRL |

*All samples measured exceeded the CREG

All of the chemicals listed above show maximum values that exceed the HAC and the HAL. Many of these chemicals had many measurements in excess of the concentration determined to be without effect- in essence the level for protecting public health. In several cases, all measurements exceeded the regulatory limit.

The interpretation by ATSDR that there is no health problem defies logic and all sense of public health assessment. Citizens are exposed to 19 chemicals at times in excess of cancer guidelines or non-cancer. No attempt to put these all together. In spite of the CDC conclusion that there is no safe lead exposure, ATSDR disagrees and is not concerned with children developing neurological problems.

The non-cancer aggregate on p.68 is wholly unsatisfactory in method but even where found an HI greater than 1, discounted because Manganese is the chemical and the MRL is less than the NOAEL (animals v. humans). So the MRL was ignored because ATSDR did not like the answer or the method, or some other thing. What about children's development?

ATSDR did not even report or measure PM_{2.5} for which there is no threshold for health effects.

Cancer p. 69: This statement is dismissive at best, callous and wrong at worst. The 1×10^{-4} cancer threshold given by ATSDR is for Superfund sites – Does ATSDR propose the residents of Midlothian live on a Superfund site? I am sure there will be both dismay and relief that some agency has finally admitted the nature and magnitude of the problem. Now, clean it up and make the industries and EPA pay.

This Monte Carlo is a joke. Where are the cumulative probability distributions? Other data need to be displayed compared to ALL regulatory levels. Most such analyses present the probability density functions.

A8 – Not measuring does not make the effect go away or diminish.

No soil sample results were presented by ATSDR, only a statement that there was nothing wrong with the soil.

p.74 Overall –

At best, the risks are hard to quantify on the basis of the data presented. Most likely there are clear health effects, both cancer and non-cancer, from the air emissions. The non-cancer effects are likely neurological.

No where does ATSDR attempt to determine the effects of a lifetime of breathing contaminated air – and let's add on PM_{2.5} to the toxic chemicals measured here.

Biographical Sketch for Peter L. deFur

Dr. Peter L. deFur is president of Environmental Stewardship Concepts, an independent private consulting firm, and is an Affiliate Associate Professor and Graduate Coordinator in the Center for Environmental Studies at Virginia Commonwealth University where he conducts research on environmental health and ecological risk assessment. Dr. deFur has served on numerous state and federal advisory committees.

Dr. deFur presently serves as technical advisor to citizen organizations concerning the cleanup of contaminated sites at FUDS, CERCLA and RCRA sites around the country. His projects include the Housatonic River, MA; the Delaware River; Lower Duwamish River, WA; Rayonier site in Port Angeles, WA; and the Spring Valley site in Washington, DC. Many of these sites, and others on which he has worked are contaminated with PCB's and/or dioxins.

Dr. deFur received B.S. and M.A. degrees in Biology from the College of William and Mary, in Virginia, and a Ph.D. in Biology (1980) from the University of Calgary, Alberta. He was a postdoctoral fellow in neurophysiology in the Department of Medicine at the University of Calgary, and an environmental fellow at AAAS in 1989. Dr. deFur held faculty positions at George Mason University and Southeastern Louisiana University before joining the staff of the Environmental Defense Fund (EDF) in Washington, DC. In 1996, deFur formed ESC and accepted a part-time position at VCU.

Dr. deFur has extensive experience in risk assessment and ecological risk assessment regulations, guidance and policy. He served on the NAS/NRC Risk Characterization Committee that prepared Understanding Risk. Dr. deFur served on a number of scientific reviews of EPA ecological and human health risk assessments, including the Framework for Cumulative Risk Assessment, the assessment for the WTI incinerator in Ohio and EPA's Ecological Risk Assessment Guidelines. deFur served on three federal advisory committees for EPA's Endocrine Disruptor Screening and Testing Program.

Kyle Newman has worked at Environmental Stewardship Concepts since 2004, where he has held the position of Environmental Scientist since 2006. He has worked in the environmental field since 1999 when he first worked for the consulting company Advent Inc, and has developed expertise in risk assessment, freshwater ecology, toxicology, soil contamination, and conservation biology.

Kyle graduated from Virginia Commonwealth University in 2003 with a B.S. in Biology. He is currently finishing his Masters of Science at VCU's Center for Environmental Studies and performing research on the relationship between ecological vulnerability and stream macroinvertebrate community structure. In addition to his work at ESC, Kyle is also the senior Recitation Leader for VCU's groundbreaking Life Science 101 course on systems biology.

SIERRA CLUB
Lone Star Chapter

March 11, 2008

Environmental and Injury Epidemiology and Toxicology Program
Texas Department of State Health Services
1100 West 49th street, room T-702
Austin, Tx 78756
Sent by email: epitox@dshs.state.tx.us

Re: Comments on 2007 Public Health Consultation for Midlothian, Texas

Dear Texas Department of State Health Services Consultation staff:

I am writing to share serious concerns over the gaps and inadequacies presented in the Texas Department of State Health Services (TDHS) and the Agency for Toxic Substances and Disease Registry (ATSDR) report titled "Health Consultation - Midlothian Area Air Quality Part I: Volatile Organic Compounds & Metals." I find the report highly inadequate for a variety of reasons and fails to seriously acknowledge the numerous gaps in the ambient air monitoring in the Midlothian area.

Background Levels: Waste Incineration Conducted at Kaufman, Tx

"We obtained background levels for many of the contaminants from TCEQ monitoring results for the town of Kaufman, TX, a town of similar population size, no large industry, and which is only rarely down-wind from Midlothian."

At least one serious concern about using Kaufman, Tx is the fact that relatively large-scale waste incineration has been conducted for many years in this community. Incinerators operated in Kaufman include municipal waste combustion facilities or medical waste incineration or both, which emit many of the same products of incomplete combustion (PICs) as do cement kiln hazardous waste incinerators such as Dioxins, Dibenzofurans, Polychlorinated Biphenyls, Polycyclic Aromatic Hydrocarbons and Metals. I recommend that you consult with TCEQ about how many waste incineration facilities were operated or are still operating in Kaufman, Tx.

However, I have no details or information about the siting of the TCEQ's Kaufman monitor relative to the waste incineration facilities and whether the monitor was downwind or upwind of the incineration facilities. But the fact that large-scale waste incinerators may have been operating in Kaufman over many years indicates that the use of Kaufman, Tx is inappropriate for any comparisons to Midlothian, Tx.

PART I

Sampling every six days for VOCs & metals. May 1981 - March 2005.

1. Sampling site selection for TCEQ ambient air monitoring raises many issues. A number of the Midlothian and Ellis County TCEQ sampling sites are not selected for suitable sampling suits as to be downwind of the Midlothian industrial plant emissions plumes and will not provide valid downwind ambient air concentrations to measure emissions from the industrial plants. How many Midlothian and Ellis County TCEQ sampling sites are actually in the general downwind area of the plants and how far in feet are these?

2. Sampling frequency raises another set of ambient air monitoring issues. Sampling on a once in six day sample duty cycle only looks at most at 16.7% of the days for air pollution and excludes for analysis 83.3% of the time period every year.

3. Sampling protocol of flow rate and analytical limitations also present a number of additional ambient air monitoring issues that need to be addressed. Many air contaminants are excluded from laboratory analysis and many are not detected due to minimum detection limits set above threshold where many toxic air contaminants may be present such as dioxins, dibenzofurans, polychlorinated biphenyls, polycyclic aromatic hydrocarbons, and others.

A.1. While it is true that "all the chemicals being released from cement kilns and steel mills have not been fully identified," this health consultation has evaluated 237 individual contaminants including 119 VOCs and 108 metals and other inorganic substances.

Another concern surrounds the question of whether the TDSHS scientists have any prior experience in performing an evaluation of a commercial or private hazardous waste combustion facility in Texas before this current Midlothian effort. Since this is not a responsibility typically involving the TDSHS scientists, the consultation may be partly compromised by the inability to comprehend the complex emissions hazards associated with such hazardous waste storage, treatment and disposal facilities as exist at Midlothian. For example, downwind air monitoring sites may be too far away from the hazardous waste facilities to be able to detect ground level fugitive hazardous waste emissions leaks from the transfer, storage and piping system at such a facility. However, having myself visited Midlothian many times and having been downwind of the hazardous waste facilities, I definitely noticed during each visit that there were in my opinion distinct fugitive gaseous emissions from these operations that produced instant severe headaches. While I cannot state for certain if such fugitive gaseous emissions were associated with the hazardous waste operations, I did not notice similar fugitive gaseous emissions from the two non-hazardous waste cement kilns at Midlothian. As a result, I maintain that the fugitive gaseous emissions from the hazardous waste cement kiln were associated with its hazardous waste operations.

Hazardous waste chemistry is highly complex and may become more complex during and immediately after the incineration process. Hazardous waste consists of toxic soup mixtures of innumerable organic and inorganic chemicals, elemental chemicals, metals, acids, bases, salts, waste water and other wastes from complex industrial mfg. processes.

Hazardous waste incineration has the potential to take the thousands of organic and inorganic chemicals and chemically transform them into thousands and thousands of incompletely burned compounds.

The consultation did not include consideration of the need to sample the air, water and food chains for known species of the following twenty groups of halogenated organic chemicals that are toxicologically known to cause adverse biological effects through the Ah-r-mediated mechanism of action:

- Polychlorinated dibenzo-p-dioxins
- Polychlorinated dibenzo-furans
- Polychlorinated biphenyls
- Polychlorinated naphthalenes
- Polychlorinated diphenyltoluenes
- Polychlorinated diphenyl ethers
- Polychlorinated anisoles
- Polychlorinated xanthenes
- Polychlorinated xanthenes
- Polychlorinated anthracenes
- Polychlorinated fluorenes
- Polychlorinated dihydroanthracenes
- Polychlorinated diphenylmethanes
- Polychlorinated phenylxylylethanes
- Polychlorinated dibenzothiophenes
- Polychlorinated quarterphenyls
- Polychlorinated quarterphenyl ethers
- Polychlorinated biphenylenes
- Polybrominated diphenyl ethers
- Polychlorinated azoanthracenes

Cite: Table 4 - Compounds that May, Based on Experimental Evidence or Structure, Be Expected to Have the Potential to Cause Adverse Effects through the Ah-r-mediated mechanism of action, p. 266 in Chapter 9, "Dioxins, Dibenzofurans, PCBs and Colonial, Fish-Eating Water Birds" by John P. Giesy, James P. Ludwig, and Donald E. Tillin, published in *Dioxins and Health* edited by Arnold Schecter, Plenum Press, New York, 1994.

There may be other possible organics including polybrominated aromatic compounds, polychlorinated-brominated aromatic compounds, polyfluorinated aromatic compounds, polychlorinated-fluorinated aromatic compounds, and other polycyclic aromatic hydrocarbons (all lumped together as "dioxins" here).

The large-scale hazardous waste incineration activities conducted at Midlothian for approximately twenty years create unique circumstances for producing the air emissions of a large number of exceptionally toxic substances since there is no such thing as 100% combustion efficiency and total organic chemical destruction in any incineration devices

let alone cement kilns. A basic concern is that the consultation has seriously underestimated and downplayed the dangers of large scale incineration of hazardous waste for a local community. The large scale incineration of hazardous waste has an expected potential to create thousands of unusual byproducts of incomplete combustion (some of these organic compounds are created by partial thermal decomposition of the waste mixtures and other compounds are created by rapid "de novo synthesis" in the cooling stack gas phase) with many occurring at levels below the frequently used one part per billion detectability limit in organic analytical equipment. But most of these unusual byproducts of incomplete combustion are not measured or identified due to their difficult chemical characteristics, which need highly specialized analysis at extremely low concentrations below most VOC analyzers. Of course, dioxin and dibenzofuran analytical equipment go well below the 1.0 ppb level down in the low parts per trillion levels and parts per quadrillion range. It's not feasible to conclude if the 119 VOCs reviewed represent 50% of the total VOC species emitted or 25% or 10% or less. Without a more comprehensive VOC analysis of the total low part per trillion range VOC species, highly toxic organics like the dioxins are being ignored completely in the consultation.

Some of these VOCs will be bound to the particulate matter emitted and this represents another fraction of the total VOCs in the ambient air. But VOC sampling that collects only gaseous phase organics and not the particle phase organics will miss a fraction of the VOC compounds in the air.

Reviewers need to ask: What is the range of possible types of VOCs produced from large-scale hazardous waste incineration? What is the range of the possible concentrations of the VOCs produced from large-scale hazardous waste incineration? Are these VOCs being detected? Yes, some VOC byproducts are being detected as indicated by 119 VOCs, but the concern is that many VOCs (several thousand more VOCs) are not being detected due to the high detectability limits in the analytical equipment such as 1.0 ppb and the potential for similar VOC species to overlap.

The same applies to inorganic compounds and metals, and in many monitoring sites, inorganic compounds and metals were not even collected.

The TCEQ has no laboratory facilities specifically established for conducting dioxin and dibenzofuran analyses, and due to the costs of such analyses, it's typically not required by the TCEQ on most environmental samples due to the expense of such laboratory analysis.

The EPA has recognized along with the organic chemistry science that any form of chlorine (organic and inorganic) in combination with carbon in a combustion process will produce the expected dioxins and dibenzofurans by rapid "de novo synthesis". The large-scale hazardous wastes burned at Midlothian have routinely contained numerous organic chlorinated residues and inorganic chemicals which would be expected to produce certain stack concentrations of dioxins and dibenzofurans by rapid "de novo synthesis". Some dioxins and dibenzofurans may also be present among the chlorinated hydrocarbons and inorganic chlorine compounds in the large-scale hazardous wastes burned and could be emitted as undestroyed chemicals.

A.2. It is also true that "All the chemicals currently being incinerated and released have not been tested for carcinogenicity and endocrine disrupting potential." However, based on historical reviews of cancer incidence and/or mortality rates in Midlothian and Ellis County, no individual or aggregate cancer rates were significantly elevated with respect to the rest of the state.

Several problems exist with the Texas Cancer Registry databases and the conclusion of **"no individual or aggregate cancer rates were significantly elevated with respect to the rest of the state"** seems premature and an unscientific statements. The Cancer Registry is significantly flawed itself in its omissions and tracking system. Many people do not show up in this database.

The EPA's recent Endocrine Screening, Testing Advisory Committee (EDSTAC) only recommended testing of potential endocrine disrupting chemicals for interference in three human hormonal pathways of estrogen, thyroid and androgen. All other hormones were excluded by endocrine testing and screening.

A.4., C.3., & D.3. The community was concerned about the health effects of dioxins, metals, and mixtures of compounds. Air data for dioxins are not routinely collected in Texas; therefore it was not possible to evaluate the potential adverse health effects associated with these compounds. We evaluated available VOCs and metals air contaminant data with respect to its potential for causing adverse health effects in humans due to acute, intermediate, and/or chronic exposures. Only manganese exceeded its health based screening value for chronic inhalation exposures. However, based upon a review of the toxicological data, we would not expect to see adverse health effects due to either long-term or short-term exposure to manganese. Mixtures of compounds also were evaluated in this consultation. Long-term aggregate exposures to air contaminants in Midlothian are not expected to result in adverse non-cancer or cancer health effects.

I find the conclusion on the VOC's seriously flawed and unsound since too many organic chemicals are not even monitored for in Midlothian. I don't think that TDSHS has any idea or even an intelligent guess as to how many organic chemicals were not being detected due to their presence below the detectability analytical limits of the lab equipment or were not being analyzed for at all such as all of the dioxin-related compounds. See more comments under A-1.

This conclusion is not scientific and is based on extremely limited data that can not logically support or confirm such a broad sweeping conclusion: **"Mixtures of compounds also were evaluated in this consultation. Long-term aggregate exposures to air contaminants in Midlothian are not expected to result in adverse non-cancer or cancer health effects."** One reason is that not all of the mixtures can possibly be determined without a great deal more ambient air monitoring and far more sophisticated laboratory analyses looking at many more products of incomplete combustion including levels in the parts per trillion where many toxic dioxin-related compounds occur or even

lower levels.

A.5., A.7., & C.1. In this health consultation, DSHS has analyzed each and every individual air sampling result collected from all TCEQ sampling locations in the Midlothian area and has not relied on any TCEQ-summarized data. Also, DSHS has not relied on any of the TCEQ's effects screening levels (ESLs) for determining potential health risks associated with exposures to airborne contaminants in Midlothian.

Significant limitations exist with the sampling and analysis program in Midlothian.

A.6. & D.4. The community was concerned that the potential for adverse health effects may be underestimated due to averaging of contaminant data over time. The initial screening of the air data involved comparing the maximum concentration for each contaminant to its most conservative health-based screening value.

Contaminants whose maximum concentrations exceeded the most conservative health-based screening value were evaluated for acute, intermediate, and long-term exposures. None of the compounds examined (with the exception of benzene) had a single 24-hour measurement that exceeded its acute exposure guideline. The acute inhalation MRL for benzene was exceeded 3 isolated times in 13 years.

Consequently, after reviewing all of the available data (which includes 94,932 individual 24-hour measurements), we find no evidence to suggest that adverse health effects would be anticipated as a result of any of the short-term or peak exposures to VOCs or Metals. The potential for adverse health effects due to exposure to EPA's NAAQS compounds will be evaluated in a future health consultation.

This conclusion is totally inconsistent with the real world experiences of many Midlothian area residents as well as myself and does not recognize the serious limitations of the available data. Especially in view of the significant limitations exist with the sampling and analysis program in Midlothian.

A.8., B.4., C.4., & D.1. The community was concerned about asthma, allergies, immune system deficiencies, and other health problems in adults as well as children. Data for these health problems are not routinely collected in Texas. Therefore, we were not able to systematically assess whether the levels of these conditions in Midlothian are different than in other areas of the state.

A basic concern here is that asthma, allergies, immune system deficiencies, and other health problems in adults and children are not being evaluated and yet these kinds of adverse health effects are being reported by Midlothian residents. The TDSHS should conclude no adverse health effects are expected when so many types of health outcomes are excluded from the consultation. Hazardous emissions and toxic contaminants could certainly be contributing or causing adverse health effects based on the information about many of these pollutants. Did the consultation consider fatalities from asthmatic attacks or allergies?

B.1., B.2., & D.2. Over the years, the Texas Cancer Registry and Texas Birth Defects Registry have conducted incidence, mortality, and prevalence investigations to determine if cancer and birth defect rates were higher or lower in the Midlothian area compared to the rest of the state (Appendix D). No statistically significant elevations of specific or total cancers were found. The prevalences for a few birth defects were higher than expected and for a few other birth defects were lower than expected based on state rates. These higher prevalence rates were not unique to Midlothian/Ellis County but were also observed throughout Health Service Region 3 (which includes 18 other counties primarily north and west of Ellis County). Because of the numerous factors involved, it is not possible to determine if these increases are due to environmental exposures or differences in reporting practices in this region compared with the rest of the state. Furthermore, it should be noted that only 3 of the 99 compounds with health based comparison values (i.e., ethylbenzene, 2-butanone, and methyl isobutyl ketone) listed "developmental effects" as the critical effect (i.e., the first observable physiological or adverse health effect occurring at the lowest exposure dose known to produce any effect at all). Hazard quotients for those 3 compounds were 0.000352, 0.0000653, and 0.00000793 respectively, levels that are far below levels that might be expected to result in an increased risk for birth defects.

This conclusion is somewhat illogical, especially in view of the significant limitations that exist with the monitoring siting, monitor distances, sampling and analysis program in Midlothian.

General Findings #1, #2, #3, and #4 are conclusions that are highly deficient for their numerous omissions and flawed considerations of data gaps.

Why am I concerned about industrial air pollution impacting the Midlothian community and rural residents?

In the 1990s I developed a recognition that the industrial air pollution at Midlothian was clearly causing significant adverse health effects to area residents and often their animals based on my previous professional experience as a state investigator for twelve years at other types of industrial facilities, based on many visits to Midlothian to investigate the conditions there, based on reviewing emissions information and permits for the Midlothian plants, based on analysis of monitoring information, and based on interviews with many citizens. I emphasize this background because during my professional experience with the Texas Air Control Board from 1980-1992, I investigated about 1,000 citizen complaints of air pollution and citizens generally complained when the industrial air pollution was so egregious that people were suffering adverse health effects from something in the air and therefore they were strongly compelled to file complaints in order to seek action to abate the problems. Once corrective measures occurred to reasonably abate the alleged air pollution events effecting their health and their residences, citizens typically complained less or no more at all. Nonetheless many residents were trying to deal with local toxic nightmares of one degree to another. In

several cases, abatement of pollution events producing citizen complaints required months and even several years before the problems were reasonably abated.

In my opinion, the Midlothian toxic nightmare fits into a pattern I have encountered elsewhere in Texas. Since leaving the Texas Air Control Board in 1992 after inspecting industrial facilities for twelve years in West Texas and which included a cement mfg. plant with two cement kilns, I have been regularly interacting with Midlothian residents regarding their health and environmental concerns with the significant toxic emissions from three local cement kilns and the steel mill. I am familiar with the locations of each of the four plant sites and have reviewed emissions associated with the facilities. Although I previously worked for the state environmental agency known as the Texas Commission on Environmental Quality (TCEQ), I have developed grave concerns about the bias that routinely creeps into the agency's scientific efforts such as certain aspects of the ambient air monitoring activities at Midlothian and the agency's generally egregious failure to protect public health from impacts due to exposure to a range of toxic contaminants. In addition, I have experienced severe headaches near the TXI facility during brief exposures to industrial emissions next to the TXI facility, which for me raises troubling questions about the abysmal lack of regulatory oversight by the TCEQ and a lack of concerns about the health and safety of Midlothian residents.

I have reviewed previous reports of November 2, 1995 Report: The Screening Risk Analysis for the Texas Industries (TXI) Facility in Midlothian, Texas, by the Office of Air Quality/ Toxicology and Risk Assessment Section, Texas Natural Resource Conservation Commission, and a November, 1995 Report: The Critical Evaluation of the Potential Impact of Emissions From Midlothian Industries by the Texas Natural Resource Conservation Commission. Even the January 31, 1996 federal Report was severely flawed for similar problems and errors: Midlothian Cumulative Risk Assessment Volume I, by the Multimedia Planning and Permitting Division, U. S. Environmental Protection Agency, Region 6, Dallas, Texas.

Risk assessments in Texas (The TCEQ's Screening Risk Analysis and the Summary Report, 1995 for Midlothian, Tx) are poor starting points for future studies and actions aimed at protecting public health and the environment due to the innumerable flaws, omissions, gaps, poor science and errors. However if viewed as "technical support" documents to justify EPA and state declarations of no substantial risk to public health due to pollution in Midlothian, they must be criticized due to their many serious omissions, inconsistencies and inadequate or misleading analyses. The federal and state peer review process is an abysmal failure in the Midlothian case.

Based on de novo analysis at TXI, we conclude that environmental and health impacts have and are likely to occur in the Midlothian area from industrial activity, including the combustion of hazardous waste at TXI. There is high likelihood that the environmental and health impacts are significant, as demonstrated by exposures and risks that greatly exceed U.S. EPA target exposure levels for a variety of exposure scenarios and source assumptions at a large number of sites. Exceedances of acceptable risk levels for children at all residential locations is especially noteworthy.

Because predicted health risks exceed target levels, continued waste combustion at TXI requires more stringent controls, e.g. more effective air pollution control technology, waste feed limitations, and/or modified operating practices.

The serious deficiencies in the Screening Risk Analysis and Summary Report for TXI indicate that the ability of EPA Region 6 to conduct an objective assessment is compromised, and the record demonstrates significant concerns regarding the effectiveness of the EPA Regions and states like Texas in regulating combustion of hazardous waste at these cement kilns.

The EPA Region with oversight for state like Texas must be strongly criticized for the tendency to go far beyond what is scientifically supportable by the existing data in making sweeping generalizations regarding the present and future safety of waste combustion in communities. Statements with little or a frail scientific basis show a disregard for the protection of public health, and serve to diminish the EPA's and states credibility among the public.

I strongly support concerns of local residents regarding hazardous waste pollution emitted by cement kilns, which have already impacted communities in the area and surrounding water and land use. In addition, a potential for more far reaching environmental impacts to air and water quality and ecological systems is a significant concern of the Sierra Club and we support the obvious need to reduce emissions.

Respectfully yours,

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**Midlothian Area Air Quality Part I:
Volatile Organ Compounds & Metals
December 11, 2007**

Response: Sal and Grace Mier, Midlothian, Texas: February 03, 2008

Preface:

We recognize that a great deal of valuable time, energy and resources were expended in the development of this report. However, we are generally very disappointed that an effort to make such critical judgments regarding the public health of our community was based on such poor and weak air monitoring data---and even more disappointing was the fact that the primary author(s) of this Report do not appear to have made any serious effort to validate and challenge the quality of this data but nevertheless were comfortable in making sweeping generalizations as if the data were sound.

Any product, whether it be a building, a document, or a report such as this is only as good as the foundation upon which it is constructed. **Step one** of this assessment should have been to assure the base (the air monitoring data) upon which all analyses for this report would evolve was solid and contained data that accurately reflected a complete picture of emissions. Thus, it is perplexing and deeply disappointing to discover that the Texas Department of State Health Services (TDSHS) and the Agency for Toxic Substances and Disease Registry (ATSDR) have produced a Public Health document which was based on deficient air monitoring data, the collection of which was not designed to analyze community impact and not designed to adequately capture complete emissions.

It is not our intent to imply that it is ATSDR's or TDSHS' fault that the proper air monitoring data upon which to base a sound public health assessment does not exist. We assume that it was the best you had available to you. However, we would like to believe that at step one TDSHS would have attempted to verify the methodology incorporated to position air monitors to optimally capture emissions (i.e., populace, wind rose patterns, etc.) and the impact on the community before they proceeded. When you review selection of monitoring sites, history, wind rose patterns, location of major emission sources, etc., it is obvious scientific methodology to capture community exposure and impact was not a prerequisite to the placement of the Midlothian air monitors. Consequently, TDSHS' attempt (with the enabling of ATSDR) to retrofit a methodology and create the illusion of adequacy is extremely disappointing and makes a statement that the **true** assessment of public health in Midlothian many not have been the major priority.

We realize it is not within TDSHS' purview to dictate to TCEQ a methodology for establishing an air monitoring system. However it is TDSHS' responsibility to **properly critique its adequacy for assessing public health**. If we cannot rely on our public health agencies to do the right thing, rather than becoming a solution to the problem, they become part of the problem.

We want to emphasize, we do not want you to find a problem if one does not exist. However, it was our hope that we would get a solid, sound, unbiased decision based on solid sound data. The foundation upon which the findings of this report are based is seriously wanting and flawed.

You have already pointed out many of the inadequacies of the monitoring sites in this report.

- (1) Tayman Drive: **No metals and inorganic compounds were collected** at this site. (*This is the one site that was best positioned to capture emissions from all major industries, but its data was limited.*)
- (2) CAMS-52: **No metals and inorganic compounds were collected.** (*This site is capable of capturing some emissions from TXI and Chaparral Steel, but inadequately placed for capturing the majority of emissions from the other industries.*)
- (3) CAMS-302: **Metals and inorganic parameters were analyzed from *PM10.** (*This site is not in a prevailing wind pattern for any of the emission sources. No indication that TSP was sampled for metal speciation.*)
- (4) CAMS-94: Not in a prevailing wind pattern for any of the emission sources. This site was selected as a background monitor for the DFW metroplex because it's south of and upwind from all industries. ***No speciation of metals from particulate matter greater than Pm2.5.** (*This may be adequate for regulatory purpose; however, this data does not present an adequate picture of local exposure.*) Monitors smaller than TSP monitors are not adequate for determining level of heavy metals in ambient air.

TSP monitors were last used in 1998.

Insufficient data available to evaluate metals – Mercury as an example: Reliable data to determine the amount of mercury in the ambient air does not exist. Note the only readings reflected in the air monitoring data for mercury were based on PM2.5 speciation for metals. These readings are for the most part “non-detect.” Given the amount of mercury that is self-reported by the industries these ‘non-detect’ readings are questionable. In 2004 the industries “self-reported” air release of mercury compounds per pounds as follows: Chaparral Steel – **709**, Ashgrove – **150**, Holcim – **59**, TXI – **10**. This demonstrates: 1) the inadequacy of the monitoring location to capture complete emissions, and 2) the inadequacy of relying on PM2.5 for speciation of metals.

According to the Office of Air Quality Planning and Standards (OAQPS) final staff paper released in December, there is a distinction in TSP, PM2.5 and PM10 and the adequacy of anything less than TSP to evaluate **total lead in ambient air. Refer to http://www.epa.gov/ttn/naaqs/standards/pb/data/20071101_pb_staff.pdf on page 17 (2.3) Air Monitoring. **2.3.1.1 Inlet Design** (last paragraph) reads:*

"Sampling systems employing inlets other than the TSP inlet will not collect Pb contained in the PM larger than the size cutpoint. Therefore, they do not provide an estimate of the total Pb in the ambient air. This is particularly important near sources which may emit Pb in the larger PM size fractions (e.g., fugitive dust from materials handling and storage)."

With our petition, we submitted a document: Evaluation of The Screening Risk Analysis for the Texas Industries Facility in Midlothian by Dr. Stuart Batterman, et al. This document evaluates risk assessments, monitoring, soil sampling, etc., done in Midlothian and presented in this consultation as activities engaged in the assessment of the community's public health. Dr. Batterman's evaluation reflects many of our concerns regarding the quality of these activities. Therefore, we are requesting that the entire document be considered as part of our comments.

Inhalation is not the only exposure route for toxins in the air. There is no indication in the analyses that skin absorption and ingestion was factored in when evaluating impact.

Because of the critical deficiencies in the air monitoring data, to comment any further on the analyses of public health impact of the toxins would be an exercise in futility as we believe it to

be a moot issue. Therefore, we will make comments on general issues. **Our Comments are in red.**

Response to Petitioner and Community Health Concerns

A.1. While it is true that “all the chemicals being released from cement kilns and steel mills have not been fully identified,” this health consultation has evaluated 237 individual contaminants including 119 VOCs and 108 metals and other inorganic substances.

Response: There are over 1,000 regulated chemicals; reviewing 237 is a start. We appreciate the fact that this report has concluded that we cannot disregard the potential impact of the unknown regarding the remainder of the chemicals. However, should this statement simply read, “Of the over 1,000 regulated chemicals, we are proud to state we have evaluated 237”?

A.2. (1) It is also true that, “All the chemicals currently being incinerated and released have not been tested for carcinogenicity and endocrine disrupting potential.” (2) However, based on historical reviews of cancer incidence and/or mortality rates in Midlothian and Ellis County, no individual or aggregate cancer rates were significantly elevated with respect to the rest of the state.

Response:

(1) We appreciate your acknowledgement of the deficiency in the extent of chemical testing. We agree with you that many chemicals (as well as heavy metals) being incinerated have **not** been tested for endocrine disrupting potential; however, many **have been** tested or are in the process of being tested. Recent scientific studies have raised red flags regarding endocrine disruption potential for many of the toxins already identified and at levels significantly lower than the current “No Observed Adverse Effect Levels” used in health risk assessments. Recent science has cast doubt on the current regulatory standards.

(2) How does the **testing** of chemicals for carcinogenicity and endocrine disrupting potential correlate solely to cancer incidence in Midlothian? There are illnesses other than cancer that are of concern. (a) Birth defects (BDs) have consistently been significantly higher in Ellis County than the State of Texas for the five years (1999 through 2004). Health Region 3 has the **highest overall BD** rate of all the eleven health regions in Texas – there appears to be a common denominator here -- and that is air pollution. Although we cannot say that this higher rate of BDs is definitely attributed to air pollution – **we cannot definitely say that it is not.** (b) Collection of quality cancer data in the State of Texas is still in its developing stages of surveillance. Unlike the BD data collection system, Texas collection of cancer data is passive. In other words the cancer surveillance system has to depend on the good will of physicians, hospitals and treatment facilities to report and many of these providers do not yet have electronic databases to facilitate this reporting. (c) Major complaints involve asthmas and other respiratory problems as well as immune system deficiencies. A peer-reviewed study regarding respiratory illnesses in Midlothian, “*The Health Effects of Living Near Cement Kilns; A Symptom Survey in Midlothian*” performed by UTMB and authored by Dr. Marvin Legator, et al, was submitted as part of this petition. This study reflected a higher incidence of respiratory problems in Midlothian than the control group.

A.4., C.3., & D.3. The community was concerned about the health effects of **dioxins, metals, and mixtures of compounds.** (1) Air data for dioxins are not routinely collected in Texas; therefore it was not possible to evaluate the potential adverse health effects associated with these compounds. (2) We evaluated available VOCs and metals air contaminant data with respect to its potential for causing adverse health effects in humans due to acute, intermediate, and/or chronic exposures. Only manganese exceeded its health based screening value for chronic inhalation exposures. (3) However, based upon a review of the toxicological data, we would not expect to see adverse health effects due

to either long-term or short-term exposure to manganese. (4) **Mixtures of compounds also were evaluated in this consultation.** (5) Long-term aggregate exposures to air contaminants in Midlothian are not **expected** to result in adverse non-cancer or cancer health effects.

- (1) TCDD is considered by science to be one of the most, if not the most, toxic **man-made** substances. **No safe level has been identified.** It has been shown to disrupt multiple endocrine functions and has negative outcomes for the fetus. Although you cannot evaluate it, you cannot disregard it.
- (2) Based on the placement of the air monitors, it does not appear assessing true community exposure was a factor in the collection of the data analyzed. There are too many deficiencies and weaknesses in the air monitoring data to make an informed evaluation.
- (3) Health issues are surfacing, **whether you expect them or not.** Some such as respiratory problems, immune system deficiencies, reproductive and birth defect issues in animals, etc., remain “anecdotal” because our guardian agencies refuse to acknowledge them. Others are well documented – for example, the continually significantly higher incidence of birth defect rates; increased respiratory symptoms in Midlothian documented by Dr. Legator, et al.
- (4) Did you mean to say, “**Additive effect of some mixtures of compounds also were evaluated in this consultation**”? As you acknowledge **only mixtures with available HAC values** were evaluated -- and as if only an additive effect were possible. There appears to be **an apparent false presumption that synergistic effects are not an issue.** Synergistic effects were not evaluated here. Can we assume dioxin (in addition to many other chemicals) was not considered in the mix? **When so many factors are missing from the equation, how can you logically compute data to make such a strong declaration,** “Long-term aggregate exposures to air contaminants in Midlothian are not expected to result in adverse non-cancer or cancer health effects”? Perhaps this statement should read: **If we knew monitoring data accurately reflects industrial emissions and community exposure, and if we assume there are no synergistic effects of aggregate exposure, and if we can say no empirical data exists that may indicate otherwise, we could assume** long-term aggregate exposures to air contaminants in Midlothian are not expected to result in adverse non-cancer or cancer health effects.

A.5., A.7., & C.1. In this health consultation, DSHS has analyzed each and every individual air sampling result collected from all TCEQ sampling locations in the Midlothian area and has not relied on any TCEQ-summarized data. Also, DSHS has not relied on any of the TCEQ’s effects screening levels (ESLs) for determining potential health risks associated with exposures to airborne contaminants in Midlothian. **Response: Thank you for not using the ESLs. It is obvious that you reviewed a large amount of data. However, it is the adequacy of the data that is of issue – not the quantity.**

A.6. & D.4. (1) (2) The community was concerned that the potential for adverse health effects may be underestimated due to averaging of contaminant data over time. The initial screening of the air data involved comparing the maximum concentration for each contaminant to its most conservative health-based screening value. Contaminants whose maximum concentrations exceeded the most conservative health-based screening value were evaluated for acute, intermediate, and long-term exposures. None of the compounds examined (with the exception of benzene) had a single 24-hour measurement that exceeded its acute exposure guideline. (3) The acute inhalation MRL for benzene was exceeded 3 isolated times in 13 years. Consequently, after reviewing all of the available data (which includes 94,932 individual 24-hour measurements), we find no evidence to suggest that adverse health effects would be anticipated as a result of any of the short-term or peak exposures to VOCs or Metals. (4) The potential for adverse health effects due to exposure to EPA’s NAAQS compounds will be evaluated in a future health consultation.

Response

- (1) Although not listed here, A.6 Reflects our concern that TCEQ monitors may not be representative of actual exposures because collection sites may not be optimally positioned to

accurately characterize air emissions in Midlothian. **This remains our major concern and the Achilles hill of this report.** See our prior discussion regarding placement of air monitors.

- (2) **Averaging still remains a concern because in your analyses this is actually what was done – except for even longer periods of time – years.** The toxicity of a given element depends upon when and to whom it is delivered. A minute dose delivered at a specific time in development (for example to the fetus) can yield physical and mental abnormalities quite evident at birth, or may not be detected until later in life. Exposure during fixed time frames when programming of the endocrine system is occurring may result in deleterious life altering effects. There are too many questions and red flags raised by scientific research related to the short “windows of vulnerability” when chemical exposure can have a negative impact on the developing fetus, a pregnant mother or the immune suppressed. Time frames for these “windows of vulnerability” are generally measured in days and weeks – not years. **This extended averaging concept removes life’s reality from the formula.**
- (3) “The acute inhalation MRL for benzene was exceeded 3 isolated times in 13 years...” -- **that you know of!** This is a misstatement. It should read, “Based on the limited available data, the acute inhalation MRL for benzene was exceeded at least 3 times in a 13-year period...” The data that you have represents snapshots by the monitors of selected short periods in time and in “select” locations. There is a high probability benzene exceeded the acute inhalation MRL also when the monitors were not running. There is a higher probability that if air monitors were methodically situated to gather data based on prevailing winds, fallout patterns and community exposure, results would be very different. At all three sites (0007, 0015, 0016) the CREG was exceeded 94%, 98%, 99% (respectively) of the time with spikes up to 118, 512, 319 (respectively) times higher than the CREG. Exposure to benzene in Midlothian is consistent 24 hours per day and long-term. Low-level long-term exposure (over two years) has been shown to lead to anemia and affect the immune system. A safe level for the fetus has not been established. Benzene passes the placental barrier and cause breaks in chromosomes and change in chromosome number. Animal studies suggest benzene can cause low-birth weight, bone marrow damage, and delayed bone formation in the fetus.
- (4) Whether the analyses of the NAAQS data is an exercise in futility or whether it produces a reliable indicator of the impact on public health depends on several factors: (a) direction and speed of prevailing wind **for each sample**; (b) whether current science – not regulatory levels – are used to determine impact on public health (c) whether readings of upwind samples are averaged with readings from downwind samples to dilute the impact (d) whether air monitors collecting NAAQS data are capable of completely capturing total lead emissions.

A.8., B.4., C.4., & D.1. The community was concerned about asthma, allergies, immune system deficiencies, and other health problems in adults as well as children. Data for these health problems are not routinely collected in Texas. Therefore, we were not able to systematically assess whether the levels of these conditions in Midlothian are different than in other areas of the state.

Response: Would it make any difference (other than to disregard it) if you did have an assessment of this condition? There appears to be a propensity in this report towards trivializing empirical data. There is no indication that anyone is asking, “Is there something we are missing?” Note the wording below.

B.1., B.2., & D.2. Over the years, the Texas Cancer Registry and Texas Birth Defects Registry have conducted incidence, mortality, and prevalence investigations to determine if cancer and birth defect rates were higher or lower in the Midlothian area compared to the rest of the state (Appendix D). No statistically significant elevations of specific or total cancers were found. (1) The prevalence for a few birth defects were higher than expected and for a few other birth defects were lower than expected based on state rates. These higher prevalence rates were not unique to Midlothian/Ellis County but were also observed throughout Health Service Region 3 (which includes 18 other counties primarily north and west of Ellis County). (2) Because of the numerous factors involved, it is not possible to determine if these increases are due to environmental exposures or differences in reporting practices in this region compared with the rest of the state. (3) Furthermore, it should be noted that only 3 of the 99 compounds with health based comparison values (i.e., ethylbenzene, 2-butanone, and methyl isobutyl ketone) listed “developmental effects” as the critical effect (i.e., the first observable physiological or adverse health effect occurring at the lowest exposure dose known to produce any effect at all). Hazard quotients for those 3 compounds were 0.000352, 0.0000653, and 0.00000793 respectively, levels that are far below levels that might be expected to result in an increased risk for birth defects.

Response:

(1) Prevalences for only a “few” birth defects were higher? How “few” is few enough? The attempted play on words here is insulting and appears to be an intent to downplay and obscure the significantly higher impact of birth defects in the community and downwind neighbors. This wording is reminiscent of the wording in the infamous “Cafeteria Talk” (see discussion below under section *Past DSHS & ATSDR Involvement and Data Review*). The fact is that the prevalence of **total birth defects for our entire region is significantly higher** than the State – that is the point we have been making. Ellis County’s total birth defect rate is higher than the region and has been **significantly higher** than the State for all years 1999 - 2003. And there were **no “few”** significantly lower – there was **only one** in Public Health Region 3. In 2002 the unadjusted prevalence for birth defect rates in **Ellis County (689.1) was 186% that of Texas (370)**. In 2002 Ellis County had the highest birth defect rate in Public Health Region 3.

(2) It is understandable if you contend that because of the numerous factors involved you cannot say environmental exposure **is (as well as you cannot say it is not)** involved – but the most perplexing excuse of all is “because it is not possible to determine if these increases are due to environmental exposures or differences in reporting practices in this region compared with the rest of the state.”

According to Texas DSHS own website:

http://www.dshs.state.tx.us/birthdefects/BD_data.shtm

“The Birth Defects Epidemiology and Surveillance Branch (BDES) uses **active surveillance**. This means it does not require reporting by hospitals or medical professionals. Instead, trained program staff members regularly visit medical facilities where they have the authority to review log books, hospital discharge lists, and other records. From this review, a list of potential cases is created. Program staff then review medical charts for each potential case identified. If the infant or fetus has a birth defect covered by the registry, detailed demographic and diagnostic information is abstracted. That information is entered into the computer and submitted for processing into the registry. **Quality control procedures for finding cases, abstracting information, and coding defects help ensure completeness and accuracy.**”

Unlike the Cancer Registry, Texas BDES Registry **does not depend** on the good will of medical facilities **nor their “better reporting practices.”** Their data collection efforts and **active surveillance** have been statewide since 1999. Because of the method of collection, this database

presents the **best empirical evidence** available to TDSHS to determine **whether and where** health issues are surfacing.

(3) Furthermore, a multitude of teratogenic and mutagenic toxins being emitted into the local air are known to cause birth defects and are known endocrine disruptors. Current science continues to produce evidence that raises questions regarding the adequacy of current levels that are deemed safe. There are many unanswered questions regarding the synergy of these toxins and their impact on the fetus during certain stages of development. There is significant scientific evidence surfacing that makes it impossible to state with the slightest degree of certainty that these toxins that are known to be endocrine disruptors and known to cause birth defects do not contribute to the significantly higher birth defects in Ellis and the surrounding downwind counties in Region 3. **This statement is especially true when you factor in the fact that you do not have a complete picture of the emissions.**

B.3. It has been suggested that the Down syndrome cluster reported in Ellis, Hood, and Somervell Counties in 1991-1994 may have been related to a cesium-137 source melt that occurred at Chaparral Steel on September 16, 1993. This might seem plausible in that one of the risk factors for Down syndrome is exposure of the mother or the father to excessive radiation prior to conception of the child. However, the time line is not right for this to have been a possibility, because the non-disjunction of chromosome 21 that results in the manifestations of Down syndrome would have had to have occurred prior to the date of the cesium-137 source melt for 15 out of 18 of the reported Down syndrome cases (based on the estimated date of conception for each of the children with Down syndrome). Also, analysis of the wind rose patterns for Midlothian during a similar time period to the cluster (i.e., 1992-94), revealed that the wind would have been blowing in the direction of one of the Down syndrome cases for less than 2% of the time during the 3-year period. Although the precise wind direction on the exact day of the source melt is not known, the prevailing winds are out of the SSE during September, which would have been blowing toward none of the three Down syndrome cases whose estimated date of conception was after the cesium-137 source melt (two of these cases were from Granbury, which is approximately 44 miles west of Midlothian, and the other was from Palmer which is 21 miles ESE of Midlothian). And finally, although the exact quantity of radiation released is unknown, modeling of this release as though the entire source (approximately 89 millicuries of cesium-137) was vaporized and released into the air (and not caught in baghouse dust as most of it was), indicates that the additional radiation would not have been detectable above background radiation levels.

1. **No one** in this community raised the issue regarding the two other Down Syndrome clusters in **Somervell or Hood County**. The only issue raised was the cluster along FM 664 in northern **Ellis County**. Furthermore, the lone “September 1993” incineration of cesium-137 correlation to this cluster surfaced solely in-house at TDSHS.

2. According to the study, the conception dates for the mothers in Ellis County occurred in March 1991, February and March 1992, February and March 1993 and February 1994. Ten of the 12 dates of delivery occurred in 1993 and the first half of 1994. **Documented in the study**, cesium-137 was reported to have been in scrap material that went into the steel mill at Chaparral Steel in Midlothian **on at least two known occasions in 1991-1994**. (Note reference above to timeline of exposure.) The cluster along the Ovilla Road corridor is east and north of Chaparral Steel. It is accurate that this area is not in a prevailing wind pattern; however, what percentage of the time must the wind blow in this direction for there to be a potential problem? **[Incidentally, the same concept regarding probabilities and wind patterns should be applied when evaluating the adequacy of the air monitoring data.]**

3. The study concluded that the median distance (12 miles) between Chaparral Steel and the cluster was too far to be impacted by the cesium-137 release – and this is also implied in your analyses above regarding cases in Palmer and Granbury. It appears that cesium-137's ability to stay aloft and travel long distances was disregarded.

4. The point to this issue has been missed. This issue was raised to point out the gaps in our public health efforts, the inability or reluctance to associate health issues with the environment and the too often inaccurate characterizations related to the transport of constituents via air. In this Down Syndrome study, traditional factors were ruled out – the only factor that was not ruled out was the environment. In this study, cesium-137 was disregarded because of the distance between the Ellis County cases and the source. Cesium-137 was raised as an example of a constituent associated with aneuploidy that stays aloft and travels a long distance before it reaches the ground. Below is an excerpt from our petition letter to Dr. Sanchez dated July 11, 2005.

The TDSHS also conducted one Down Syndrome study in Ellis County. A concerned parent living in northern Ellis county reported that he was aware of eight children with Down Syndrome that had been born in the immediate area during 1992 to 1994; an additional four cases were identified via the Texas Department of Health Bureau of Vital Statistics. Eleven were live births and 1 was a fetal death. The observed 12 cases were 2.78 times the expected number of 4.32 cases. This finding was considered "statistically significant." Unlike the cancer clusters identified in Ellis County, this cluster was deemed to be "statistically significant" and thus progressed to a higher level of epidemiological investigation. Other traditional factors that have been known to be linked to Down syndrome were reviewed but ruled out. Unfortunately the study was not designed to review the potential association of environmental factors to Down Syndrome; even though these are probably the only major variables left to consider. The primary investigator made the point that this cluster occurred several miles away from the Midlothian industries and thus it was not likely that there would have been an association. This assertion could be correct but again, keep in mind that the study was not designed to review the impact of environmental factors. There could also have been some unlikely occurrences related to wind direction and velocity that could have occurred during the Spring of 1993 when most of the children were conceived. Just because the "prevailing" winds are from south to north doesn't mean that the winds blow in this direction 100% of the time. Also, some constituents are more "persistent" than others. For example, Cesium 137 was known to have been incinerated by Chaparral Steel during this time period and this element has a known association to Down Syndrome and leukemia. The ATSDR Public Health Statement on Cesium 137 also states that this element has the ability to travel a long distance in the air before being brought back to the earth by rainfall and gravitational settlings. Cesium has a half-life of 30 years. I am not saying that Cesium 137 caused the cluster of Down Syndrome, but this, again, emphasizes not only the gaps in our air monitoring but the inaccurate perceptions related to the transport of constituents via air. We do not monitor for all elements and we do not take into account the ability of certain elements to travel at time, rate and speed beyond the ability of the monitors to capture their full impact.

Also note: Author of this section (B.3) still seems to have an inaccurate understanding of cesium-137's persistency to stay aloft for long periods of time and to travel a considerable distance before being brought back to earth. It is also known that shielded cesium-137 (example a gauge encased in lead) was difficult to detect prior to incineration. Since a certain percentage of cesium-137 continued to show up in the EAF dust one would question whether encased cesium-137 continued to be incinerated. Again, this is not to say that cesium-137 is the cause of these Down Syndrome babies – **but to stress the gaps in the system.** [Again, the concern

about wind rose patterns expressed here is to be complimented. The same attitude should prevail when assessing the adequacy of the monitoring data.]

C.2. This concern turned out to be **unfounded**, in that all three CAMS monitoring locations have collected air sampling data on 97-99 of the 119 different VOCs, amounting to 60,396 individual contaminant measurements. The CAMS-94 location collected air sampling data on **52 metals or other inorganics present in PM_{2.5} particulate matter** amounting to 8,164 individual contaminant measurements, and the CAMS-302 location collected air sampling data on **24 metals or other inorganics present in PM₁₀ particulate matter**, amounting to 4,344 individual contaminant measurements. Only the CAMS-52 location collected no air samples for metals or other inorganics present in particulate matter. The confusion may have arisen because the CAM sites only collect data for the NAAQS compounds on a continuous basis (i.e., 24 one-hour-average levels per day). The other contaminants (VOCs and metals) are collected noncontinuously as one 24-hour-average level collected once every 6 days.

The concern that we were given conflicting data by TCEQ was not unfounded. Refer to documentation (emails from TCEQ) in the petition file. The **source** of confusion was not the petitioner but **TCEQ**. However, you have pointed out one of the inadequacies of the data for **8,164** contaminant measurements for 52 metals and other inorganics collected at CAMS-94 and **4,344** individual measurements for metals or other inorganics collected at CAMS-302. **PM_{2.5} and PM₁₀** are not adequate for determining the amount of metals released into the ambient air because the larger particulate matter to which these metals bind are screened out. This is particularly true in assessing local impact since these larger particles have a tendency to settle closer to the source. This data may satisfy regulatory obligations, but is not reflective of true public exposure. Again, it is quality not quantity that should be of essence here.

C.4. & D.5. (1) Health problems reported in domesticated animals and livestock were shared with veterinarians at Texas A&M University. (2) While DSHS does not have animal-species-specific health-based comparison values to evaluate the risks for health effects in animals, many of the health-based comparison values used in our evaluation of human exposures are derived from animal studies and consequently, we would expect these human HAC values to be equally conservative in protecting animal health for most common domestic and farm animals.

- (1) So you talked to veterinarians at Texas A&M ... and? You were presented with strong empirical evidence that should prompt the following questions. **“Are these animals sentinels to what may be happening to people? Are there deficiencies in the data we are reviewing? Are we missing something?”** The casual dismissal of this issue is extremely disconcerting especially when some local veterinarians are pointing to the environment as the potential source of the problems. We would have expected that the inherent scientific curiosity (and ethical obligation) of the author (s) of this report would have automatically “kicked in” and that this issue would have been aggressively pursued.
- (2) This response avoids the issue as to why concerns of health effects in animals have been surfacing throughout the years. The community was concerned that the effects they were seeing in the animals paralleled health problems in the community. The question was, **“Are these animals canaries in the coal mine?”** Animals are exhibiting immune symptoms, reproduction problems, inability to carry offspring to term, low birth weights, birth defects, etc. An example http://midlothiannow.com/MY_DOGS__MYSELF.html. This was some of the documentation provided with the petition. Levels of toxins in the blood samples and hair analysis from these animals and manifestation of disease do not match the findings and “assumptions” of this report. Again, “Are we missing something?”

(1) Maternal age- and race/ethnicity-adjusted prevalence rates for total birth defects and for hypospadias/epispadias in Midlothian were significantly elevated with respect to Texas. Similarly adjusted prevalence rates for total birth defects and for craniosynostosis were significantly elevated in Ellis County with respect to Texas. Similarly adjusted prevalence rates for total birth defects, craniosynostosis, microcephaly, hypospadias/epispadias, and obstructive genitourinary defects were significantly elevated in Health Service Region 3 with respect to Texas. (2) Similarly adjusted prevalence rates for pyloric stenosis were significantly lower in Health Service Region 3 than in Texas as a whole.

- (1) We appreciate the fact that you acknowledge significantly elevated birth defect rates in Midlothian, Ellis County and Public Health Region 3.
- (2) It is fascinating the number of times you have mentioned this one insignificant fact in this report as if though it should trivialize and negate the preponderance of evidence that establishes the significantly higher birth defect rates.

General Findings

1. One hundred thirteen contaminants (47 VOCs and 66 metals or other inorganic compounds) had no levels exceeding the most conservative HAC value (or had no reported levels above the detection limit). No known health effects are associated with exposure to these contaminants at the concentrations measured in Midlothian; therefore, exposure to these contaminants would not be expected to result in adverse health effects.

Response: ... therefore, exposure to these contaminants would not be expected to result in adverse health effects. **Any respectable scientist would question and challenge whether data reviewed represents true and complete emissions and community exposure. Unless you can assure that the data reviewed accurately captures emissions and reflects community exposure, a statement like "...therefore, exposure to these contaminants would not be expected to result in adverse health effects" is without a solid scientific basis.**

2. Health based screening values were not available for 87 contaminants (59 VOCs and 28 metals or other inorganic compounds). Additional information is needed to determine the public health significance of these contaminants.

Response: We appreciate that you acknowledge screening values were not available for a large number of regulated contaminants.

3. Thirteen VOCs had one or more measured level above the most protective health-based screening value. Three of the VOCs (1,1,2-trimethylbenzene; 1,3,5-trimethylbenzene; and m-and p- xylene) had one or more level above the most conservative contaminant-specific non-cancer screening value. Ten of the VOCs (benzene; 1,3-butadiene; carbon tetrachloride; chloroform; 1,2,-dibromoethane; 1,2-dichloroethane; methylene chloride; 1,1,2,2-tetrachloroethane; 1,1,2-trichloroethane; and vinyl chloride) had one or more level above the most conservative contaminant-specific cancer screening value.

Response:
Statements like "... had one or more level above the most conservative contaminant-specific cancer screening value..." although technically true, sound so trivializing, especially when the data shows that benzene levels exceeded this "most conservative screening value" over 97% of the time.

Again, the only issue is not just what you found. We remain concerned about what may not have been identified due to the inadequacy of data due to the placement of the monitors. Comment in #1. above applies here.

4. Fourteen metals or other inorganic compounds had one or more measured level above the most protective health-based screening value. Four of the metals or other inorganic compounds [chlorine (PM_{2.5}), lead (TSP), manganese (TSP), and manganese (PM₁₀)] had one or more level above the most conservative contaminant-specific non-cancer screening value. Ten metals [arsenic (PM₁₀), arsenic (PM_{2.5}), arsenic (TSP), beryllium (PM₁₀), cadmium (PM₁₀), cadmium (PM_{2.5}), cadmium (TSP), chromium (PM₁₀), chromium (PM_{2.5}), and chromium (TSP)] had one or more level above the most conservative contaminant-specific cancer screening value.

Response: The response to item #1 above also applies here. Metal speciation based on PM_{2.5} and PM₁₀ does not adequately capture true levels of metals in the ambient air. The last year metal speciation was based on TSP was 1998.

Individual Contaminants – Non-Cancer Health Effects Evaluation

Using reasonable maximum exposure scenarios, only manganese (both as PM₁₀ and as TSP) exceeded ATSDR's chronic inhalation MRL by a small margin. After an in-depth review of the toxicological information and the uncertainty factors used in deriving the chronic inhalation MRL, we concluded that it is highly unlikely that the manganese levels seen in Midlothian would result in any observable adverse health effects, even after long-term exposure.

Response: The response to item #3 above also applies here.

Individual Contaminants – Cancer Health Effects Evaluation

Exposures Prior to 1982:

Based on ambient air samples collected prior to calendar year 1982, the estimated excess lifetime cancer risks associated with reasonable maximal exposure to arsenic (TSP), cadmium (TSP), and chromium (TSP) ranged from 5.38×10^{-5} (a total of 1 excess cancer in 18,597 people exposed for 70 years) to 9.30×10^{-5} (a total of 1 excess cancer in 10,748 people exposed for 70 years). If these exposures were to continue for 70 years, they would pose a low increased lifetime risk for cancer and would not be expected to result in measurable harmful health effects. Past exposures to these compounds (prior to 1982) therefore posed "no apparent public health hazard."

Response: "Based on exposures prior to 1982..." Are you referring to the 1981 monitoring at site 0001 (City Hall roof)? If yes, then this should be stated as thus. Also, do you believe, based on prevailing wind patterns, this monitor was adequately situated to capture true emissions from Ash Grove, TXI and Chaparral Steel? It should be pointed out: 1) that ambient air data prior to 1982 was limited to 1981 and was scarce (practically nonexistent) since monitoring for **most** heavy metals and VOCS was not done and 2) there is insufficient data to make an informed statement regarding public health impact. And why would we say, "...and if these exposures continue..." **when we know they did not!** -- We know that population, industry, production, mobile sources, etc. increased.

Exposures 1982 through 1992:

This time span should not have been omitted. It should be noted that for a critical 6-year period ambient air data for heavy metals and VOC's is missing. This period is of particular concern to the community because Ashgrove unsafely burned hazardous waste derived fuel (HWDF) from 1986 to 1992. It was not until after Ashgrove's "trial burn" in 1992 that it was determined that this facility **could not safely burn** HWDF. Holcim went online in 1987. Also, during this period EPA issued citations to TXI for violations involving hazardous waste burning.

Exposures 1993 through 2005:

In the entire history of air monitoring in Midlothian, site 007 (Tayman Drive) was the **only site** in a prevailing wind pattern that had the potential to facilitate capturing data from all industries. There is no data from this site for metals. Data was collected only for 1993-1997. A large number of samples

were collected upwind of all the industries at CAMS-94. Averaging in readings from CAMS-94 when the wind is blowing out of the south only serves to dilute the true impact.

Ongoing Exposures:

It would be prudent to ask what monitoring is currently taking place. Are the sites in position to collect data that accurately reflects true public impact from all sources? The response may give insight to TCEQ's intent and attitude regarding public health.

Overall Conclusions

We found that the majority of the risks associated with exposure to the chemicals analyzed in this health consultation were low. However, we are classifying this site as an Indeterminate Public Health Hazard because further information is needed to fully characterize the extent of the public health hazard posed by air contaminants in Midlothian. This classification is based on the following facts:

Overall Response to this section:

Response: We truly appreciate the fact that it was recognized that insufficient data exists to make a solid conclusion whether a public health hazard does or does not exist. It is quite evident (through no fault of ATSDR or TDSHS) that the collection of data to assess public health or to capture a complete picture of emissions and true public impact was not a factor in the placement of air monitoring stations. Consequently, the data is insufficient and inadequate for this purpose. Adequate data does not exist that would permit TDSHS to make a sound analysis that would warrant a call in either a safe or unsafe direction. Thus, it is quite disconcerting that an effort was made to assess public health impact to **any degree**. This serves only to discredit ATSDR's and TDSHS' purported mission to protect public health.

Again, it is not our intent to insist a public health problem be identified if one does not exist. However, it was our hope that **all conclusions or statements derived regarding the community's public health would be based on the recent and developing science and on solid data appropriate to identifying real public exposure.**

1. Sixteen out of 59 VOCs and 2 out of 28 metals or other inorganic compounds for which health-based screening values were not available had average levels above average background (levels obtained from other areas in Texas and/or the U.S.). Additional information is needed to determine the public health significance of these contaminants.
2. While individual contaminants produced, at most, a low increased lifetime risk for cancer and no apparent public health hazard, under the aggregate exposure scenario, total excess lifetime cancer risk for all cancers combined could be interpreted as posing a public health hazard. However, this conclusion is based on the assumption that all the chromium detected in the air is of the most toxic form [i.e., chromium(VI)], an assumption that is inconsistent with information obtained from other areas of the state. The relative proportions of chromium(III) and chromium(VI) will need to be determined in order to accurately define the risk estimate for total cancer (all sites combined).
3. While this health consultation reviewed the majority of the contaminants measured in Midlothian air (119 VOCs and 108 metals and other inorganics), EPA's NAAQS compounds still need to be evaluated in a future consultation.
4. There are data gaps both in sampling locations and parameters of interest. No air data for the analysis of VOCs were collected prior to 1993. Air data for the analysis of metals and other inorganic compounds were collected at only one location from 1981 through 1984. No air data for these contaminants were collected prior to 1981 and none were collected between 1985 and 1992. For the time periods when air data does exist, data were collected from a limited number of monitoring stations and may not reflect conditions throughout the community. (2) However, since the major monitoring locations were relatively close to one or more of the primary emission sources, we do not

anticipate that air pollutant levels for much of the city would be too much higher than those observed.

Response:

- (1) You are right to assert "... data was collected from a limited number of monitoring stations and may not reflect conditions throughout the community," **because it definitely does not.** The only monitoring site capable of collecting emissions from all sources was 0007 on Tayman Drive and its data limitations are quite obvious.
- (2) **"Relatively close" does not suffice.** Monitor placement in relationship to both the source(s) and wind rose patterns should be the criteria. Other than Tayman Drive (site 007), no monitors were "close to" or in a prevailing wind pattern to adequately capture emissions from Ashgrove and Holcim. Most of the metals were monitored at CAMS-94 (site 0015) which is **upwind from all sources.** Based on the wind rose patterns this is the one spot that is **least likely** to capture data representative of local emissions. The second site (based on the wind rose patterns) least likely to capture emissions is CAMS-302 which is west of TXI/Chaparral Steel and south of the other industries. The majority of the VOC's were collected at site 0015 and 0016. Site 0016 is south of Holcim and Ashgrove and again (based on prevailing winds) not in an ideal location to capture emissions from Ashgrove or Holcim. TSP monitoring for metal speciation was limited before 1998 and nonexistent after 1998.

Recommendations

We have made the following recommendations in response to these findings:

1. As resources allow, research the toxicology literature for contaminants measured in Midlothian air for which health-based screening values were not available, and determine the potential public health impact of exposures to these substances.
2. Collect additional ambient air samples from **previously** sampled locations to determine the specific distribution of chromium species and to refine the risk estimates for this contaminant.
Response: Since previously sampled locations were obviously not optimally situated to capture true emissions, is there some logic to limiting collection to the previously sampled site?
3. Evaluate the levels of EPA's NAAQS compounds in the continuous air monitoring data.
Response: Although we appreciate your efforts, if data was collected at CAMS-94, which is obviously not in an ideal position to capture true emissions from the industries, of what value would it be when assessing public health impact? It would just be another exercise in futility. Also, it is not possible to determine a community's true lead impact from ambient air based on anything other than TSP readings.
4. Where possible identify and fill data gaps with additional data from TCEQ to identify any additional air contaminants that might need evaluation and/or sampling.
Response: This report has surfaced deficiencies in the system that should already have been identified by TCEQ. Before we proceed to identify additional air contaminants that need evaluation we need to get a firm handle on the ones that have already been identified. Current TCEQ monitoring does not give an accurate picture of total emissions and public impact. **If public health is a concern, and if there is a serious intent to assess community impact, a methodology based on wind rose patterns, terrain, emission sources, populace, etc needs to be scientifically devised and implemented.**

Actions Completed Historically, the TCEQ has collected a vast amount of environmental data in Midlothian, Texas, including air monitoring samples, soil samples, vegetation samples, and others dating back to the early 1980's.

Response:

- (1) Historically TCEQ has shown that this agency's ties and loyalty lies with industry and that public health cannot be allowed to trump economic welfare. The lack of monitoring sites placed in and around Midlothian as a result of a methodology scientifically based on prevailing winds, major emissions sources, populace, etc., testifies to this. This brings us to problems faced in this consultation — data that does not measure true impact of emissions — data deficient for assessing public health. One can only presume this was part of the design.
- (2) The Evaluation of The Screening Risk Analysis for the Texas Industries Facility in Midlothian, by Dr. Stuart Batterman, et al, points out that the monitoring system was deficient considering the scale of industry and waste combustion. Furthermore this evaluation documents inconsistencies and deficiencies/omissions in many of the emissions and soil sampling/analyses. TCEQ was criticized for its tendency to go far beyond what is scientifically supportable by the existing data in making sweeping generalizations regarding the present and future safety of waste combustion in Midlothian. This document was submitted with the petition and should have been a factor in the analysis of data quality/adequacy of the TCEQ data.

2. Earlier data were analyzed by the TCEQ using EPA methodology and TCEQ's screening levels [4, 10].

Response: Again, refer to the Evaluation of The Screening Risk Analysis for the Texas Industries Facility in Midlothian, by Stuart Batterman, et al. This was part of the petition package and part of the evidence submitted. It should not have been ignored. It critically reviews the documents referred to here [4,10]. This evaluation points out TCEQ's failures at times to use EPA methodology. It sheds a light on serious omissions, inconsistencies, selective use of critical data; sampling times, techniques and locations inappropriate to characterize impact; meteorological and other data not presented to interpret monitoring data; advance notice given to industry prior to ambient air monitoring, etc.

3. DSHS staff reviewed summarized monitoring data (1993 through 1995), attended numerous meetings with TCEQ staff and area residents, and distributed questionnaires to see if there were consistent reports of odors, or signs or symptoms of illnesses that might be related to environmental pollution.

Response: See our response below under Past Environmental Sampling and Data Review regarding actions and results of TDSHS involvement during this period.

4. The Texas Cancer Registry analyzed cancer morbidity and mortality data for Midlothian and Ellis County, looking for any significant increases in cancer rates in this area over the period 1993 through 2002.

5. The Texas Birth Defects Registry analyzed birth defect data for Midlothian, Ellis County, and Health Service Region 3, looking for any significant birth defect elevations during the period 1999 through 2003.

6. ***

7. DSHS staff obtained detailed (not summarized) TCEQ air monitoring data from 1981 through 1984 and from January 1993 through March 2005 in an electronic format and created a database of monitoring results. With the completion of this health consultation, DSHS has analyzed this data for VOCs and metals or other inorganic compounds and compared these data to health-based screening levels published by ATSDR and EPA. A conservative exposure scenario was generated, and

carcinogenic and non-carcinogenic risk estimates were calculated, assuming 70-year lifetime and/or chronic exposures at the *reasonable maximal exposure levels seen in the Midlothian area.

Response: Sufficient data was not available to adequately determine “reasonable maximal exposure levels seen in the Midlothian area.”

Actions Under Way

Actions Planned

1. DSHS and ATSDR will make this health consultation available to the public, local industries, the local government, and state and federal health/environmental agencies.

2. DSHS and ATSDR will continue to address the community’s health concerns relating to air quality.

Response: “**Continue...**”? The only way to credibly address a community’s health concerns relating to air quality is to have an adequate air monitoring system truly representative of air emissions to which the community is exposed. A scientifically devised system based on a methodology that incorporates prevailing winds as they relate to emission sources, terrain, populace, etc. has never been in place in Midlothian. More of the same is of little value.

3. ***

4. DSHS will discuss with TCEQ the potential for determining the specific distribution of chromium species in Midlothian air. **Hopefully we will get a complete picture of the true emissions first.**

5. DSHS will discuss with TCEQ the potential for identifying and filling data gaps and identifying any additional air contaminants that might need evaluation and/or sampling.

This community needs an adequate air monitoring system that is based on a scientific methodology designed to capture the total emissions as they impact the community. Then, and only then will our health agencies be able to make a viable evaluation as it relates to public health.

6. DSHS will complete the analysis of the hourly NAAQS data. **If this data was collected at upwind monitoring stations situated where the majority of emissions will be missed, this will be an exercise in futility. Also, unless data was collected at a site(s) where (based on prevailing wind) true emissions from all sources are captured it will be of little value in assessing impact on public health.**

Appendix D – Birth Defects and Cancer Registries Report Summaries

Birth Defects Registry Report Summaries

A Down syndrome cluster investigation released in 1996 reported that the number of Down syndrome cases in Ellis, Hood, and Somervell Counties among deliveries in 1992 through 1994 was 3.4 times higher than expected based on statewide rates [74]. Those results, which included adjustment for maternal age, were statistically significant at the 95% level. While that study did not provide evidence that environmental factors were associated with the excess occurrence of Down syndrome cases, its ability to do so was limited.

Response: **We take this as a statement that the environment could not be ruled out. We agree with this fact. Also, are we talking about 3 separate clusters here that occurred in Public Health Region 3 during the same period?**

In response to a citizen request, the DSHS Texas Birth Defects registry completed an additional review of birth defects registry data in June 2005 [75]. They examined the occurrence of 48 specific

types of birth defects as well as “any monitored birth defect” among deliveries to residents of Midlothian, Venus, and Cedar Hill over the period from 1997 through 2001 and compared those rates to the state as a whole (1999 through 2001). Adjusting for maternal age, the prevalence rate for the occurrence of one type of birth defect related to urinary tract development (hypospadias or epispadias) was approximately **3.7 times** higher than the prevalence rate observed for Texas (1999 through 2001). Adjusting for maternal race/ethnicity, the prevalence rate for hypospadias or epispadias was approximately **4.2 times higher** than the prevalence rate observed for Texas (1999 through 2001). These results were statistically significant at the 95% level. Similarly, the prevalence of any monitored birth defect among Midlothian residents (1997 through 2001), adjusted for maternal age, was **1.5 times** the prevalence rate for Texas (1999 through 2001), and the result was statistically significant at the 95% level. However, adjusting for maternal race/ethnicity, caused the prevalence ratio to drop to 1.2, and the result was no longer statistically significant. It is not clear what effect if any the different time periods for data inclusion in Midlothian vs. Texas may have had on the birth defect prevalence rates.

In response to additional inquiries in August and October 2006, DSHS Texas Birth Defects registry completed an additional review of birth defects registry data in November 2006. They examined the prevalence of total birth defects as well as 48 specific types of birth defects in the 11 Health Service Regions of Texas over the period from **1999 through 2003**.

The standardized prevalence ratio (SPR) for any monitored birth defect, adjusted for maternal age and race/ethnicity, in **Health Service Region 3** (which includes Ellis County and 18 other counties in the Dallas-Fort Worth area) was found to be 18% higher than the state as a whole, and those results were statistically significant at the 95% level. Specific defects found to be significantly elevated at the 95% level included **hypospadias/epispadias (SPR=1.14)**, obstructive genitourinary defects (SPR=1.11), **microcephaly (SPR=1.31)**, and **craniosynostosis (SPR=1.33)**. [Pyloric stenosis was significantly lower in Health Service Region 3 than Texas as a whole (SPR=0.84). –

What is not mentioned here is that of all the eleven Health Service Regions in Texas, Public Health Region 3 continues to reflect the highest birth defect rate.

The maternal age and race/ethnicity adjusted prevalence rate (per 10,000 live births) for total birth defects in **Ellis County was 483.66** compared with 360.70 in Texas as a whole (SPR=1.34); these results also were statistically significant at the 95% level. Out of 48 specific birth defects (after adjustment for maternal age and race/ethnicity), only **craniosynostosis (SPR=3.61)** was significantly elevated in Ellis County with respect to Texas as a whole.

We assume you are referring to the cumulative average rates for periods 1999 through 2003. An interesting point that should be made here is that in 2002 the unadjusted prevalence for birth defect rates in Ellis County (689.1) was 186% that of Texas (370). In 2002 Ellis County also had the highest birth defect rate in Public Health Region 3

Cancer Registry Report Summaries

The Texas Department of State Health Services completed cancer incidence and/or mortality investigations The incidence and mortality of the other cancer types were not significantly different than what would be expected when compared to the rest of the state.

Response:

This report made a comment that the higher birth defect rates in Health Service Region 3 and Ellis County may be due to the difference in reporting practices. Should not the same logic be applied here to the cancer rates. Since, the cancer surveillance depends on the good will of the health providers, is it not possible that there is a difference in reporting practice in the rural areas such as Ellis County and your picture of cancer case may not be complete?

Past Environmental Sampling and Data Reviews

Air monitoring data were collected every six days for a variety of metals and other inorganic constituents of particulates in the Midlothian area sporadically from 1981 to 1984 in accordance with the national schedule. Samples were collected from the roof of the City Hall on North 8th Street and were analyzed for approximately 30 different parameters including total suspended particulates (TSP) adjusted for standard temperature and pressure (STP). No air data were available for the time period from January 1985 through December 1992.

In 1991, the TNRCC initiated an environmental monitoring program in and around Midlothian to evaluate soil, vegetation, slag, and stack emissions for 18 different metals and/or polychlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans (PCDFs). Of the 175 soil samples collected between 1991 and 1995, 1 sample exceeded the TNRCC's soil screening level for lead (400 ppm), and 6 out of 140 soil samples exceeded the TNRCC's soil screening level for arsenic (20 ppm). Measurements for all other soil metals were below their respective soil screening levels.

Response: So based on tests taken 17 years ago, excessive lead and arsenic were identified in the soil? What were the PCDD levels? This paragraph is silent regarding findings in stack emissions. Refer to Batterman, et al, Sections 5.2 – 5.3.1 analysis of these soil sampling. See Section 4.3.9 Dioxin/furans. These sections all point out questionable quality assurance/quality control and raises questions regarding discrepancies between various soil sampling techniques and discrepancies in airflow and temperatures during stack testing for dioxins/furans, etc.

Additional samples were collected in the vicinity of Chaparral Steel. Results from these samples show that 2 out of 22 soil samples collected just outside of the Chaparral property line exceeded the TNRCC's soil screening level for lead (400 ppm), and 1 out of 22 soil samples exceeded the soil screening level for cadmium (40 ppm) [4, 10]. All other soil metals were below the TNRCC's respective soil screening levels. **Response: So excessive levels of lead and cadmium were identified in the soil.**

Among 60 soil samples tested, the Toxicity Equivalency Quotient (TEQ) for PCDDs and PCDFs ranged from 0.3-17.9 parts per trillion (ppt); all were below the ATSDR's health-based soil guidance level of 50 ppt. **Response: It appears that dioxin was identified in all 60 soil samples. Dioxin is the deadliest of all man-made chemicals. There is no known safe level for dioxins – what is ATSDR's basis for deeming a "safe" level? How is PCDD's synergistic effects and the endocrine disrupting factor calculated into this "safe level"?**

Slag (a by-product of steel production) samples were collected and analyzed for 13 different metals; none exceeded their respective soil screening levels.

As part of the Chaparral Steel special study, hay, wheat, and other vegetation samples were collected from the fields surrounding the steel mill. With the exception of aluminum, cadmium, and iron in samples collected in the field immediately south of Chaparral, all measured metal concentrations were below their respective maximum tolerable levels for **cattle**³.

Response:

So an issue with aluminum and cadmium and iron surfaced? What about lead?

A letter regarding this study from Dr. Lund dated September 22, 1994 states: "Soil samples collected from the hay field contained elevated levels of cadmium, manganese, and lead. Cadmium, manganese, and lead levels exceeded the human soil ingestion comparison values by up to 2.1, 1.1, and 6.2 times respectively. Human ingestion of soil from the hay field with the measured metal concentrations may result in adverse health effects. In addition to exposure through hay and vegetation consumption, animal ingestion of soil during grazing may increase the total metal exposure in the animal.

This letter also indicates eight additional hay-bale samples (four 0-3 inch depth samples and four 3-6 inch depth samples) were collected from the rows of hay-bales stored at site #8. The results show that iron, manganese, cadmium, lead and titanium levels in surface samples (0-3 inch depth) **were significantly greater** than samples collected from 3 to 6 inches within the hay bales. **These results suggest aerial deposition of the metals.**

Stack samples were collected from all three cement manufacturing facilities while they were burning different combinations of coal, HWDF, and/or tire-derived fuel. The total 2,3,7,8-Tetrachlorodibenzodioxin (TCDD) Toxicity Equivalency Quotient (TEQ) concentrations estimated for each of the test conditions were all below the TNRCC's screening levels.

Response:

Again, TCDD is the deadliest of all **man-made** chemicals. There is no known safe level for dioxins – what level does TCEQ (TNRCC) **ESLs** deem acceptable.

Starting in 1993, the TNRCC began collecting air samples for VOCs, particulates, metals, and other inorganic compounds from various locations or Continuous Air Monitoring Stations (CAMS) around the city as follows (see Appendix E, Tables 1a & 1b and Appendix C, Figure 2):

Tayman Drive (Site 0007): **PM10** Total Particulates (0 to 10 μm), 1993 through 1996 (231 results) **Metals & Inorganic Compounds, None** VOCs (78 species), 1993 through 1997 (11,135 results)

CAMS-94 (Site 0015): **PM10** Total Particulates (0 to 10 μm), 1994 through 2004 (690 results) **PM2.5 Fine Particulates (0 to 2.5 μm)**, 2002 through 2004 (157 results) **Metals & Inorganics in PM2.5 (52 species), 2002 through 2004** (8,164 results) VOCs (98 species), 1999 through 2005 (22,955 results)

CAMS-52 (Site 0016): **PM10** Total Particulates (0 to 10 μm), 1994 through 2004 (685 results) **Metals & Inorganic Compounds, None** VOCs (99 species), 1997 through 2004 (34,842 results)

CAMS-302 (Site 0017): **PM10** Total Particulates (0 to 10 μm), 1999 through 2004 (262 results) **Metals Inorganics in PM10 (24 species), 2001 through 2004** & (4,344 results) VOCs (97 species), 2004 through 2005 (2,599 results)

Note: Tayman Drive (007) is the only location (based on prevailing wind patterns) capable of capturing ambient air data representative of public exposure. All others are upwind of Holcim and Ashgrove. CAMS-94 is upwind of all industries and metal speciation is based on PM2.5 only. There does not appear to be any **TSP** monitoring for metal speciation at any of these sites.

In 1996, the United States Environmental Protection Agency (EPA) conducted a cumulative risk assessment using air modeling data based upon estimated emissions for the industries in the area during **1985 and 1987 through 1990**. In their report, no increased risk for developing cancer or potential for developing non-cancer health effects were identified above the EPA's regulatory standards for acceptable risk [11].

Response: The EPA assessment was a theoretical mathematical model conducted for regulatory purposes and should not be relied upon to determine public health implications. This assessment was based on estimated data that was already 6-11 years old when the report was issued. How were permit violations factored in? Was Ashgrove's permit violation and failed efforts at burning of hazardous waste in its wet kilns factored in? Much has changed since 1990. Production has increased. Types of fuels have changed. Incineration of hazardous waste and tire-derived fuel has increased. Mobile emissions sources have increased. Population has increased. Emissions have increased. **Findings are obsolete.** Empirical data should trump any theoretical estimate.

Past DSHS and ATSDR Involvement and Data Reviews

(2) Between 1992 and 1995 TDH and ATSDR periodically evaluated the air monitoring data collected in the Midlothian area and attended community meetings. The majority of samples were below the (1) **screening levels considered to be health protective at that time** [12]. (3) Although no consistent pattern of symptoms or illnesses were noted among area residents, there were common complaints among the residents about sulfur odors and excessive dust. At the request of various citizens groups, DSHS Birth Defects and Cancer Registries have analyzed data from Midlothian, Venus, Cedar Hill, Ellis County, and Health Service Region 3 to determine prevalence rates for various types of birth defects and the standardized incidence and mortality rates for various types of cancers in the aforementioned areas. Reports were written by the respective registries and summaries of those reports are presented in Appendix D.

(1) What do you know about screening levels now that you didn't know then? It is noted that data available for review at that time was very limited. However VOC collection on Tayman Drive indicated that 94% of the benzene emissions exceeded the CREG values and benzene emissions spiked to an acute chronic inhalation RfC of 20.57 ppb in May 1995. Ashgrove burned hazardous waste derived fuel (HWDF) from 1986 to 1992. It was not until after the "trial burn" in 1992 that it was determined that this facility could not safely burn HWDF. Holcim went online in 1987. Also, it was during this period that EPA issued citations to TXI for violations involving hazardous waste burning. . **Refer to "Cafeteria Talk" below and how this was trivialized.**

(2) The results of these visits that culminated in the infamous "Cafeteria Talk" presented November 2, 1995 at the Midlothian Middle School Cafetorium was a source of extreme frustration and disappointment for the community. It was not just in the dismissive and condescending manner in which it was presented with **sweeping generalizations and statements not apparently supported by science.** (Statements like: **"Contrary to some of the claims you may have heard ...dioxin exposure is not a significant health risk in Midlothian."** **"ESLs are generally 100 fold or more lower than the LOAEL."** **"If it has been determined that environmental pollutants in an area are not consistently elevated into a range expected to cause adverse health-effects, then it is a foregone conclusion that differences in disease prevalences cannot be validly attributed to environmental pollution."** **"After 120 years of study, there are no reports in the medical/scientific literature linking Down Syndrome to any sort of chemical exposure or industrial pollution."**)

What was even more frustrating was that the community's concerns regarding lack of adequate monitoring and health problems surfacing in both the people and the livestock were trivialized. Results of a poorly designed and analyzed questionnaire **was embraced** to rule out the alleged asthma and breathing problems while the only peer-reviewed study, The Health Effects of Living Near Cement Kilns: A Symptom Survey in Midlothian showing a higher incidence of respiratory problems in Midlothian **was totally ignored.** A poorly executed and failed Animal Health Survey (which incidentally did surface breeding problems) was abandoned as a failure. The eagerness to place emphasis on the negative and the dismissiveness of potential links was very worrisome.

Troubling are statements made during this "Cafeteria Talk" (like: **"The TNRCC's environmental sampling program in Midlothian has been unprecedented!"** **"Never before in history has the agency, or its predecessor, the Texas Air Control Board collected so many environmental samples, from so many different media, from so many sampling locations, analyzing for so many different compounds and finding so few of even the mildest of health concerns."**) This is troubling, not only from the perspective that the review of the environmental data (especially the air monitoring data) reveals significant gaps and deficiencies that should have been obvious then. But, **what is most troubling and of great concern is whether the author of this "Cafeteria Talk" could develop and maintain sufficient objectivity to adequately evaluate the currently available data and arrive at objective scientific conclusions without bias in this current public health consultation.**

(3) It was acknowledged that levels of sulfur compounds were “on occasion” above the odor threshold levels. The complaints regarding excessive odors (not given credence then) were substantiated.

Methods Used in this Consultation

Because of the diversity of the health and environmental concerns and the volume of data available for the Midlothian area, several health consultations will be needed to address these concerns. In this consultation we reviewed available air monitoring data with respect to volatile organic compounds (VOCs), metals, and other inorganic compounds. Subsequent consultations are planned to address EPA’s National Ambient Air Quality Standards (NAAQS) compounds and (*) consideration of wind patterns and other weather data. Additional consultations may be added based on the results of these analyses.

Response: *This holds promise. This same consideration/logic should be applied to the data analyzed for this report.

Environmental Data

We reviewed air monitoring data collected by the TCEQ in the Midlothian area from 1981 through 1984 and from January 1993 through March 2005. Air data were not available prior to 1981 or between January 1985 through December 1992. These data, collected every six days in accordance with the national schedule, include 119 VOCs collected from 4 different monitoring locations and 108 particulate and metal parameters collected from 13 different sampling locations (most data were collected from 6 locations) in and around Midlothian. Current sampling locations and historical sampling sites are shown in Appendix C, *Figures 1 and 2. Monitoring site locations and the number of measurements made for VOCs and for metals/inorganic compounds at each site are shown in Appendix E, Tables 1a and 1b, respectively. **Response:** See our prior remarks regarding adequacy of monitoring sites to capture complete emissions. *Reference figure 2. The “artist” that overlaid this aerial photo with king-size pictures of canisters should be complimented with his ability to create an illusion. At first glance, one is inspired by what really looks like heavy monitoring in most of the critical spots is taking place. Unfortunately a review of the actual air monitoring data and what each of these “canisters” represents, burst the bubble.

Quality Assurance/Quality Control

We obtained detailed (not summarized) ambient air quality data that TCEQ collected in the Midlothian area from May 1981 through March 2005. In preparing this report, DSHS/ATSDR relied on the data provided to us by the TCEQ and (1) assumed adequate quality assurance/quality control (QA/QC) procedures were followed with regard to data collection, chain of custody, laboratory procedures, and data reporting. (2) For the purpose of analysis, concentrations reported as “ND” (or not detected) were assigned numerical values equal to ½ the detection limit for the compound.

(1) Assuming QA/QC is a leap of faith especially when it comes to public health issues versus industrial welfare.

(2) When direction of wind and fallout patterns would not support a reading other than a possible non-detect, the non-detect readings should have been discarded. Including them only serves to dilute true concentrations and distort findings. This is true even with uncustomarily low concentrations reflected on days when (based on wind direction) a true measurement cannot be expected.

Health-Based Assessment Comparison (HAC) Values

Media-specific health-based assessment comparison (HAC) values for non-cancer health effects are generally based on ATSDR’s minimal risk levels (MRLs), EPA’s reference doses (RfDs), or for air, EPA’s reference concentrations (RfCs). MRLs, RfDs, and RfCs (1) all are based on the assumption that there is an identifiable exposure dose for individuals including sensitive subpopulations, such as pregnant women, infants, children, the elderly, or the immunosuppressed, that is likely to be without appreciable risk for non-cancer health effects even if exposure occurs for a lifetime [13].

When a substance is listed as a carcinogen, the lowest available HAC value usually proves to be the cancer risk evaluation guide or CREG. CREGs are based on EPA's chemical specific cancer slope factor (CSF) and represent the concentration [for airborne contaminants, usually expressed as micrograms per cubic meter ($\mu\text{g}/\text{m}^3$)] that would result in a daily exposure dose [expressed as milligrams per kilogram per day ($\text{mg}/\text{kg}/\text{day}$)] and theoretical lifetime cancer risk level of one additional cancer case in one million people exposed (a risk of 1×10^{-6}), assuming a 70 kg person breathes an average of 20 cubic meters (m^3) of air per day over a 70 year lifetime [13].

Response

This does not appear to be true of all constituents. Take lead for example. An exposure dose that is likely to be without appreciable risk for health effects (even for short periods of time – such as the “window of vulnerability for the fetus” or for a child in his first few years of life) **has not been identified**. A provisional RfC) $0.375 \mu\text{g}/\text{m}^3$ was created for evaluating lead based on a long-ago outdated level (quarterly average) $1.5 \mu\text{g}/\text{m}^3$ to protect a long-ago outdated once acceptable blood lead level of $30 \mu\text{g}/\text{dl}$. In addition a blood lead level of $10 \mu\text{g}/\text{dl}$ was used as a comparative value of safety when all reputable science and even CDC say it is not an acceptable level of lead poisoning.

According to the Office of Air Quality Planning and Standards (OAQPS) final staff paper, evidence of a differing sensitivity of the immune system to Pb across and within different periods of life stages indicates a potential importance of exposures as short as weeks to months duration. For example, the animal evidence suggests that the gestation period is the most sensitive life stage followed by early neonatal stage, and within these life stages, critical windows of vulnerability are likely to exist.

OAQPS final staff paper indicates (based on peer-reviewed scientific studies) that for neurological effects on the developing nervous system), no threshold levels can be discerned from the evidence. OAQPS concludes, *“Thus, to the extent one places weight on risk estimates for the lower standard levels, we believe these risk results may suggest consideration of a range of levels that extend down to the lowest levels assessed in the risk assessment, 0.02 to $0.05 \mu\text{g}/\text{m}^3$.”*

OAQPS states: *“In conclusion, staff judges that a level for the standard set in the upper part of our recommended range (0.1 - $0.2 \mu\text{g}/\text{m}^3$, particularly with a monthly averaging time) is well supported by the evidence and also supported by estimates of risk associated with policy-relevant Pb that overlap with the range of IQ loss that may reasonably be judged to be highly significant from a public health perspective, and is judged to be so by CASAC. A standard set in the lower part of the range would be more precautionary in nature in that it would place weight on the more highly uncertain range of estimates from the risk assessment.”*

In general, comparison values are derived for substances for which adequate toxicity data exist for the exposure route of interest. All substances were evaluated as if inhalation was the only exposure route. Breathing is not the only exposure route for toxins in ambient air to enter the body. Toxins in the air are also absorbed by dermal exposure and ingestion. This is especially relevant to toxins that are persistent in the environment and are continually re-suspended.

Comparison values may be available for up to three different exposure durations: acute (14 days or less), intermediate (15 to 365 days), and chronic (more than 365 days). Usually, HAC values based on long-term exposure guidelines are lower (more conservative) than HAC values based on short-term exposure guidelines. Thus, the initial screen usually involves comparing each discrete (i.e., short-term) contaminant level with a HAC value based on a long-term exposure guideline. **What is the acute, intermediate or chronic long-term exposure for a fetus and its critical “windows of vulnerability”?**

Health-Based Screening

Estimation of Long-Term Exposure Levels

Nearly all air samples collected for the measurement of VOCs, metals, and other inorganic substances have come from 4 primary sampling locations (1) (sites 0007, 0015, 0016, and 0017). Site 0007 is approximately 1.2 miles northeast of Ash Grove and 1.6 miles northwest of Holcim. Sites 0015, 0016, and 0017 are approximately 1.6 miles south, 1.5 miles north, and 1.2 miles northwest of the TXI/Chaparral facilities respectively (see Appendix C, Figure 2 and Appendix E, Tables 1a & 1b). (2) Some Midlothian neighborhoods are located within 1-1.5 miles of one of the major industrial facilities but most are farther away. (3) Since emission levels tend to drop off with distance from the emission source, we expect the levels measured at the 4 primary sampling locations to be fairly representative of the upper range of levels to which the majority of the residents of Midlothian would be exposed. Of course individual exposure concentrations will vary from day-to-day due to changes in emission levels, wind speed and direction, and the movement of people around the city. (4) Consequently, we have averaged the sample results from all monitoring sites together to give the best approximation of the average concentration to which Midlothian residents may have been exposed over extended periods of time.

Response:

It appears these sites were established in response to needs other than monitoring public health impact.

Tayman Drive (Site 07) was the only monitor logically placed to capture emissions from all industries and is the only monitoring site that was in a prevailing wind pattern capable of capturing most emissions from Holcim and Ashgrove. Unfortunately this data is 10 to 15 years old and is not reflective of current exposure. Industrial activity has increased significantly since this data was collected and tire derived fuel and other hazardous materials have been added to the mix. **Metals and inorganic compounds were not sampled here.** The majority of the data for metals was taken upwind from all the industries (site 0015, CAMS-94). Site 302 (almost directly west of TXI) also is not in line with prevailing wind rose patterns. TSP monitoring (sites 0001 and 0012) for metals was very limited (6 out of the last 27 years) and none in the vicinity of Ashgrove and Holcim. TSP monitoring ended in 1998.

Site 015 is upwind of the town, schools, and the majority of the population. Furthermore, it is **upwind from all industrial activity.** The site was selected as a background monitor for DFW because of its upwind location and is not in a position to capture the majority of the local emissions; however, it could be useful in determining what blows in from the Houston area. **Metals and inorganics were measured here for only three years and these measurements were based on PM2.5.** The major contribution that data from this site gives to this study is a dilution of all constituents evaluated and a distortion of true public health impact.

Site 016 is in a position to capture some emissions from TXI and Chaparral Steel, but rarely Holcim and Ashgrove. **Unfortunately, metals and inorganic compounds were not sampled here.**

CAMS-302 (Site 0017). Placed almost directly west and just slightly north. This site is not in a prevailing wind pattern for any of the industries. Metals speciation was from PM10 – no TSP monitor.

The argument "...we expect the levels measured at the 4 primary sampling locations to be fairly representative of the upper range of levels to which the majority of the residents of Midlothian would be exposed" could hold weight: 1) if data was more representative of emissions from all industries (specifically Holcim and Ashgrove) and at monitoring sites established based on prevailing wind; 2) if all data was simultaneously collected to represent the same level of

industrial activity for a given period; and 3) if there were not so many inconsistencies in the data (example: metal sampling). Furthermore, readings captured at CAMS-94 (and possibly CAMS-302) should be disregarded when the wind is blowing out of the south. These readings do not capture community exposure and generally serve only to dilute true impact.

“...Since emission levels tend to drop off with distance from the emission..” This is not true of all emissions. Some constituents can stay aloft and travel for great distances and when and where they come down depends on many variables. For many constituents, it depends on what size PM to which they attach. Take lead (or any heavy metal) for example. Lead attached to the larger particulate matter (greater than PM10) has a tendency to settle in closer proximity (depending on wind speed) to the source while lead attached to PM2.5 becomes aerosol and can stay aloft indefinitely and travel long distances. If you were analyzing data collected on a TSP monitor, this statement could to some degree hold more weight. **Unfortunately no TSP monitoring took place at the sites listed above.**

“...Of course individual exposure concentrations will vary from day-to-day due to changes in emission levels, wind speed and direction, and the movement of people around the city.” While this is true, some locations are more heavily exposed to total emissions for longer periods of time than others. Locations located closer to Holcim and Ashgrove realize a higher impact of **total** emissions. Unfortunately, monitoring adequate to capture these exposures is severely limited and missing for many constituents (example heavy metals). There could be some logic in evaluating impact on communities within 1.5 miles of the individual monitoring sites – but only for those constituents that were adequately monitored and tend to settle close to the emission site. There are too many variances (created by time lapses, increases in production and TDF increases, lack of metal analysis, limited data capturing emissions from industries on north side of Midlothian, etc.) in monitoring sites to average across the board.

“...Consequently, we have averaged the sample results from all monitoring sites together..” Since when do people get exposed to “averages”? People are exposed to whatever is in the air at the time. What is the average “window of vulnerability” for a fetus?

Evaluating Exposure to Chemical Mixtures

While risk assessments often focus on identifying risks from single contaminant exposures, real-life situations such as the one in Midlothian involve the simultaneous exposure to multiple contaminants. Consequently, in addition to assessing the risks associated with exposure to individual contaminants, we also evaluated aggregate exposures from multiple contaminants for the Midlothian area, both for non-carcinogenic and for carcinogenic effects.

Simultaneous exposures to multiple chemicals may have additive effects (where the combined effect is equal to the sum of the effects of each agent alone), synergistic effects (where the combined effect is greater than the sum of the effects of each agent alone), or antagonistic effects (in which one substance interferes with the effects of another producing a less toxic effect), when compared to a single chemical exposure alone. In general, aggregate exposures to multiple chemicals at levels below their thresholds for minimal effects would, at most, be expected to produce a simple additive effect. Consequently, aggregate exposures to multiple chemicals were evaluated assuming an additive effect. It was also assumed that all compounds contributing to the exposure were elevated in unison and that people were exposed to all the chemicals at the same time.

Response: “Consequently, aggregate exposures were evaluated assuming an additive effect”? How does this tie in to your explanation of synergistic effects? Does “Consequently ...” mean consequently synergistic effects are not real? The bottom line is that total aggregate effects were

not really evaluated unless you have “assumed” synergistic effects and endocrine disruption activity are not possible.

Chemical Mixtures and Non-Carcinogenic Effects

To estimate the potential public health significance of simultaneous exposures to multiple chemicals, we tabulated all of the critical effects for each contaminant listed by the EPA on the Integrated Risk Information System (IRIS) database which were the basis for deriving the RfD or the RfC. We also tabulated all of the critical effects listed by the ATSDR in their Toxicological Profile series which were the basis for deriving their inhalation MRLs. The 95% UCL of the estimated average daily exposure dose was divided by the appropriate health-based value to calculate the 95% UCL on the Hazard Quotient (HQ) for a particular critical effect (e.g., CNS effects, developmental effects, liver toxicity, etc.). HQs from multiple contaminants known to produce critical effects of a similar nature or on the same organ system were summed to arrive at the Hazard Index (HI) for each critical effect as a result of exposure to the chemical mixture. Aggregate exposures with an HI less than 1.0 were considered to be without appreciable risk for adverse health effects. Aggregate exposures with an HI greater than 1.0 were subjected to further analysis to determine the potential public health significance. **Response: How are synergistic effects and endocrine disrupting activity factored into this formula?**

Chemical Mixtures and Carcinogenic Effects

To estimate theoretical excess lifetime cancer risks associated with simultaneous exposures to multiple carcinogens, we tabulated all of the cancer critical effects for each contaminant listed by the EPA on the IRIS database which were the basis for deriving the IUR or the oral slope factor (if applicable). For each contaminant, the 95% UCL on the estimated average daily exposure was multiplied by the IUR to calculate the theoretical lifetime risk of developing certain types of cancer (e.g., lung, liver, kidney, etc.), assuming a continuous, 70-year exposure. Risks from exposures to multiple contaminants known to produce the same type of cancer were summed to obtain an estimate of the total excess risk of developing that cancer as a result of exposure to the chemical mixture. Finally, all of the individual cancer risks were summed to obtain a cumulative cancer risk estimate. Aggregate exposures with a cumulative cancer risk estimate less than 1×10^{-4} were considered to be without appreciable risk for adverse health effects. Aggregate exposures with a cumulative cancer risk estimate greater than 1×10^{-4} were subjected to further analysis to determine the potential public health significance.

Response: How are synergistic effects and endocrine disrupting activity factored into this formula? If you have not factored in these two facets, do you believe you have scientifically evaluated aggregate exposures?

Child Health Considerations

In communities faced with air, water, or food contamination, the many physical differences between children and adults demand special emphasis. Children could be at greater risk than are adults from certain kinds of exposure to hazardous substances. Children play outdoors and sometimes engage in hand-to-mouth behaviors that increase their exposure potential. Children are shorter than are adults; this means they breathe dust, soil, and vapors close to the ground. A child's lower body weight and higher intake rate results in a greater dose of hazardous substance per unit of body weight. If toxic exposure levels are high enough during critical growth stages, the developing body systems of children can sustain permanent damage. Finally, children are dependent on adults for access to housing, for access to medical care, and for risk identification. Thus adults need as much information as possible to make informed decisions regarding their children's health.

Health-based assessment comparison values such as the MRLs, RfDs, and RfCs used in this health consultation are all based on the (1) assumption that there is an identifiable exposure dose for individuals including sensitive subpopulations (such as pregnant women, infants, children, the elderly, or the immunosuppressed) that is likely to be without appreciable risk for non-cancer health effects, even if exposure occurs for a lifetime. Each of these HAC values employs an uncertainty factor designed to account for human variability or sensitive subpopulations, including children. (2) With regard to CREG values and potentially increased carcinogenic risks for children, only one of the carcinogens observed in Midlothian air (vinyl chloride) is listed by the EPA as having a mutagenic mode of action. Using the recommended additional age-dependent adjustment factors of 10 for exposures occurring between birth and 2.0 years, and 3 for exposures occurring between the ages of 2.0 and 6.0 years, we would anticipate a 31.3% higher lifetime risk than that calculated by conventional methods.

- (1) This should read: "Though there is evidence to the contrary that an identifiable exposure dose of many toxins exists for individuals including sensitive subpopulations (such as pregnant women, infants, children, the elderly, or the immunosuppressed) that is likely to be without appreciable risk for non-cancer health effects, even if exposure occurs for a lifetime, we proceed in our assumptions as if there were." Note: prior discussions regarding lead. ATSDR has consistently flown in the face of science by condoning a blood-lead level of 10 ug/L as an acceptable level of lead poisoning though science has established (and CDC concurs) that it is not.
- (2) The point to this statement is obscure and the information is confusing. Are you saying that cancer is the only issue of concern for children? A large number of the toxins in Midlothian air are known fetotoxins, neurotoxins, endocrine disrupters, teratogens. Mercury, lead, arsenic, benzene, cadmium, chromium have all been associated with mutagenic effects. Safe levels for the fetus for most of these chemicals has not been determined.

Other

On page 29 under Results

Carbon tetrachloride was detected at quantifiable levels in 711 (7.46%) of the 952 ambient.... Did you mean 74.60% --appears to be a typo in both places within this paragraph

ADDENDUM
To
Prior Comments Submitted February 3, 2008

Midlothian Area Air Quality Part I:
Volatile Organ Compounds & Metals
December 11, 2007

Prepared by Sal and Grace Mier, Midlothian, Texas
As addendum to February 03, 2008 Comments
Date: March 09, 2008

Suggestions:

For reasons outlined in our prior comments, air monitoring data collected in Midlothian by TCEQ cannot be scientifically justified as adequate to determine public health implications. Therefore, it is suggested that Under Section **Results and Discussions** (starting on page 22 up through 67) all “Public Health Implications” based on this air monitoring data be removed.

Response to Petitioner and Community Health Concerns (starting on page 5): All responses reflecting an analysis based on TCEQ air monitoring data collected in Midlothian should be revised to reflect adequate data was not available to arrive at a scientific conclusion.

General Findings (page 8) should reflect that TCEQ air monitoring data collected in Midlothian was inadequate to arrive at a scientific conclusion of public health impact of toxic emissions in the air. All conclusions using TCEQ air monitoring data as a basis should be deleted.

Individual Contaminants – Non-Cancer Health Effects Evaluation (page 9): This section should reflect that TCEQ air monitoring data provided insufficient data to evaluate non-cancer health effects. All analyses based on TCEQ data should be deleted.

Individual Contaminants – Cancer Health Effects Evaluation (page 9): This section should reflect TCEQ air monitoring data collected in Midlothian was inadequate to arrive at a scientific conclusion of public health impact of toxins in the ambient air. All analysis based on TCEQ air monitoring data should be deleted.

Aggregate Exposures – Non-Cancer Health Effects (page 9): This section should reflect that due to absence of critical data such as dioxin/furans, VOCs, heavy metals (especially mercury and lead), questions regarding critical windows of vulnerability, questions regarding endocrine disruptive activity and the overall inadequacy of the air monitoring data, aggregate exposures and the impact on public health could not be scientifically evaluated.

Aggregate Exposures – Cancer Health Effects (page 10): This section should reflect that due to absence of critical data such as dioxin/furans, heavy metals (especially mercury and lead), questions regarding critical windows of vulnerability, questions regarding endocrine disruptive activity and the overall inadequacy of the air monitoring data, aggregate exposures and the impact on public health could not be scientifically evaluated. (Note: Estimate on cancer risks considering only chromium(VI) is understated.

Overall Conclusions (page 10):

Basis for classification of an “Indeterminate Public Health Hazard” should be revised to reflect all deficiencies that preclude a scientific public health evaluation. Inadequacy of TCEQ air

monitoring data for assessing public health precludes such statements as, “We found majority of risks associated with exposure to chemicals analyzed in this health consultation as low.” All conclusions and inferences relating to public health based on the TCEQ air monitoring data should be removed.

1. Paragraph 1. It should be reflected that the number of VOCs and metals exceeding background levels could be significantly higher if adequate air monitoring data were available.
2. Paragraph 2. “..Under the aggregate exposure scenario, total excess lifetime cancer risk for all cancers combined could be interpreted as posing a public health hazard...” **This scenario is understated by inferring that this interpretation is based on the assumption that all chromium detected in the air is chromium(VI). A major omission is the impact of the deadliest of all man-made toxins – dioxins/furans. The statement regarding a possible public health hazard should reflect this omission. This statement should also reflect an assumption was made that all data reviewed adequately reflected a complete picture of toxic exposure (which it does not) and there are no synergistic effects of these aggregate exposures. (Have other pathways for exposure such as dermal or ingestion been factored in?)**
3. Paragraph 3. The adequacy of the EPA NAAQS to capture true public exposure and adequacy for evaluating public health should be scientifically evaluated before proceeding.
4. Paragraph 4. ATSDR should request assistance of a reliable independent scientist for help in evaluating the TCEQ Midlothian air monitoring for adequacy of capturing public impact and for adequacy in evaluating the public health of the community. An assessment for the need for additional and appropriate monitoring could also be recommended.

Recommendations (Page 11):

Please recommend that TCEQ establish a monitoring system that captures a complete picture of toxic emissions from all sources and data adequate for monitoring public health.

Actions Under Way (page 12):

Action to effectuate an adequate monitoring system in Midlothian should be undertaken. DSHS should discuss with TCEQ a methodology for establishing a monitoring system that captures emissions from all major sources and produces data adequate for monitoring public health.

Conclusions (Starting on page 72):

All findings should reflect the inadequacy of TCEQ air monitoring data to capture total emissions and the inadequacy for evaluating public health. All findings based on this inadequate data should be withdrawn.

Aggregate Exposures – Non-Cancer Health Effects (page 73)

The CNS/neurological effects are grossly understated. How were dioxins factored in? How were synergistic effects factored in? Up-wind readings for mercury give you for all intent and purpose zero data on mercury. By the sheer nature of the cement industries and incineration of hazardous waste and tire-derived fuel, you know that the emissions of these toxins are significant. It is not becoming of an agency charged with public health to make such a deficient statement. This statement should be revised to reflect the deficiencies in the data reviewed.

Below are corrections to statements made in our original comments submitted on February 3, 2008. It is requested that you substitute statements as amended below. The change is highlighted in yellow.

On page 5 in paragraph (3) the reference to the time benzene exceeded the CREG, the sentence should read as follows:

At all three sites (0007, 0015, 0016) the CREG was exceeded 94%, 98%, 99% (respectively) of the time with spikes up to 118, 512, 319 (respectively) times higher than the CREG.

On page 11 under response to item 3, the first sentence should read:

Statements like "... had one or more level above the most conservative contaminant-specific cancer screening value..." although technically true, sound so trivializing, especially when the data shows that benzene levels exceeded this "most conservative screening value" over 97% of the time.

On page 19 under paragraph in first paragraph (1) response, sentence should read: However VOC collection on Tayman Drive indicated that 94% of the benzene emissions exceeded the CREG values and benzene emissions spiked to an acute chronic inhalation RfC of 20.57 ppb in May 1995.

During these last couple of years, there has been much speculation in the community regarding the delay of this report. The initial anticipated completion period of 3 months was stretched to 6 months, and then went on indefinitely for over two years on an apparent merry-go-round between TDSHS and ATDSR.

Speculation for the delay ranged from "possible political interference" to "a delay is a form of non-response – a method to keep the community at bay for as long as possible." TDSHS' reason for delay was, "The data was so comprehensive that it would take a very long time to complete the analyses."

It was obvious to the community from the onset that based on the positions of the air monitors, data collected by TCEQ would not be adequate for assessing public health. It was our naïve hope that adequate data based on sound science was being collected. As it turned out, this was not the case. This consultation was based on readily available data that could be pulled into Access and/or Excel databases along with the comparison data and easily manipulated to generate the results provided in this report. Readily available references were used. Prior TDSHS documents should have been easily accessible. Community visits were completed in the first 3 months. Can you provide some logic to the delay? Or was this delay just an effort to keep the community pacified and at bay?

Final Comment:

We truly appreciate the fact that ATSDR/TDSHS acknowledged that a finding less than an “Indeterminate Public Health Hazard” is not appropriate. However, the basis for this finding omits the most glaring and pertinent deficiencies – the lack of valid data to make an appropriate health assessment of any kind. Premature assessments (based on deficient air monitoring data) of a finding of “no apparent health hazard” for many of the constituents evaluated in this consultation are very disconcerting.

I refuse to be so cynical to imply that ATSDR/TDSHS are not concerned about public health, because there are many professionals working for these agencies who have demonstrated their commitment. However there appears to be a pervasive institutionalized philosophy and culture that does not allow public health issues to surface if they will trump economic and industrial goals. Your agencies, professionals and the communities to which you have a public health obligation deserve better than this.

Honorable Brad Miller, Chairman
Congressional Subcommittee Hearing on Investigations and Oversight
U.S. House Committee on Science and Technology
2321 Rayburn House Office Building
Washington, D.C. 20515
THURSDAY MARCH 12, 2009

Written Testimony of Neil J. Carman, Ph.D.
Former State of Texas Air Pollution Control Agency Regional Field Investigator of
Industrial Plants Including Portland Cement Kilns and Waste Incinerators in 1980s-90s

The EPA's Sham (Bifurcated) Hazardous Waste Combustor MACT Rule and Enforcement Failures by EPA and State of Texas are Related to Health Hazards from Toxic Waste Incineration in Cement Kilns at Midlothian, Texas

The sham EPA MACT rule for toxic waste incineration has created a tragic mess for communities like Midlothian, Tx. In addition, State and EPA enforcement failures have led to over a decade of unsafe air pollution and plant upsets impacting citizens close to Midlothian cement kilns that are allowed to incinerate up to 200 million pounds a year of hazardous waste. Known kiln stack air pollutants include carcinogenic metals. Result is Midlothian residents have been living a fifteen-year toxic nightmare created by broken regulatory systems at EPA and State of Texas both failing to fix dirty air problems. As a former State of Texas air pollution investigator, the Midlothian situation is as appalling as I have encountered in thirty years of environmental work in Texas and other states.

Egregious toxic air pollution is due to a bad MACT rule and laxness in fixing the upsets (24-hour baghouse failures) at Texas Industries, Inc's (TXI) four cement kilns burning hazardous waste as fuels. In 1996, EPA made a regretful decision to allow cement kilns to serve as commercial hazardous waste incinerators and, in hindsight, EPA's decision was exceptionally poor public health policy for communities like Midlothian's. It led to a serious failure under the Clean Air Act and RCRA to protect public health. Adding to bad MACT rulemaking is EPA and Texas officials turned a blind eye to years of repeated citizen complaints of health problems, alleging something was rotten at TXI's plant because residents and their animals suffered serious illnesses and their animals often died prematurely. Unsafe levels of air pollution such as toxic metals and other substances from TXI's poorly regulated toxic waste incineration are the primary suspect in my opinion.

Incineration of wastes is a dangerous activity, but even more dangerous is cement kilns incinerating hazardous waste under sham MACT rules. Hazardous waste incineration is inherently dangerous, because combustion of such waste produces thousands of toxic byproducts spewed into the air. Cement kilns were not designed, built or intended for use as commercial toxic waste incinerators since EPA has a RCRA program for permitting of toxic waste incinerators. Cement kilns are designed to make cement and possess different designs and operations from dedicated hazardous waste incinerators. The EPA needs new MACT standards and strict enforcement to fix its egregious 1996 MACT mistake.

Why are Cement Kilns unsafe to communities as quasi-hazardous waste incinerators?

Cement kilns were authorized by EPA in a 1996 MACT rule to run under weaker, less protective MACT standards for Hazardous Waste Combustors (HWC) compared to hazardous waste incinerators. By bifurcating the MACT rule and adopting weaker incineration rules for cement kilns, EPA turned a small group of Cement plants (less than 20% in US) into dangerous toxic waste incinerators with higher mass emissions of toxic substances than more stringently regulated hazardous waste incinerators. The MACT HWC rule set standards for Hazardous Air Pollutants such as mercury, arsenic, cadmium, chromium VI, lead, dioxins, chlorine, total hydrocarbons (CO), particulate matter, DRE of 99.99%, opacity, etc. Cement kilns raced to get RCRA permits to burn toxic waste.

Cement kilns burn up to 1,000 degrees hotter than incinerators and a concern is they may burn too hot for metals causing higher mass emissions due to greater metal volatility at higher temperatures. Adding to this concern is TXI had several baghouse failures lasting for hours, and in my view higher toxic metal emissions would have likely occurred. Exposure to toxic metals is consistent with some health problems reported at Midlothian.

March 2009 Status of EPA's Hazardous Waste Combustor MACT rule:

(1) EPA's HWC rule is currently under review after Federal Court litigation resulted in a remand back to EPA for agency action to fix the sham HWC MACT rule;

(2) EPA having admitted that more than half the MACT emission standards that the HWC rule contains are unlawful, the agency is now deciding whether to defend the rest or take the whole HWC rule back to fix it;

(3) one of the issues raised in the HWC MACT rulemaking is whether EPA should keep the specially lenient standards that allow cement kilns to burn hazardous waste; and

(4) EPA deliberately set MACT standards at a level that would ensure new hazardous waste burning kilns would be built to keep burning hazardous waste.

In my thirty years professional experience investigating industrial plants and community health complaints from neighborhoods and downwind residents, I interacted with many communities in Texas seeing first hand how air pollution harms communities. I observed that toxic waste burning cement kilns like Midlothian's are especially dirty facilities spewing out a dangerous soup of toxins, known carcinogens, and harmful chemical mixtures that are poorly known for human health effects. Arsenic, aluminum, cadmium, chromium, lead, mercury, nickel and selenium are among toxic heavy metals emitted by TXI due to receipt of bulk hazardous waste and its incineration.

Conclusion: As a former Texas investigator with 12 years inspecting over 200 industrial plants a year including waste incinerators and cement kilns, I regard incineration as a dangerous activity based on investigations of incinerators with problems while working for the State of Texas air pollution control agency. Even more dangerous is cement kilns incinerating toxic wastes classified as "hazardous waste" by EPA. EPA needs to set more stringent MACT rules for all Hazardous Waste Combustors, and notably cement kilns and protect public health in these badly impacted communities. Note attached list of toxic substances associated with hazardous waste incineration.

**Volatile Organic Compounds, Metals and Criteria Air Pollutants Potentially
Emitted by Hazardous Waste Incineration**

I. 115 Volatile Organic Compounds = Products of Incomplete Combustion (PICS)

| | |
|--|---------------------------------|
| Acetone (1) | Benzoic Acid (8) |
| Acetonitrile (2) | Bis(2-ethylhexyl phthalate) (9) |
| Acetophenone (3) | 1-Bromodecane (10) |
| Benzaldehyde (4) | Bromofluorobenzene (11) |
| Benzene (5) | Bromoform (12) |
| Benzenedicarboxaldehyde (6) | Bromomethane (13) |
| Benzenofuran (7) | Butylbenzyl phthalate (14) |
| Carbon tetrachloride (15) | 1-Chlorohexane (23) |
| Chlorobenzene (16) | Chloromethane (24) |
| 1-Chlorobutane (17) | 1-Chlorononane (25) |
| Chlorocyclohexanol (18) | 1-Chloropentane (26) |
| 1-Chlorodecane (19) | Cyclohexane (27) |
| Chlorodibromomethane (20) | Cyclohexanol (28) |
| 2-Chloroethyl vinyl ether (21) | Cyclohexene (29) |
| Chloroform (22) | |
| 1-Decane (30) | 1,1-Dichloroethylene (38) |
| Dibutyl phthalate (31) | Dichlorodifluoromethane (39) |
| Dichloroacetylene (32) | Dichloromethane (40) |
| Dichlorobromomethane (33) | 2,4-Dichlorophenol (41) |
| 1,2-Dichlorobenzene (34) | Diethyl phthalate (42) |
| 1,4-Dichlorobenzene (35) | Dimethyl ether (43) |
| 1,1-Dichloroethane (36) | 3,7-Dimethyloctanol (44) |
| 1,2-Dichloroethane (37) | Diethyl adipate (45) |
| Ethenylethylbenzene (46) | Ethylphenol (50) |
| Ethylbenzaldehyde (47) | (Ethylphenyl)ethanone (51) |
| Ethylbenzene (48) | Ethynylbenzene (52) |
| Ethylbenzoic acid (49) | Formaldehyde (53) |
| Heptane (54) | Methylcyclohexane (60) |
| Hexachlorobenzene (55) | Methyl ethyl ketone (61) |
| Hexachlorobutadiene (56) | 2-Methyl hexane (62) |
| Hexanal (57) | 3-Methyleneheptane (63) |
| 1-Hexene (58) | 3-Methylhexane (64) |
| Methane (59) | 5,7-Methylundecane (65) |
| Naphthalene (PAH) (66) | Nonanol (68) |
| Nonane (67) | 4-Octene (69) |
| Pentachlorophenol (70) | Phenol (74) |
| Polychlorinated Biphenyls (PCBs) (71) | |
| Polychlorinated dibenzo-p-dioxins (PCDDs) (72) | |
| Polychlorinated dibenzofurans (PCDFs) (73) | |

I. 115 Volatile Organic Compounds = Products of Incomplete Combustion (PICS)

| | |
|--------------------------------|---------------------------------------|
| Pentanal (75) | Phenylacetylene (76) |
| Phenylbutenone (77) | 1,1'-(1,4-Phenylene) bisethanone (78) |
| Phenylpropenol (79) | Propenyl methylbenzene (80) |
| 1,1,2,2-Tetrachloroethane (81) | Trichloroethylene (89) |
| Tetrachloroethylene (82) | Trichlorofluoromethane (90) |
| Tetradecane (83) | Trichlorotrifluoroethane (91) |
| Tetramethyloxirane (84) | 2,3,6-Trimethyldecane (92) |
| Toluene (85) | Trimethylhexane (93) |
| 1,2,4-Trichlorobenzene (86) | 2,3,5-Trichlorophenol (94) |
| 1,1,1-Trichloroethane (87) | |
| 1,1,2-Trichloroethane (88) | |
| Vinyl chloride (95) | |

I. 115 Volatile Organic Compounds: 20 Polycyclic Aromatic Hydrocarbons (PAHs) detected with Hazardous Waste Fuel Use:

| | |
|------------------------------|-------------------------------|
| Acenaphthylene (96) | Fluoranthene (106) |
| Acenaphthene (97) | Fluorene (107) |
| Anthracene (98) | Indeno(1,2,3-c,d)pyrene (108) |
| Benz(a)anthracene (99) | Naphthalene (109) |
| Benzo(a)pyrene (100) | Phenanthrene (110) |
| Benzo(b)fluoranthene (101) | Pyrene (111) |
| Benzo(k)fluoranthene (102) | Phenanthrene (112) |
| Benzo(g,h,i)perylene (103) | Perlyene (113) |
| Chrysene (104) | 2-Chloronaphthalene (114) |
| Dibenzo(a,h)anthracene (105) | 2-Methylnaphthalene (115) |

II. 16 Metals Emitted Depending on Characteristics of the Hazardous Waste Fuel Use:

| | |
|-----------------|-----------------|
| Antimony (116) | Lead (124) |
| Arsenic (117) | Manganese (125) |
| Barium (118) | Mercury (126) |
| Beryllium (119) | Nickel (127) |
| Cadmium (120) | Selenium (128) |
| Chromium (121) | Silver (129) |
| Cobalt (122) | Thallium (130) |
| Copper (123) | Zinc (131) |

III. Criteria Pollutants Associated with Hazardous Waste Fuel Use:

| |
|--|
| Sulfur dioxide (132) |
| Carbon Monoxide (133) |
| Soot/Smoke - Fine Particulate matter PM2.5 (134) |
| Nitrogen oxides (135) |
| Volatile Organic Compounds (1 - 115 and others unidentified) |

NOT “JUST STEAM”
A Review of “Emissions Data from Midlothian Industry”
For the Texas Senate Natural Resources Committee,
September 9th, 2008

In the summer of 2008 Amanda Caldwell and Susan Waskey, two University of North Texas Geography graduate students, did something no one had previously done. They added up all the emission reports submitted to state and federal government by the three cement plants and adjacent steel mill in Midlothian. Their report, “Midlothian Industrial Plant Emission Data” was the first to try to document the cumulative impact from what is the largest concentration of smokestack industries in North Texas.

Although there has been an operating cement plant in Midlothian since 1960, emission data was only available from the state beginning in 1990, and from the EPA beginning in 1988. The last available data from both sources is currently 2006. Besides providing an idea of the total pollution burden imposed by these facilities for the first time, Caldwell and Waskey also spotlight the differences in reported volumes of air pollution when industry submits emissions reports to the state versus the federal governments. The two databases reveal some interesting contrasts in tracking 16 years of air pollution emissions that call for closer examination.

Caldwell and Waskey’s work definitively puts to rest the oft-repeated unofficial explanation by the companies and their boosters that that plant’s emissions are “just steam.” In fact, pollution from the smokestacks of these facilities is the largest industrial threat to public health in North Texas, and has been for decades.

1. The Facilities

Texas Industries, Inc. (TXI) cement plant

One dry kiln

Four wet kilns

Fuel: coal, hazardous waste, permitted for tires

Holcim US Inc. cement plant

Two dry kilns

Fuel: coal, tires, oil filter fluff, petroleum coke, used oils

Ash Grove Texas L.P. cement plant

Three wet kilns

Fuel: coal and tires

Gerdau Ameristeel, (formally Chaparral Steel)

Electric Arc Furnace Steel Mill

2. The Emissions Reports

A) USEPA’s Toxic Release Inventory (TRI)

Toxic Release Inventory reports are generated by industries as required by the Emergency Planning and Community Right-to-Know Act (EPCRA), enacted in 1986. According to the EPA,

“EPCRA's primary purpose is to inform communities and citizens of chemical hazards in their areas. EPCRA Section 313 requires EPA and the States to annually collect data on releases and transfers of certain toxic chemicals from industrial facilities, and make the data available to the public in the Toxics Release Inventory (TRI).....EPA compiles the TRI data each year and makes it available through several data access tools, including the TRI Explorer.” (USEPA 2008)

The release data used in this project are self-reported by each facility, and neither the quality of the data, nor the quantities reported should be assumed to be precisely accurate

Caution should be taken in interpreting trends from the TRI reports as the list of “reportable” chemicals has changed over the years. Since its inception in 1987, the list of toxic chemicals that must be reported has doubled to more than 650, with most of the additions occurring in 1995. Also, numerous changes have been made to the list, including de-listing some chemicals and modifying reporting thresholds of others.

B) Texas Commission on Environmental Quality’s Annual Contaminant Summary Reports

The second half of the data collection effort was focused on the state of Texas’ *Contaminant Summary Reports*. Again, like the federal data, 2006 is the latest reporting year for which data are available. Reported data earlier than 1990 do not exist from the state, according to a conversation with the Emissions Assessment Section Manager at TCEQ. Data was also not collected in 1991 at the state level, for reasons not readily known to the TCEQ manager.

The *Contaminant Summary Report* contains data detailed in three sections: Criteria Emissions Total, Contaminant Summary Report, and Hazardous Air Pollutants (HAPS) Summary Report. The Criteria Emissions Total section lists data for seven “Pollutant Classes”, namely:

- PM2.5 – suspended particulate matter of a size 2.5 microns or less (requirement added in 2000),
- PM10 – suspended particulate matter of a size 10 microns or less,
- VOC – volatile organic compounds,
- CO – carbon monoxide,
- NOX – nitrous oxides,
- SO2 – sulfur dioxide, and
- PB – lead.

These requirements originate from the National Ambient Air Quality Standards (NAAQS), established by the USEPA under the direction of the Clean Air Act, and annual reporting is further required under the Texas Clean Air Act.

The Hazardous Air Pollutants (HAPS) Summary reports chemicals for which both the federal and state Clean Air Act requires annual reporting. Data from both the Criteria Emissions Total and HAPS Summary Report were included in this report. The third section titled “Contaminant Summary Report” is a catch-all listing of chemicals required by a mix of requirement, sources, including Criteria Emissions, HAPS, permit, and other requirements, according to the TCEQ manager Kevin Cauble. Chemicals unique to this listing are **not** included in this project’s analysis.

3. The Volume of Pollution

Between 1990 and 2006, the three cement plants and steel mill reported to state and/or federal government that their facilities released approximately one billion pounds – 986,509,069 - of harmful air pollution into the North Texas skies, including:

10,000 pounds of Mercury

91,000 pounds of lead

Over 7 million pounds of “EPA-classified toxic” air pollution

Approximately 35 million pounds of respirable Particulate Matter

Over 134 million pounds of global warming gases

Over 300 million pounds of smog-forming Nitrogen Oxide

Approximately 400 million pounds of acid rain causing Sulfur Dioxide

That’s an average of over 61 million pounds of air pollution released every year, 7000 pounds an hour, 117 pounds per minute, 2 pounds per second over 16 years. And yet, the position of the Texas Committee on Environmental Quality is that Midlothian has some of the cleanest air in the state.

Because it’s heavier than the gaseous pollution released by the Midlothian plants, Particulate Matter contaminated with metals and other combustion residues will usually fall out within 10 miles of the source, with the heaviest concentrations in the areas most consistently downwind of the cement plants, or in very close proximity of the plants themselves.

A 10-mile radius around the Midlothian cement plants would include portions of Arlington, Cedar Hill, DeSoto, Grand Prairie, Mansfield, Midlothian, Red Oak, and Venus, and incorporate 314 square miles.

34,903,092 pounds of PM10, or soot, from all four facilities is enough to deposit 111,156 pounds on each square mile in that 10-mile radius over the last 16 years.

Almost all of the Lead and Mercury released by the cement plants is emitted as Particulate Matter pollution. 91,000 pounds of lead is enough to deposit 289 pounds of the poison on each square mile. 10,103 pounds of Mercury is enough for 32 pounds to be deposited on each square mile in that same area.

334,816,276 pounds of Nitrogen Oxide is the equivalent smog-forming pollution from the annual emissions of nine million automobiles.

402,516,432 pounds of Sulfur Dioxide is the equivalent to the SO_x released by 20 coal plants in a year.

4. Toxicity of Selected Pollutants

A) Particulate Matter, or soot, is toxic in its own right, more so when other toxins are hitching a ride on its surface - almost all of the Lead and Mercury released by the cement plants is emitted as Particulate Matter pollution. Soot from engines, or industrial processes like cement manufacturing is much smaller than the sand dust or fire soot which evolution equipped human beings to expel. Because it’s smaller it remains deep in the lungs, doing damage.

In the last few years, PM pollution has been linked by scientists to lung damage, asthma, heart attacks, strokes, blood clots, brain cancer, genetic damage, and Parkinson’s Disease. Toxicologists specializing in PM pollution believe to be no “safe” level of exposure to PM pollution.

B) Mercury does not decompose or exit the environment once it's been released into the atmosphere. It is deposited back onto the ground, where it persists in soil and water, and bioaccumulates in fish and wildlife.

According to leading scientists, as little as 1/24th of an ounce of Mercury can contaminate a 20-acre lake and all the fish in it. Using this measuring stick, 10,000 pounds of Mercury is enough to contaminate over 133,000,000 20-acre lakes. Joe Pool Lake is within five miles of all the Midlothian cement plants and steel mill, and the closest plant is within two miles of the Lake.

C) Lead and lead compounds can be highly toxic when eaten or inhaled. Although lead is absorbed very slowly into the body, its rate of excretion is even slower. With constant exposure, lead accumulates gradually in the body. It is absorbed by the red blood cells and circulated through the body where it becomes concentrated in soft tissues, especially the liver and kidneys. Lead can cause lesions in the central nervous system and apparently can damage the cells making up the blood-brain barrier that protects the brain from many harmful chemicals. Most of the leading scientists specializing in lead poisoning believe there is no safe level of exposure to lead – that is no level that is not capable of causing some neurological or physiological effect.

D) According to the Agency of Toxic Substances and Disease Registry, long-term exposure to Sulfur Dioxide

“can affect your health. Lung function changes were seen in some workers exposed to low levels of sulfur dioxide for 20 years or more. However, these workers were also exposed to other chemicals, so their health effects may not have been from sulfur dioxide alone. Asthmatics have also been shown to be sensitive to the respiratory effects of low concentrations of sulfur dioxide.

Animal studies also show respiratory effects from breathing sulfur dioxide. Animals exposed to high concentrations of sulfur dioxide showed decreased respiration, inflammation of the airways, and destruction of areas of the lung.

5. Specific Plants and Pollutants

“Criteria Air Pollutants” as reported to the state of Texas 1990-2006 **In Pounds**

| | TXI | Holcim | Ash Grove | Ameristeel |
|--------|-------------|-------------|-------------|------------|
| PM 2.5 | 2,134,389 | 5,046,097 | 3,323,425 | 2,305,006 |
| PM 10 | 9,390,498 | 8,622,812 | 12,416,103 | 4,473,678 |
| VOCs | 2,054,302 | 10,871,857 | 2,054,302 | 7,712,107 |
| CO | 25,794,554 | 94,523,052 | 13,891,342 | 57,371,754 |
| NOx | 143,073,757 | 79,430,708 | 96,899,096 | 15,412,715 |
| SOx | 154,531,598 | 109,471,684 | 135,685,591 | 2,827,559 |

| Individual Criteria Air Pollutant Totals | 1990-2006 | In Pounds |
|--|-------------|-------------------|
| PM 10 | 34,903,091 | (PM 2.5 included) |
| VOCs | 22,692,568 | |
| CO | 191,580,702 | |
| NOx | 334,816,276 | |
| SOx | 402,516,432 | |

TOTAL Criteria Air Pollutants Released 1990-2006 In Pounds
986,509,069

A) TXI

TOTAL AIR POLLUTION 1990-2006:
336,979,556 pounds

TXI is the largest cement plant, and largest industrial facility among the four examined in this analysis, so it's not surprising it would lead in total pollution.

In general, the amount of TRI chemicals released to the environment through the air by TXI spiked in the year 2000, to over 1.2 million pounds.

This coincided with TXI's bringing the fifth cement kiln into operation at their Midlothian plant. Subsequently, TRI releases stabilized at a level lower than one million pounds after 2000, but at a significantly higher rate than in the past (more than 480,000 lb/yr).

In 1999, reporter Steve Brown wrote in *The Dallas Morning News* that TXI had promised that this \$200 million expansion to add the 5th kiln to their operation "would not increase pollution", and it would "have advanced pollution controls that would keep the project from harming air quality" (Brown 1999). The data from both the EPA Toxic Release Inventory and the state Hazardous Air Pollutants reports show a different outcome. Air releases from both reports are higher than prior to 2000.

B) Holcim

TOTAL AIR POLLUTION 1990-2006:
307,966,836 pounds

Holcim's TRI releases and state emissions inventory consist mostly of Toluene (404,288 lbs.), Benzene (232,109 lbs.), Sulfuric Acid (172,145 lbs.) and unspecified/mixed Xylenes (145,982 lbs.). Holcim has also had lesser amounts of on-site landfill releases over the years.

Holcim's state air emissions (HAPS emissions consist mostly of Toluene (508,429 lbs.), Benzene (329,279 lbs.), Xylenes (248, 103 lbs.), and Hydrochloric Acid (196,566 lbs.).

C) Ash Grove

TOTAL AIR POLLUTION 1990-2006:
263,141,444 pounds

Ash Grove's toxic air emissions consist mostly of sulfuric acid (872,185 lbs) and hydrochloric acid (171,473 lbs). On-site landfill releases are also of note, consisting mostly of Magnesium and Magnesium Compounds (1,903,018 lbs.), and smaller amounts of Chromium (34,464 lbs.) and Lead (8224 lbs.).

The state Air Emissions Inventory (HAPS) shows that most prevalent toxic chemical released over the 17-year reporting period was Hydrogen Chloride (334,655 lbs.) Ash Grove's state Criteria Emissions Releases show that Sulfur Dioxide (SO_x) and Nitrous Oxides (NO_x) were the most prevalent components of these emissions. Furthermore, there is a discouraging upward trend in released amounts of Sulfur Dioxide during the recent past.

What remarkable about Ash Grove's numbers are that they're so large for the smallest cement plant. It has more SO_x, NO_x and PM₁₀ than Holcim, which is twice its size.

D) Ameristeel

TOTAL AIR POLLUTION 1990-2006:

89,655,098 pounds

Most air releases were Zinc (352,076 lbs), Lead (47,238 lbs) or Manganese (46,904 lbs). Chaparral's releases are primarily "off-site", with zinc releases over the 17-year period approaching 50 million pounds.

The state air emissions inventory (HAPS) consist mostly of Manganese Dioxide (58,609 lbs.) or PM₁₀-Manganese Dioxide (72,583 lbs.), and Lead Oxide (50,337 lbs.) or PM₁₀-Lead Oxide (38,237 lbs.). The Nitrous Oxide (NO_x) component of those emissions seems to be holding steady at one million pounds per year

6. These are Underestimates

The fact that there is absolutely no emissions data from either EPA or the state for the first 30 years of industrial operations in Midlothian – including the first four years of hazardous waste-burning at two cement plants - means that the large numbers reported here for the first time are inherently vast underestimates of the total pollution burden produced by heavy industry in the town since 1960. This is anything but a comprehensive review.

Even when records begin in 1990, there are large discrepancies in the data reported to both the state and federal governments. TRI and state emissions data for several of the companies were not reported for many of the years during the project time period:

Chaparral did not report TRI data in 1990.

Holcim did not report TRI data for the years 1990 -1999.

Ash Grove did not report TRI data for the years 1990 and 1993-1995.

Holcim did not report Hazardous Air Pollutants data to the state for the years 1990 – 1999.

It is unlikely that these facilities were not releasing anything worthy of reporting to either the USEPA or state databases during these years. Omissions such as these ensure that, even during the period when records do exist, this analysis only gives a glimpse into the actual pollution burden caused by the four facilities,

7. Contradictions in Data

A cursory examination of EPA air release data in Figure 56 (Total Air Releases per Firm 1990-2006) and TCEQ air release data in Figure 60 (Total Hazardous Air Pollutants per Firm 1990-2006), show strikingly different results. For this reporting period, the EPA data shows TXI to be the firm with the largest amount of toxic chemicals released to the air (5,287,384 lbs.), while the state's data show Holcim to be the largest emitter of hazardous air pollutants (1,507,663 lbs).

According to the plants' TRI reports, there were almost 48,000 pounds of lead air pollution released by all four facilities over the entire 16 years, versus the over 90,000 pounds of lead the same plants reported sending up their stacks to the TCEQ and its predecessors during the same period.

According to the plant's TRI reports, there were approximately 5000 pounds of Mercury air pollution released by all four facilities from 1990 to 2006 versus the approximately 10,000 pounds of Mercury air pollution reported to the state over the same time.

Even within the same reporting system, the method used to calculate or estimate reported quantities for various chemicals may have differed from firm to firm and year to year, making comparisons or trend analysis difficult. Take the case of Volatile Organic Compounds at the cement plants that are literally across the street from each other. When Holcim finally began reporting volumes for TRI in 2000, it immediately cited large numbers for VOCs such as Toluene, Xylene, and Benzene. It has been Holcim's position that these VOCs come from the limestone itself and testing done over the last three years generally supports this conclusion. On the other hand, neither TXI nor Ash Grove have ever reported the large numbers of these VOCs that Holcim has, despite mining and using the same Midlothian limestone. The result is that even though Holcim did not report ANY emissions for nine of the 16 years covered in this analysis, it is the largest historical VOC polluter in the study, with VOC totals that are at least five times that of the next cement plant. Is Holcim's limestone that much different than the other two plants, or are TXI and Ash Grove under-reporting their emissions?

Some of these calculation differences could be investigated further, as could the apparent reporting gaps (missing data) from some of the firms. Also, the company-to-company differences in what chemical substance get reported in which section of the annual report to the state could be evaluated. Those chemicals from the state's "Contaminant Summary Report" block that are not included in the HAPS or Criteria Emissions blocks of data could also be scrutinized for inclusion in this dataset.

Executive Summary

Extracted From

Evaluation of The Screening Risk Analysis for the Texas Industries (TXI) Facility In Midlothian, Texas

**Written by the Texas Natural Resource Conservation
Commission
And Other Materials Related to the Texas Industries Facility**

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Following are photocopies of the Executive Summary for this document

1. Executive Summary

This report critically reviews the Screening Risk Analysis for the Texas Industries (TXI) Facility in Midlothian, Texas and other materials related to the Texas Industries (TXI) facility, the most important of which is the Critical Evaluation of the Potential Impact of Emissions From Midlothian Industries: A Summary Report. Both documents were written by the Texas Natural Resources Conservation Commission (TNRCC) and released November, 1995.

TXI has been producing cement since 1960 in the town of Midlothian located 30 miles southwest of Dallas, Texas. Since the late 1980's, TXI has become one of the nation's largest hazardous waste combustion facilities accepting off-site or "commercial" hazardous waste. Midlothian also contains a steel recycler and two other large cement-producing facilities. These facilities have also burned waste and tires as fuel. Most of this report focuses on TXI, although some portions provide a broader perspective. This report also presents several de novo analyses, including dispersion modeling, risk assessment and data interpretation.

This report draws on a variety of source materials, including permits, guidance materials, the Federal Register and other regulatory and compliance information, and much of the public record including correspondence involving the public, TXI, TNRCC, and EPA obtained in several visits to TNRCC. Telephone conversations with Midlothian residents were also held.

While this report is lengthy, it is not exhaustive and not every aspect of the TNRCC's analysis could be examined in-depth. In cases, the scope of this report did not permit any coverage. Still, this report addresses many factors that affect the determination of public health and environmental impacts in the Midlothian area. In cases, a more thorough review and critique of several topics is provided than has been performed by the TNRCC in any available report. This review was made difficult due to the lack of information in the Screening Risk Analysis and the Summary Report. (This report reproduces critical data which should have been presented in the Screening Analysis and Summary Report by TNRCC, e.g., soil concentrations and emission data.)

The Screening Risk Analysis and the Summary Report are useful starting points for prioritizing future studies and actions aimed at protecting public health and the environment. However, if viewed as "technical support" documents to justify TNRCC declarations of no substantial risk to public health due to pollution in Midlothian, they must be criticized due to their many serious omissions, inconsistencies, and inadequate or misleading analyses. Substantial deficiencies include the use of inappropriately low or unreliable emission rates (especially for arsenic, benzo(a)pyrene, beryllium, dioxin/furans, and mercury), the omission of many compounds specified in EPA guidance (e.g., antimony, barium, silver and thallium in the direct exposure pathway, and cadmium and chromium in the indirect pathway), the omission of fugitive emission

sources (e.g., cement kiln dust), the omission of the effect of documented kiln upsets (estimated to lead to upper-bound particulate emission rates 20 to 40% higher than reported), the omission of the drinking water pathway, some incorrect model parameters (e.g., omission of soil/water partition coefficient for lead), and many erroneous interpretations of model results and available data.

The omission of many hazardous compounds and the selective use of available emission data, among other reasons, mean that the Screening Risk Analysis has not evaluated or has improperly evaluated some of the potentially largest chemical causes of cancer and noncancer risks. Additionally, the TNRCC estimated, but omitted from the Screening Risk Analysis, relatively high risk estimates for on-site TXI property which is being used for agricultural purposes.

In the unequivocal conclusions drawn in the TNRCC reports, technical data and results are interpreted narrowly and sometimes incorrectly, uncertainties are given little if any consideration, US EPA guidance is incorrectly interpreted, and no mention is made of further actions and studies which could help to confirm conclusions, e.g., TXI's ongoing odor studies, health studies, etc. Statements like "*...results of these evaluations ... indicate that adverse health effects are not expected to occur in area residents, including sensitive subgroups*" (p. iv), are incorrect with respect to risks that may occur after 30 or more years of emissions. The Summary Report does not describe or estimate cumulative impacts, trends, or other details necessary to correctly estimate future risks.

Much of the environmental data monitored in Midlothian is insufficient to support the TNRCC's claims. For example, while several of the largest risks predicted in the Screening Risk Analysis resulted from eating local fish and meat, no samples of fish or meat were analyzed or reported. Contaminant concentrations in sediment or water, both important in indirect exposure pathways, were also not reported. In cases, concentrations in air and soil were compared to high impact sites in Texas and the US, not true background levels for Midlothian. Soil and air sampling techniques were not state-of-the-art, in cases US EPA-approved methods were not used, some sampling locations or sampling times were inappropriate to characterize impacts, no meteorological and other data are presented to interpret monitored data, in one case industry was inappropriately given notice prior to ambient monitoring, and significant issues of quality assurance remain for much of the data. All of this leads to the perception that the TNRCC's interpretation and actions are not protective of public health.

The body of this report presents de novo analyses of environmental impacts and health risks from the TXI facility. Based on risk assessment techniques, other environmental impact assessment methodologies, and an assessment of existing environmental monitoring data, we conclude that environmental and health impacts

have and are likely to occur in the Midlothian area from industrial activity, including the combustion of hazardous waste at TXI. That TXI, the other cement kilns and steel smelter in Midlothian cause impacts is inescapable. For example, concentrations of arsenic, beryllium, cadmium, chromium and lead in soil show patterns associated with the major sources, and soil levels appear to be increasing. Further, there is high likelihood that the environmental and health impacts are significant, as demonstrated by exposures and risks that greatly exceed US EPA target exposure levels for a variety of exposure scenarios and source assumptions at a large number of sites. (Target levels are individual lifetime cancer risks of 10^{-5} and hazard quotients for non-cancer risks of 0.25.) Exceedences of acceptable risk levels for children at all residential locations is especially noteworthy. These risk estimates exclude impacts from other industrial facilities in Midlothian, some of which are expected to have greater impacts than the TXI facility.

The revised (de novo) risk estimates exceed the TNRCC estimates due primarily to the inclusion of the drinking water pathway, accounting for fugitive impacts, and the use of more realistic worst-case emission rates. The de novo estimates still exclude effects of upsets and other factors which would increase risks. However, the de novo analysis better represents the overall risk associated with exposure to TXI emissions, the goal in requiring the completion of risk assessments for facilities burning hazardous waste.

Because predicted health risks exceed target levels, continued waste combustion at TXI requires more stringent controls, e.g., more effective air pollution control technology, waste feed limitations, and/or modified operating practices. The EPA Maximum Available Control Technology (MACT) standards for cement kilns burning hazardous waste, just released by EPA in March 1996, would also have the effect of requiring additional controls on TXI to meet mercury, dioxin/furans and possibly other emission limitations. Additionally, the proposed MACT standards will require more restrictive limitations in TXI's permit for antimony, chromium, mercury, lead, particulate matter, hydrocarbons and dioxin/furans than currently specified. The EPA determined that the MACT standards are cost-effective, however, MACT standards are generally not very stringent and, at present, are only in draft form. When approved, however, the MACT standards will represent minimum standards which the TNRCC must adopt.

Risk assessment targets do not represent other health endpoints, nuisance impacts, ecological damage, animal impacts, etc. On nuisance, the record demonstrates numerous complaints, potential violations, Orders by TNRCC and the US EPA, etc. Ecological impacts have not been investigated. While a livestock general and reproductive health study in Midlothian was released by EPA Region VI on Jan. 31, 1996, the extremely low response rates and other issues render this study useless, thus, animal impacts are also unknown.

Several additional factors should be stated. First, in cases, the TNRCC has made considerable efforts to monitor environmental impacts, and indications are that many TNRCC technical personnel are competent and concerned. Some of the monitoring programs appear entirely reasonable, some represent useful allocation of resources, and some involve a degree of innovation. Others, however, are highly deficient with respect to study design, execution, data quality and data analysis. Overall, the monitoring program is not impressive given the scale of industry and waste combustion in Midlothian and the degree of public concern.

Second, the TNRCC must be strongly criticized for its tendency to go far beyond what is scientifically supportable by the existing data in making sweeping generalizations regarding the present and future safety of waste combustion in Midlothian. The TNRCC seems even to capitalize on its findings, shown clearly by claiming to have performed a "comprehensive assessment," by completing "exhaustive sampling," by dismissing all risks found, by maintaining that strong odors pose no health risk to TXI employees or residents, etc. In any event, statements with little or a frail scientific basis show a disregard for the protection of public health, and serve to diminish the TNRCC's credibility among the public.

Finally, the record is deeply troubling regarding activities by the TNRCC related to inspection and enforcement, and by TXI with respect to compliance and responsiveness. This is not the focus of this report, and a comprehensive review of regulatory compliance and enforcement is not provided. Even a cursory examination, however, indicates many inspection, enforcement and compliance issues. For example, the TNRCC has not addressed many concerns raised by its technical staff, has applied different standards to cement kilns and incinerators (despite language to the contrary), has used lax emission requirements (e.g., for opacity and HCl), has not anticipated the stricter controls on waste combustion, has not resolved many historical and ongoing problems with air quality violations and nuisance complaints that have persisted for years, has not prohibited or directed other Texas agencies to prohibit agricultural uses or other high-risk uses of contaminated areas on TXI property, and has rarely pursued administrative penalties or other remedies for violations. While the regulatory situation regarding the combustion of hazardous waste in cement kilns is hardly simple, and political and economic battles are being waged over waste combustion in Texas and the nation, the resolution of even simple nuisance complaints at TXI is neither timely nor satisfactory.

The serious deficiencies in the Screening Risk Analysis and Summary Report indicate that the ability of the TNRCC to conduct an objective assessment is compromised, and the record demonstrates significant concerns regarding the effectiveness of the TNRCC in regulating the combustion of hazardous waste at TXI.