



Dallas City Council
Dallas City Hall
1500 Marilla St.
Dallas, Texas 75201

Dear City Council Members:

I am writing to support a six-month moratorium on issuance of natural gas drilling permits, along with the creation of a task force of environmental scientists/engineers and medical experts to assess how the environmental and health effects of drilling in an urban setting can be mitigated. Technology that is currently available and widely used in other industries can reduce emissions from natural gas drilling, if it is required to be installed.

First, let me introduce myself. I am a faculty member in environmental engineering at the University of Texas at Arlington. I have been working in the field of air quality since 1996, the year I completed my Ph.D. in air quality from the University of Texas at Austin. Following 6 ½ years in government and consulting, I joined UT Arlington full-time in 2003. I teach 5 graduate-level classes in air pollution, and have served as principal investigator or co-principal investigator on over \$2.3 million in grants. I have published over 35 peer-reviewed conference papers and journal articles on air quality issues, and am a registered professional engineer in the state of Texas.

In the past 2 years, I have conducted studies of toxic air pollutant concentrations surrounding 3 sets of natural gas compressor stations, at 3 different locations in Tarrant and Denton Counties. Starting with pollutant concentrations measured in the field over a 2-hour period, I used a computer model to simulate how concentrations would vary under a variety of meteorological conditions, some of which are conducive to concentrating pollutants. The results showed exceedances of both short-term and long-term Texas Commission on Environmental Quality (TCEQ) effect screening levels (ESLs) for a variety of toxic air pollutants. Tables 1 and 2 below summarize the findings for short-term (1-hour) and long-term (annual) averages, respectfully. A paper detailing the methodology for one of the studies, which was presented at the Air & Waste Management Association Annual Meeting in Calgary last June, is attached.

Table 1. Modeled maximum 1-hour average pollutant concentrations surrounding compressor station sites, compared with TCEQ short-term Effect Screening Levels

Pollutant	1-hour Average Concentration, $\mu\text{g}/\text{m}^3$			TCEQ ESL	TCEQ 1-hour ESL exceeded?		
	Site 1	Site 2	Site 3		Site 1	Site 2	Site 3
Benzene	12,776	165,434	472.8	170	Yes	Yes	Yes
Carbon disulfide			35,942	30			Yes
Carbonyl sulfide	48,943		10,404	135*	Yes		Yes
Dimethyl disulfide	326,769		7661	20	Yes		Yes
Ethyl benzene	10,276			2000*	Yes		
Ethyl methyl benzene	84,762			1250	Yes		
Hexachlorobutadiene	11,245			2	Yes		
Methyl chloride		78,656		1030		Yes	
Styrene	1611		454	110*	Yes		Yes
Toluene	29,311	632,241	2081	640*	Yes	Yes	Yes
1,2,4-Trichlorobenzene	7034			400	Yes		
1,2,4-Trimethylbenzene	14,914		2743	1250	Yes		Yes
Xylene, m-		199,376		180*		Yes	
Xylene, o-	16,903			1600*	Yes		

* odor basis; health impact threshold is higher



Table 2. Modeled annual average pollutant concentrations surrounding compressor station sites, compared with TCEQ long-term Effect Screening Levels

Pollutant	Annual Average Concentration, $\mu\text{g}/\text{m}^3$				TCEQ Annual ESL exceeded?		
	Site 1	Site 2	Site 3	TCEQ ESL	Site 1	Site 2	Site 3
Benzene	738	11,179	39.8	170	Yes	Yes	Yes
Carbon disulfide			3025	30			Yes
Carbonyl sulfide	2827		875.7	135*	Yes		Yes
Dimethyl disulfide	18,876		644.8	20	Yes		Yes
Ethyl benzene	594			2000*	Yes		
Ethyl methyl benzene	4889			1250	Yes		
Hexachlorobutadiene	650			2	Yes		
Methyl chloride		5315		1030		Yes	
Styrene	93		38.2	110*	No		Yes
Toluene	1693	42,723	175.1	640*	Yes	Yes	Yes
1,2,4-Trichlorobenzene	406			400	Yes		
1,2,4-Trimethylbenzene	862		230.9	1250	Yes		Yes
Xylene, m-	976	13,473		180*		Yes	
Xylene, o-	14,914			1600*	Yes		

* odor basis; health impact threshold is higher

The above results are based on data from compressor stations, not ordinary wells; also, they were generated by computer software, and thus subject to a certain amount of uncertainty. However, I believe that they still pose enough concern, particularly since the effect screening levels were most often exceeded by such large amounts, to warrant a moratorium on issuance of natural gas drilling permits. I particularly urge you to wait until March, when results of the extensive City of Fort Worth study are supposed to be made available. The Fort Worth study, conducted by Eastern Research Group, will provide sampling information concerning pollutant emissions associated with 50% of the drilling sites in the City of Fort Worth. It will also recommend setback distances to protect public health. It will thus provide a wealth of information which other cities in the region can use to make informed decisions regarding natural gas drilling.

The above opinions are my own, and do not necessarily represent those of UT Arlington. If I can answer any questions, please contact me at 817/272-5410 or sattler@uta.edu. Thank you for your time and consideration.

Sincerely,

Melanie Sattler, Ph.D., P.E.
Associate Professor