

National People's Oil and Gas Summit

Health Surveys in DISH, Texas and Pavillion, Wyoming

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**Health Survey Instruments prepared by Wilma Subra
on behalf of EARTHWORKS' Oil and Gas
Accountability Project (OGAP)**

**Results of the Health Survey Evaluated by Wilma
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Health Survey of Current and Former DISH/Clark, Texas Residents

Health Survey Forms Completed in October-November 2009

Report prepared December 2009

Health Survey Participants

31 individuals between the ages of 4 and 69

15 females

16 males

Lived in DISH an average of 8.5 years (3 months to 25 years)

DISH, TX Units Associated with Odor Complaints

11 Compressor Stations

**Operated by: Atmos Energy
Chesapeake Energy
Crosstex Energy
Enbridge
Energy Transfer Partners**

Gas Metering Stations

**Operated by: Atmos Energy
Crosstex Energy
Enterprise**

**Gas Wells in Barnett Shale and Condensate Tanks
Operated by Devon**

Gas Transmission Pipelines

Distance from Surveyed Individuals to Facilities Associated with Odor Events

50 feet to 2 miles

Units at Compressor Stations and Gas Metering Stations Releasing Emissions into the air of DISH

- Compressor Engines**
- Compressor Blowdowns**
- Condensate Tanks**
 - Storage Tanks**
- Truck Loading Racks**
- Glycol Dehydration Units**
 - Amine Units**
 - Separators**
- Fugitive Emission Sources**

Frequency of Odor Events in DISH

90% of individuals surveyed reported experiencing odor events once per day to 24 days per month

Odors Experienced in DISH

Sulfur smell Natural gas smell (with odorizer)

Health Effects Associated with Sulfur Smell

Burning Eyes	Headaches
Runny Nose	Asthma
Sore Throat	Nausea
Sinus	

Health Effects Associated with Natural Gas Smell

Nausea	Hypertension
Indigestion	Chronic Sinus Infections
Headaches	Asthma

165 Medical Symptoms and Diseases Reported

Medical Condition	Most Prevalent	
	# of Individuals	% of Individuals Surveyed
Sinus Problems	18	58
Throat Irritation	17	55
Allergies	17	55
Weakness and Fatigue	17	55
Eye Irritation	16	52
Nasal Irritation	15	48
Joint Pain	14	45
Muscle Aches and Pains	13	42
Breathing Difficulties	13	42
Vision Impairment	13	42
Severe Headaches	12	39
Sleep Disturbances	12	39
Swollen and Painful Joints	12	39
Frequent Irritation	10	32

71% of Population had Respiratory Impacts

Sinus Problems	18/31	58%
Throat Irritation	17/31	55%
Breathing Difficulties	13/31	42%
Wheezing	9/31	29%
Bronchitis	7/31	23%
TOTAL	22/31	71%

Air Sampling Performed on behalf of the Town of DISH

**15 Volatile Organic Chemicals Were Detected
in Excess of Texas Commission on Environmental Quality
(TCEQ) Short and Long-term Effects Screening Levels**

**A number of the Chemicals were Carcinogens and
Neurotoxins**

Health Effects Reported By DISH Community

Nasal Irritation*	Increased Fatigue*
Throat Irritation*	Dizziness*
Eyes Burning*	Forgetfulness
Frequent Nausea*	Easy Bruising
Allergies	Muscle Aches & Pains*
Sinus Problems*	Weakness* & Tired*
Bronchitis*	Ringing in Ears
Persistent Cough	Sores & Ulcers Mouth
Chronic Eye Irritation*	Urinary Infections
Shortness of Breathe	Depression*
Severe Headaches*	Decreased Motor Skills*
Frequent Nose Bleeds	Falling, Staggering*
Sleep Disturbances	Frequent Irritation*
Joint Pain	Amnesia
Difficulty in Concentrating	Severe Anxiety*
Nervous System Impacts	Excessive Sweating
Irregular/Rapid Heart Beat*	Abnormal EEG*
Strokes	Lump in Breast
Enlarged Spleen	Thyroid Problems
Pre-Cancerous Lesions*	Endometriosis
Abnormal Mammogram	Brain disorders*

*** 61% of Health Impacts Associated with Chemicals present in Excess of Short and Long Term Effects Screening Levels in the air in DISH**

Health Survey of Pavillion, Wyoming Residents

Health Survey Forms Completed in March 2010

Report prepared August 2010

Health Survey Participants

16 individuals between the ages of 37 and 82

7 females

6 males

3 individuals who did not identify their sex or age

Lived in Pavillion an average of 28 years (7 to 56 years)

Facilities in Pavillion

Associated with Odor Events

Facilities in Pavillion Associated with Odor Events

Natural Gas Wells

Natural Gas Production Facilities

Compressor Stations

Production Tanks

Condensate Tanks

Water Tanks

Pneumatic Chemical Pumps

Pavillion Waste Water Treatment Facility

**Distance from Surveyed Individuals to Facilities Associated with
Odor Events**

250 feet to 4 miles

Odors and Associated Health Impacts

Frequency of Odor Events

2 times per day to 20 days per month

Odors Experienced in the Pavillion Area

Gas	Rotten Eggs
Fuel Oil	Nail Polish Remover
Propane	Nail Polish
Sulfur	Airplane Model Glue

Health Impact

Diminished Sense of Smell
Headaches
Sore Throat
Burning Eyes and Nose
Eye Pain and Dryness
Nausea
Itchy Skin
Dizziness

Duration of Health Impacts

Ongoing
Persistent, day or two
30 minutes to several hours
5-30 minutes
1/2 day
15 minutes to several hr.
Persistent
Persistent

128 Medical Symptoms and Diseases Reported

Most Prevalent

Medical Condition # of Individuals

Memory Loss	9
Feeling Weak & Tired	8
Throat Irritation	8
Sinus Problems	7
High Blood Pressure	7
Muscle Aches or Pains	7
Forgetfulness	6
Recall Problems	6
Breathing Difficulties	6
Eyes Burning	6
Joint Pain	6
Decrease in Vision	5
Sleep Disorder	5

81% of Population had Respiratory Impacts

Throat Irritation	8/16	50%
Sinus Problems	7/16	44%
Breathing Difficulties	6/16	38%
Nasal Irritation	4/16	25%
Wheezing	2/16	12%
Bronchitis	1/16	6%
TOTAL	13/16	81%

Water Well Contaminants

Private water wells in the Pavillion area were sampled by the Environmental Protection Agency in March and May 2009. The chemicals detected included:

Petroleum Hydrocarbons

Methane

Chlorides

Fluoride

Nitrate

Nitrite

Sulfate

Arsenic

2-Butoxyethanol Phosphate

2,4-bis (1-phenyl)-phenol

Caprolactam

Bisphenol A

Terpineol

5-Hydroxymethyl dihydrofuran

Limonene

Dimethyl Phthalate

Bis(2-Ethylhexyl)Phthalate

The health impacts associated with the chemicals detected in the Pavillion well water correspond to 46% of the Pavillion medical conditions reported in the health survey.

Air Contaminants

Toxic air emissions from the drilling, production and processing of natural gas have been extensively documented.

The toxic chemicals potentially being released into the air in Pavillion correspond to 77% of the most prevalent medical conditions recorded in Pavillion.

Recommendations for Involvement of Federal, State and Local Oil and Gas, Environmental and Health Agencies

Document, compile and evaluate odor events and associated community health symptoms.

Track community health impacts over time .

Increase tracking of operational upsets, spills, releases and permit violations of the oil and gas facilities.

Establish continuous monitoring of speciated toxic air emissions with data provided in real time.

Provide ongoing monitoring of drinking water quality and identify sources of groundwater contamination.

Evaluate exposure of community members living in close proximity to oil and gas drilling and production facilities.

Provide appropriate medical care and intervention .

Define sources of contamination, pathways of exposure and implement actions to reduce emissions and exposure.

