

Submitted For incorporation  
into record *BJ*

Comments to Oil Conservation Division  
July 23, 2015

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Not Exhibit

Member of Greater Chaco Health Impact Assessment Committee  
HIA Committee Members: Dine CARE, Sara Wylie, PhD Northeastern University and Global Community Monitoring

RE: WPX application for the creation of a new pool for horizontal development on both 1926.42 acres of federal and Alloted Indian land (6 ½ miles southwest of Counselor) and on 640 acres subject to a federal communitization agreement (4 miles north of nearby Lybrook).

#### Comments:

There are many risks the residents of the Counselor, Lybrook, Nageezi and surrounding greater Chaco region are being asked to accept.

#### Pooling Agreements

1. If landowners and allottees consent to a pooling agreement then their potential royalties can be significantly reduced and their other lease provisions can be altered or invalidated. Allotees in this area have generally not been informed of what pooling is and how it can affect them and their income.
2. If land needs a federal communitization agreement, then there are specific reasons why the land cannot be independently developed in conformity with established well spacing or other practices, and such an agreement may or may not be in the public or tribal best interests. The agreement for Communitization does not spell out any negative consequences for landowners to consider before consenting.

There are other kinds of impacts and risks residents have had to deal with:

1. Heavy truck and tanker traffic has worsened on rural and oil field roads. Congestion makes commuting difficult and hazardous along with causing delays getting to work and school.
2. US Hwy 550 closures and slow downs impact regular daily traffic and many dangerous conditions have been reported for motorists traveling 550 from Bernalillo to Farmington.

There are Risks for Lybrook Community School

1. Parents in Lybrook have reported that their children have – more than once – been kept overnight at the school and not permitted to return home due to problems caused by various oil field operations (Reported by Robert Kelly)
2. Air quality at the school is a concern as a large equipment yard and wells with continuous flaring (in April, May and June) is located less than a mile north of the school property on US 550.
3. Particulate Matter from diesel exhaust from oil company vehicles and well equipment poses another air pollution risk for children during outdoor periods and when arriving and leaving.
4. The school, which usually offers summer programs and classes, has been closed this summer.

One of the greatest concerns is that of the Health Impact Assessment committee that I serve on. There are significant and increasing Public Health Risks throughout the well development area

1. Residents of all ages have experienced the following symptoms in the vicinity of the wells currently operating near homes and community areas: nausea, sudden and severe headaches,

tightness in the chest and chest pain, throat irritation, burning sensation in the eyes, nose, throat and lungs, stiffness in the neck, a runny nose, dizziness, a feeling of collapse.

2. These symptoms are consistent with a widely cited and very recent University of Pennsylvania report on hospitalization rates and number of gas and oil wells in 67 zip code areas. The strongest evidence is that cardiology inpatient cases and neurology inpatient numbers rise dramatically in zip code areas that have higher numbers of UGODs or unconventional G & O drilling. ("Higher" = 79 wells for every 100 km squared) There were also higher numbers of hospitalizations in other medical categories like dermatology, endocrine disorders, urology and cancers. ("Unconventional Gas and Oil Drilling is Associated with Increased Hospital Utilization Rates", research article by Department of Biostatistics, University of Pennsylvania Perelman School of Medicine, Philadelphia, Pennsylvania. Pub. July 15, 2015)
3. There are other studies in Colorado that have linked benzene exposure – from flaring - with severe birth defects that include low birth-weight babies with heart defects and neurological damage that results in extensive surgeries or infant mortality.

The Mancos shale area is under intense pressure by oil companies wanting to secure leases, APDs, variances and other approvals for pooling and additional development, but BLM has not yet completed a mandatory NEPA process which requires a 2003 Resource Management Plan be updated and study the *specific impacts of hydraulic fracturing*. There is currently a request for an injunction filed last Monday by the Western Env. Law Center on behalf of Dine CARE and other litigants in 10<sup>th</sup> Circuit court halting all new drilling until the BLM has completed this preliminary study. The first hearing was last Monday and a second hearing has not yet been scheduled but may be in late August.

I request that the decision on the applications by WPX to expand it's drilling in the greater Chaco area be tabled until:

1. The injunction is decided on and
2. Until the BLM's RMP-A is completed.

There is clearly no immediate need to promote new development with the ongoing glut of oil and gas product and low prices. Also, there are severe problems in land management and methane flaring identified by our Congressional delegates: Senators Udall and Heinrich and Representatives Lujan and Lujan-Grisham that oil companies should take care of before they are granted more land for drilling.

The COSTS of illness and hospitalization on the other hand can be enormous – with even short stays and treatment averaging \$30,000 per patient and much higher amounts for cancer patients or those that develop chronic conditions as a result of exposure to the many toxins emitted from UGOD operations. Please be proactive - wait for the facts before making a decision we'll all have to live with.

# NATIONAL RESEARCH COUNCIL

## WHAT IS A HEALTH IMPACT ASSESSMENT?

Health impact assessment (HIA) is a fast-growing field that helps policy makers take advantage of these opportunities by bringing together scientific data, health expertise and public input to identify the potential—and often overlooked—health effects of proposed new laws, regulations, projects and programs. It offers practical recommendations for ways to minimize risks and capitalize on opportunities to improve health. *HIA gives federal, tribal, state and local legislators, public agencies and other decision makers the information they need to advance smarter policies today to help build safe, thriving communities tomorrow.*

-- Authoring committee of the National Research Council of the National Academies *Improving Health in the United States: The Role of Health Impact Assessment*

### **Health Impact Assessment:**

- Looks at health from a broad perspective that considers social, economic and environmental influences;
- Brings community members, business interests and other stakeholders together, which can help build consensus;
- Acknowledges the trade-offs of choices under consideration and offers decision makers comprehensive information and practical recommendations to maximize health gains and minimize adverse effects;
- Puts health concerns in the context of other important factors when making a decision; and
- Considers whether certain impacts may affect vulnerable groups of people in different ways.

### **What is the purpose of HIA?**

Through reports and communications, HIA seeks to:

- Make a judgment about how a proposed project, plan, or policy will affect health
- Highlight disparities (or differences) in health between groups of people
- Provide recommendations to improve decisions
- Raise awareness among decision makers and the public
- Clearly state health effects.

### **What are the benefits of conducting HIA?**

Health Impact Assessment is a practical approach to help create healthier communities by addressing the root causes of prominent health problems. It can benefit the field of public health, communities, and decision makers.

Benefits to the field of public health include that HIA:

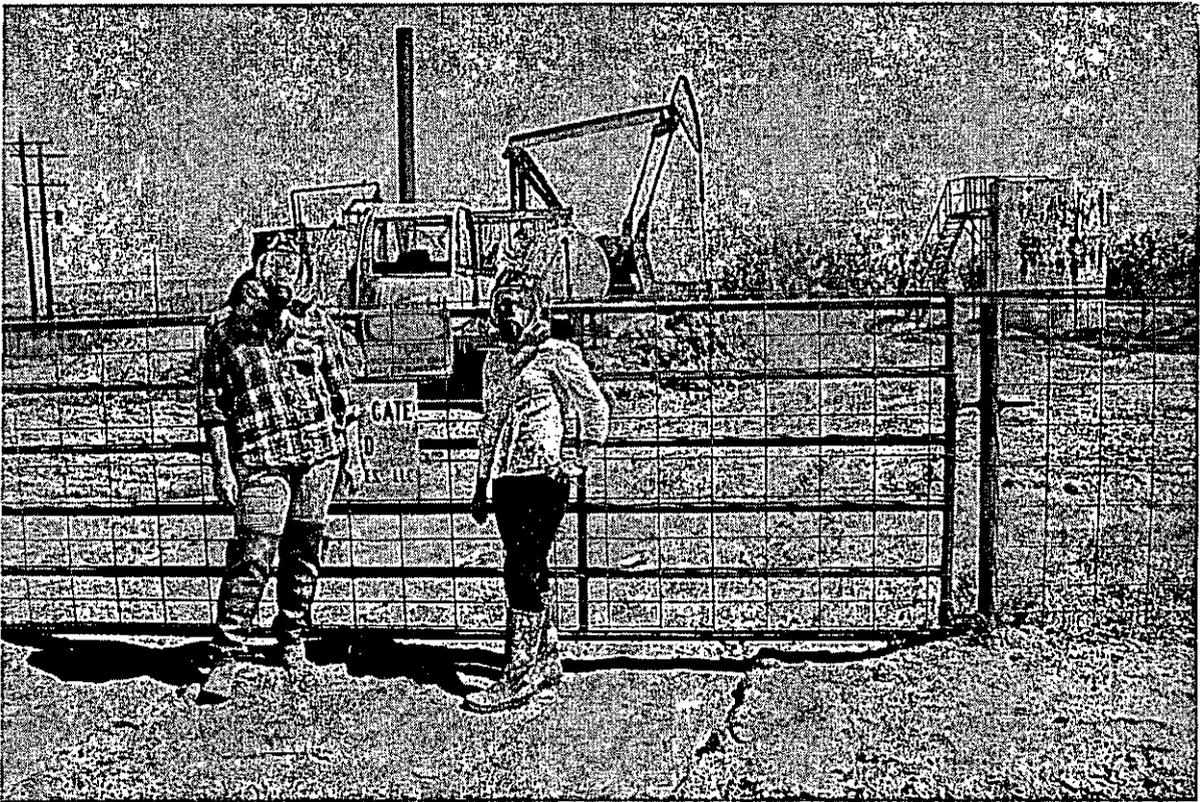
- Provides a comprehensive lens on issues
- Offers a structured process to determine how a policy, plan, or project will affect health
- Considers historical, cumulative, and disparate impacts

### **When is a HIA carried out?**

To be most effective, HIA is often done *before* a decision is made or a policy is implemented. The decision can be about a project, policy, or plan on a local, regional, state, or national scale.

# WARNING SIGNS

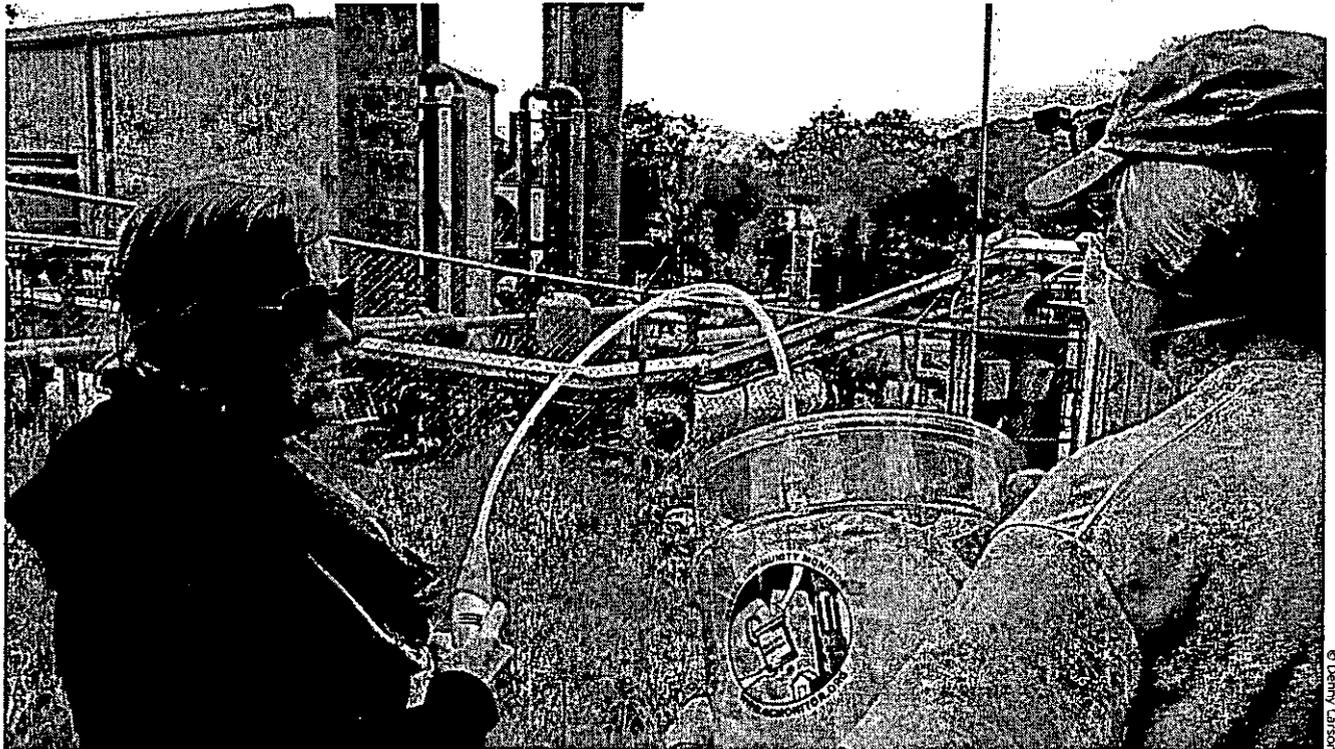
Toxic Air Pollution Identified at Oil and Gas Development Sites



Results from Community Air Monitoring Reveal  
Chemicals Linked to Health Hazards

COMING CLEAN AND GLOBAL COMMUNITY MONITOR • OCTOBER 2014

## EXECUTIVE SUMMARY



© Denny Larson

Air monitoring training in Pennsylvania.

**T**he United States' oil and gas boom has transformed hundreds of communities across the country—from rural areas and small towns to suburbs and cities—into industrial production zones. Oil and gas companies are using unconventional techniques such as hydraulic fracturing to extract deposits wherever they can be reached, even if those places are in the backyards of homes, near schools or places of worship, or on farmland. Oil and gas production uses hundreds of toxic chemicals that are emitted directly or escape into the air, exposing residents, workers, and animals.

This report provides results from community air monitoring in six states near oil and gas wells and other sites associated with oil and gas production processes, particularly hydraulic fracturing, or fracking.<sup>1</sup> Monitoring results revealed the presence of an array of airborne hazardous chemicals

at levels higher than federal health and safety standards—in some cases, in concentrations that pose an immediate health threat to people.

The investigation by a team of scientists and community members (see page 12), published in *Environmental Health*, is the first peer-reviewed study of hazardous air pollutants near fracking and other oil and gas production sites in multiple U.S. locations. Residents of communities heavily affected by oil and gas production in Arkansas, Colorado, Ohio, Pennsylvania, New York and Wyoming were trained to collect samples using equipment and methods certified by federal agencies, which were then analyzed by an accredited independent laboratory. Residents collected air samples when they personally observed activity at the sites or when they suffered symptoms such as headaches, dizziness or breathing problems.

The analysis showed:

- Eight chemicals classified as volatile compounds, were found in concentrations in excess of either the U.S. Environmental Protection Agency's most hazardous cancer risk level or the minimal exposure levels for non-cancer risks (minimal risk level or MRL), set by the Agency for Toxic Substances and Disease Registry (ATSDR).<sup>2</sup> About 38 percent of the samples (29 of 76) contained concentrations of volatile compounds exceeding these federal standards.
- The chemicals that most often exceeded health and safety standards were formaldehyde, which is a known human carcinogen, and hydrogen sulfide, a nerve and organ toxin known by its rotten egg odor.
- Seven samples, all from Wyoming, contained hydrogen sulfide in concentrations ranging from more than twice to 660 times the level classified by the EPA as immediately dangerous to human life.<sup>3</sup>
- Fourteen samples—seven from Arkansas, six from Pennsylvania and one from Wyoming—contained concentrations of formaldehyde exceeding the EPA's most hazardous cancer risk level.
- Several other chemicals were detected at concentrations above health and safety standards. Four samples from Wyoming contained benzene, a known carcinogen, in concentrations above EPA's most hazardous cancer risk level. Seven samples from Wyoming and one from Pennsylvania contained hexane, a nerve toxin, at levels above either ATSDR minimal risk levels or the workplace safety standards for long-term exposure set by the Occupational Health and Safety Administration (OSHA). One Wyoming sample contained hexane at 7,000 times OSHA's minimal risk level. Five Wyoming samples contained levels of the nerve toxins toluene and xylene at levels exceeding either the short-term or long-term minimal risk levels.

As serious as these findings are, they don't give a full picture of the health hazards the communities face. This is because government standards are often based on levels considered safe for healthy, working adult men and do not account for the increased sensitivity of infants and children, the elderly and other vulnerable populations. Neither do government standards account for the effects of cumulative exposure to unknown chemicals or to multiple chemicals, even though most people in the United States are exposed to many other chemicals in our daily lives

in our homes, at work or school, in vehicles, or from other sources. Nor do government standards account for the health hazards of unknown chemicals. For example, one Wyoming sample captured high levels of hydrogen sulfide, hexane, benzene and xylenes, plus six other identifiable volatile organic compounds (VOCs) and 15 other unidentified compounds the monitoring was not designed to measure.

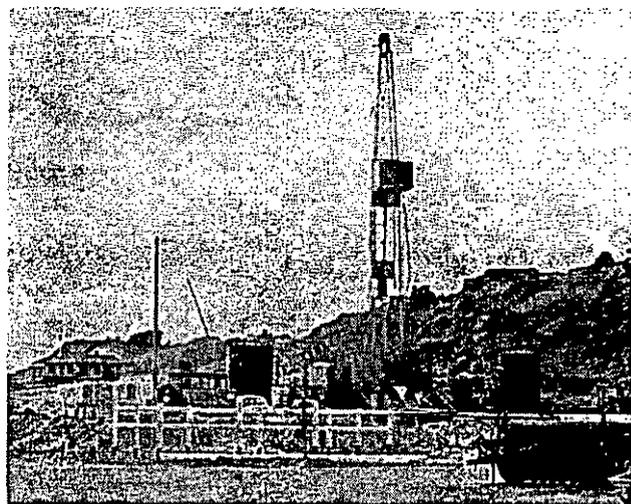
Understanding the cumulative and life-cycle impacts of oil and gas development is critical to addressing these public health challenges.

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**THE INVESTIGATION BY A TEAM** of scientists and community members is the first peer-reviewed study of hazardous air pollutants near fracking and other oil and gas production sites in multiple U.S. locations.

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The research team also reviewed air quality monitoring studies conducted by regulatory agencies in five states. (See Appendix A.) State studies have found evidence of direct and "fugitive" air emissions, exposure to complex chemical mixtures, spikes of known or suspected cancer-causing chemicals and evidence of greater emissions during certain production stages. Some combination of the same compounds we found were detected in all of the studies we reviewed, but the regulators interpreted the results to suggest limited threats to health and safety.



Toxic neighbors: Drill pad near a home in rural Wyoming.

© John Fenton

TABLE 1

Summary of Findings of Air Monitoring at Oil and Gas Development Sites in Arkansas, Colorado, Pennsylvania and Wyoming

State	Nearest infrastructure	Chemical	Concentration (µg/m <sup>3</sup> )	% of ATSDR risk level	% of EPA cancer risk level
AR	compressor	formaldehyde	36	366% of chronic level	4,500%
AR	compressor	formaldehyde	34	345% of chronic level	4,250%
AR	compressor	formaldehyde	27	274% of chronic level	3,375%
AR	compressor	formaldehyde	28	286% of chronic level	3,500%
AR	compressor	formaldehyde	23	234% of chronic level	2,875%
AR	compressor	formaldehyde	44	120% of intermediate level	5,500%
AR	compressor	1,3-butadiene	8.5	n/a	284%
AR	compressor	formaldehyde	48	130% of intermediate level	6,000%
CO	waste pond	hydrogen sulfide	41	147% of intermediate level	n/a
PA	compressor	formaldehyde	8.3	n/a	1,038%
PA	compressor	formaldehyde	7.6	n/a	950%
PA	PIG launch	benzene	5.7	n/a	127%
PA	compressor	formaldehyde	61	124% of acute level	7,625%
PA	compressor	formaldehyde	59	120% of acute level	7,375%
PA	compressor	formaldehyde	32	325% of chronic level	4,000%
PA	compressor	formaldehyde	34	347% of chronic level	4,250%
WY	separator	hydrogen sulfide	590	602% of acute level	n/a
WY	separator	benzene	2,200	7,500% of acute level	48,890%
WY	separator	toluene	1,400	467% of chronic level	n/a
WY	separator	ethylbenzene	1,200	461% of chronic level	n/a
WY	separator	mixed xylenes	4100	158% of intermediate level	n/a
WY	separator	n-hexane	22,000	1,041% of chronic level	n/a
WY	separator	benzene	31	106% of acute level	689%
WY	work-over rig	hydrogen sulfide	30	108% of intermediate level	n/a
WY	separator	benzene	230	784% of acute level	5,112%
WY	separator	mixed xylenes	317	146% of chronic level	n/a
WY	well	n-hexane	2,500	119% of chronic level	n/a
WY	separator	hydrogen sulfide	91	325% of intermediate level	n/a
WY	separator	benzene	110,000	374,915% of acute level	2,444,445%
WY	separator	toluene	270,000	7,200% of acute level	n/a
WY	separator	mixed xylenes	135,000	1,556% of acute level	n/a
WY	well	n-hexane	1,200,000	56,738% of chronic level	n/a
WY	separator	benzene	100	341% of acute level	2,223%
WY	compressor	benzene	35	120% of acute level	778%

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TABLE 1

Summary of Findings of Air Monitoring at Oil and Gas Development Sites in Arkansas, Colorado, Pennsylvania and Wyoming (continued)

State	Nearest infrastructure	Chemical	Concentration ( $\mu\text{g}/\text{m}^3$ )	% of ATSDR risk level	% of EPA cancer risk level
WY	compressor	formaldehyde	46	125% of intermediate level	5,750%
WY	discharge canal	hydrogen sulfide	210	215% of acute level	n/a
WY	discharge canal	hydrogen sulfide	1,200	1,225% of acute level	n/a
WY	well pad	hydrogen sulfide	6,100	6,225% of acute level	n/a
WY	discharge canal	hydrogen sulfide	5,600	5,715% of acute level	n/a
WY	discharge canal	hydrogen sulfide	240	245% of acute level	n/a
WY	discharge canal	hydrogen sulfide	66,000	67,347% of acute level	n/a
WY	discharge canal	benzene	23	118% of intermediate level	512%

**SUMMARY OF FINDINGS.** Primary results of air samples taken by trained community members, at sites where unconventional oil and gas development activities occur. The samples show the presence of airborne chemicals, some at levels exceeding government health-based standards. Detailed monitoring results are available in the *Environmental Health* journal article.

Source: Macey, G et al. "Air Concentrations of Volatile Compounds Near Oil and Gas Production: A Community-Based Exploratory Study." *Environmental Health*, October 2014.

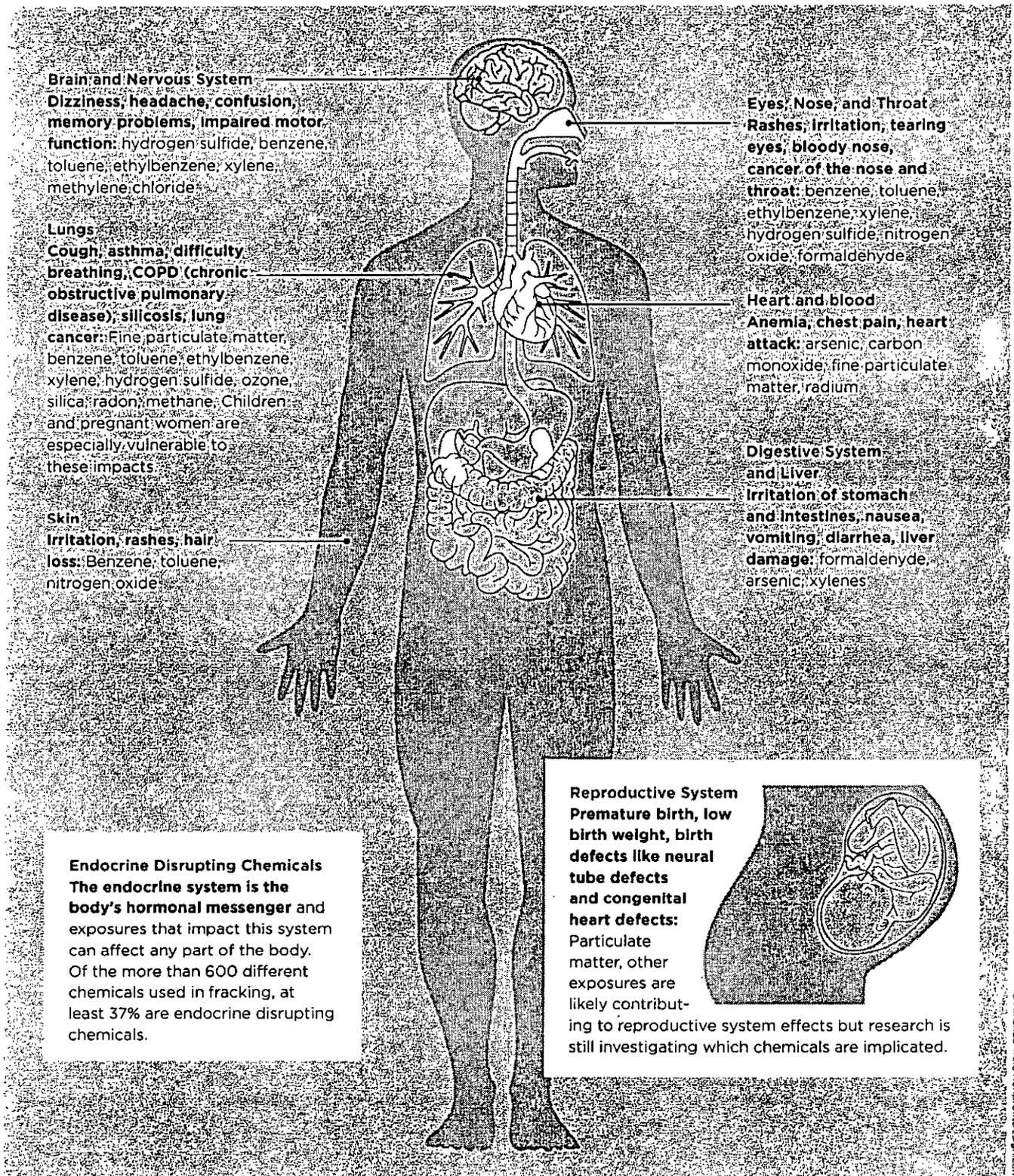
Air samples were taken when community residents could verify that activity was taking place at the sites or when they experienced symptoms. Thus, the project provides the range of potential exposure levels experienced by people living or working near these sites. The results from this independent study demonstrate that state regulators' studies are incomplete. Therefore, one cannot assume that there are no significant health threats from air pollution generated at oil and gas development sites.

For each place where air samples were taken, the report also provides personal testimonies from people who live there, showing deep concerns that their health and that of their families and community is being harmed by exposure to toxic chemicals from oil and gas development. Although the presence of air pollution does not prove a link to the symptoms reported by community residents, the information is enough to warrant a more precautionary approach to oil and gas activities—one that places greater emphasis on avoiding health hazards for all people living and working in drilling and production areas. The monitoring data is a warning sign that we must act to prevent chemical exposures that could endanger health.

In order to better protect the environment and public health, not only in these six states but in other places where production is occurring, federal and state agencies, legislators and the scientific community must act with greater accountability. Our recommendations include:

- More comprehensive air monitoring for toxic gases, and more rigorous enforcement by state regulators of air emissions near sites associated with fracking and other production activities.
- Full public disclosure of all chemicals, constituents and compounds used in fracking and other drilling and production activities, and the amounts used. Companies should not be allowed to hide toxic chemicals as trade secrets or "confidential business information."
- Use of a precautionary approach when regulating oil and gas development operations. If data is inconclusive, regulators should err on the side of protection of health.
- Investment by utilities and governments in common-sense energy efficiency measures and clean, renewable energy development, which can be safer and more cost effective than producing fossil fuels.
- Direct engagement of community residents affected by oil and gas development in decision-making over each stage of the extraction and production cycle.

**FIGURE 1**  
**Health Effects of Chemicals Associated with Oil and Gas Development**



This image indicates the common symptoms and health impacts known to be linked to chemicals associated with unconventional oil and gas development, including some of the chemicals captured in air samples as part of this project.

NOTE: For a description of health symptoms associated with specific chemicals, see the Agency for Toxic Substances and Disease Registry at <http://www.atsdr.cdc.gov/substances/ToxOrganSystems.asp>.