OIL AND GAS DEVELOPMENT: EXEMPTIONS FROM HEALTH AND ENVIRONMENTAL PROTECTIONS

HEARING

BEFORE THE

COMMITTEE ON OVERSIGHT AND GOVERNMENT REFORM

HOUSE OF REPRESENTATIVES

ONE HUNDRED TENTH CONGRESS

FIRST SESSION

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OIL AND GAS DEVELOPMENT: EXEMPTIONS FROM HEALTH AND ENVIRONMENTAL PROTECTIONS

WEDNESDAY, OCTOBER 31, 2007

HOUSE OF REPRESENTATIVES,
COMMITTEE ON OVERSIGHT AND GOVERNMENT REFORM,
Washington, DC.

The committee met, pursuant to notice, at 10:05 a.m. in room 2154, Rayburn House Office Building, Hon. Henry A. Waxman (chairman of the committee) presiding.

Present: Representatives Waxman, Cummings, Kucinich, Tierney, Higgins, Braley, Davis of Virginia, Shays, Cannon, Issa, Sali, Platts, Duncan, and Foxx.

Also present: Representative DeGette.

Staff present: Phil Barnett, staff director and chief counsel; Karen Lightfoot, communications director and senior policy advisor; Greg Dotson, chief environmental counsel; Gilad Wilkenfeld, professional staff member; Teresa Coufal, deputy clerk; Caren Auchman and Ella Hoffman, press assistants; Leneal Scott, information systems manager; William Ragland, Miriam Edelman, and Rob Cobbs, staff assistants; David Marin, minority staff director; A. Brooke Bennett and Kristina Husar, minority counsels; Larry Brady, minority senior investigator and policy advisor; Patrick Lyden, minority parliamentarian and member services coordinator; Brian McNicoll, minority communications director; and Benjamin Chance, minority clerk.

Chairman WAXMAN. Today's hearing will examine loopholes in Federal health and environment protections that are exploited by the oil and gas industry.

As children, we all learned about basic fairness, and we know that it is just not fair when someone gets to play by different rules than the rest of us. But as we will learn today, there is one set of environmental rules for the oil and gas industry and a different set of rules for the rest of America.

The Safe Drinking Water Act makes it illegal to inject other toxic chemicals into underground aquifers, but this prohibition does not apply to the oil and gas industry. Think about this for a moment. Oil and gas companies can pump hundreds of thousands of gallons of fluid containing any number of toxic chemicals into sources of drinking water with little or no accountability.

The Clean Water Act requires companies and even homeowners to control erosion while a property is under construction. But even this simple requirement does not apply to oil and gas production

facilities. Even the Clean Air Act dropped a key pollutant emitted by oil and gas operations from the list of regulated hazardous air pollutants, though it did give EPA authority to add the chemical to the list.

This wish list of loopholes is terrific for the oil and gas industry but terrible for our health and environment. In the case of Steve Mobaldi and Susan Wallace-Babb, who will testify today, unregulated oil and gas development had a disastrous impact on their lives.

Several of the biggest loopholes were enacted just 2 years ago as part of the Energy Policy Act of 2005. One exemption involves a practice known as hydraulic fracturing, which has become widely used in recent years in coal bed methane gas wells. Hydraulic fracturing involves injecting a mixture of water, chemicals, and sand into a well at high pressure. This mixture, or fracturing fluid, is put under enough force that it cracks the underground rock formation, allowing natural gas to escape. These fracturing fluids can contain toxic chemicals.

A Federal Appeals Board ruled in 1997 that this practice, which Haliburton pioneered, was subject to regulation under the Safe Drinking Water Act, but in 2005 Congress exempted hydraulic fracturing from regulation.

I and other Members opposed this special interest give-away. We were right on the merits, but lost the key votes.

We did, however, salvage one small victory: a provision was inserted into the law that requires the Department of Interior to commission a comprehensive National Academy of Sciences study of coal bed methane development, including the impacts of hydraulic fracturing. Yet, even this victory proved to be short-lived. As I explained in a letter I am releasing today, the Interior Department has essentially ignored the study requirement.

The theory seems to be that the less we know about the dangerous practice of hydraulic fracturing, the better. As someone who has spent my career working to improve the Safe Drinking Water Act, I am deeply disturbed by this approach to a serious environmental threat. I would like to ask unanimous consent to include my letter in the record.

Without objection, that will be the order.

The Bush administration argues that we need oil and gas too desperately to let anything stand in the way, but there is no way we can ever drill our way to energy independence. We need efficiency and we need alternatives to oil, and we have a moral obligation to respect our environment.

The loopholes we will learn about today affect the water we drink, the air we breathe, and the land we live on. I hope that with today's hearing we can begin to bring our environmental policy back into balance.

[The prepared statement of Chairman Henry A. Waxman and the letter referred to follow:]

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Opening Statement of Rep. Henry A. Waxman
Chairman, Oversight and Government Reform Committee
Hearing on Oil and Gas Development: Exemptions in Health and Environmental Protections
October 31, 2007

Today's hearing will examine loopholes in federal health and environment protections that are exploited by the oil and gas industry.

As children, we all learned about basic fairness. And we know that it's just not fair when someone gets to play by different rules than the rest of us.

But as we will learn today, there is one set of environmental rules for the oil and gas industry and a different set of rules for the rest of America.

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Even the Clean Air Act dropped a key pollutant emitted by oil and gas operations from the list of regulated, hazardous air pollutants, though it did give EPA authority to add the chemical to the list.

This wish list of loopholes is terrific for the oil and gas industry but terrible for our health and environment. In the case of Steve Mobaldi and Susan Wallace-Babb, who will testify today, unregulated oil and gas development had a disastrous impact on their lives.

Several of the biggest loopholes were enacted just two years ago as part of the Energy Policy Act of 2005.

One exemption involves a practice known as "hydraulic fracturing," which has become widely used in recent years in coalbed methane gas wells. Hydraulic fracturing involves injecting a mixture of water, chemicals, and sand into a well at high pressure. This mixture, or "fracturing fluid," is put under enough force that it cracks the underground rock formation allowing natural gas to escape. These fracturing fluids can contain toxic chemicals.

A federal appeals court ruled in 1997 that this practice, which Halliburton pioneered, was subject to regulation under the Safe Drinking Water Act. But in 2005, Congress exempted hydraulic fracturing from regulation.

I and other members opposed this special interest giveaway. We were right on the merits, but lost the key votes.

We did, however, salvage one small victory. A provision was inserted into the law that requires the Department of Interior to commission a comprehensive National Academy of Sciences study of coalbed methane development, including the impacts of hydraulic fracturing.

Yet even this victory proved to be short-lived. As I explain in a letter I am releasing today, the Interior Department has essentially ignored the study requirement. The theory seems to be that the less we know about the dangerous practice of hydraulic fracturing, the better.

As someone who has spent my career working to improve the Safe Drinking Water Act, I am deeply disturbed by this approach to a serious environmental threat.

I ask unanimous consent to include my letter in the record.

The Bush Administration argues that we need oil and gas too desperately to let anything stand in the way. But there is no way we can ever drill our way to energy independence. We need efficiency and we need alternatives to oil. And we have a moral obligation to respect our environment.

The loopholes we'll learn about today affect the water we drink, the air we breathe, and the land we live on. I hope that with today's hearing, we can begin to bring our environmental policy back into balance.

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October 31, 2007

The Honorable Dirk Kempthorne
Secretary
United States Department of the Interior
1849 C St. NW
Washington, DC 20240

Dear Secretary Kempthorne:

The Energy Policy Act of 2005 required the Secretary of Interior to enter into an agreement with the National Academy of Sciences to study the impacts of coalbed natural gas production on the surface waters and ground waters of certain western states. Congress required that the study be completed within one year of enactment and include recommendations for changes to federal law to address adverse impacts of coalbed methane development.

Unfortunately, it appears that the Department has failed to comply with this requirement. The statutorily-mandated study is now 14 months late and has not yet been started. Moreover, documents the Oversight Committee has obtained from the Bureau of Land Management (BLM) indicate that the Administration does not intend to meet the substantive requirements of the Energy Policy Act. Specifically, the documents reveal that BLM is planning to ask the National Academy to conduct a public meeting – not a study as required by law. Under BLM's approach, there will be no study and no recommendations to Congress.

This approach is flatly inconsistent with the legal requirements of the Energy Policy Act and the law's mandate for better information on the impacts of coalbed methane development. I am writing to urge you to abandon this approach, to comply with the law, and to immediately contract with the National Academy for a full report with recommendations.

Background

Natural gas produced from underground coal seams is known as coalbed methane. Unlike conventional gas production that simply taps reservoirs of natural gas trapped in underground geologic formations, coalbed methane is produced from methane that clings to the surface of the coal. A key technique in developing coalbed methane is known as "hydraulic fracturing." Under this practice, a mixture of water, chemicals, and sand is typically forced into

a well at high pressure. This mixture, or "fracturing fluid," is put under enough force that it fractures the underground rock formation, allowing natural gas to escape.[1] Ground water is then pumped out of the coal seam in order to decrease pressure on the coal and allow the natural gas to release from the coal and be produced from the well.[2]

While hydraulic fracturing has been used in conventional oil and gas well development, it raises particular concerns in the context of coalbed methane development. Hydraulic fracturing fluids sometimes contain chemicals that cause adverse health effects.[3] According to EPA, coalbed methane wells tend to be shallower and closer to underground sources of drinking water than conventional oil and gas production wells.[4] Also, hydraulic fracturing of coalbed methane wells actually occurs in underground sources of drinking water across the country.[5]

Additionally, the ground water pumped out of coalbed methane wells, known as "produced water," raises concerns. Produced water is often high in salt content and if released can adversely affect the environment.[6] Producing water also depletes groundwater sources, a limited resource in the arid West.

Over the objections of many members, the Energy Policy Act of 2005 exempted hydraulic fracturing from the Safe Drinking Water Act. At the same time, however, the law required the Secretary of Interior to enter into an arrangement with the National Academy of Sciences to "conduct a study on the effect of coalbed natural gas production on surface and ground water resources, including ground water aquifers, in the States of Montana, Wyoming, Colorado, New Mexico, North Dakota, and Utah."[7] The study is required to examine the

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[1] Environmental Protection Agency, *Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs* (June 2004) (EPA 816-R-04-003).

[2] *Id.*

[3] Oil and Gas Accountability Project, *Our Drinking Water at Risk: What EPA and the Oil and Gas Industry Don't Want Us to Know about Hydraulic Fracturing* (Apr. 2005).

[4] Environmental Protection Agency, *Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs* (June 2004) (EPA 816-R-04-003).

[5] *Id.*

[6] Thomas F. Darin and Amy W. Beatie, *Debunking the Natural Gas "Clean Energy" Myth: Coalbed Methane in Wyoming's Powder River Basin*, Environmental Law Reporter (2001).

[7] Sec. 1811 Coal Bed Methane Study, Energy Policy Act of 2005, P.L. 109-58 (Aug. 8, 2005).

effectiveness of current management approaches to development, including best management practices and various production techniques, mitigation approaches and their costs, and the effects of coalbed methane development on water resources, including drinking water.[8] The National Academy of Sciences is also to offer any recommendations for changes to federal law that would be necessary to address adverse impacts to surface or ground water resources associated with coalbed methane development.[9]

The Interior Department's Actions

The National Academy of Sciences study was required to be completed by August 8, 2006, one year after enactment.[10] The study is now 14 months late and has not yet been started.[11] After receiving an inquiry on this matter from the House Oversight Committee on September 5, 2007, the Department of Interior finally decided to proceed with funding the National Academy for limited activity on this subject.[12] However, it appears that the activity that the Interior Department intends to fund does not comply with the requirements of the Energy Policy Act.

In a letter to BLM, the National Academy of Sciences offered four alternatives for work the Academy could do on coalbed methane development.[13] The alternatives ranged in cost from $15,000 to $430,000. The National Academy identified the $430,000 report as "a full Academies report with recommendations, as specified in Section 1811" of the Energy Policy Act of 2005. The $15,000 alternative would be simply a "meeting and oral summary, without recommendations."[14] According to the National Academy, the $15,000 alternative should not

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[8] *Id.*

[9] *Id.*

[10] *Id.*

[11] Telephone conversation between House Oversight Committee staff and Elizabeth A. Eide, Director, Committee on Earth Resources, The National Academies (Oct. 29, 2007).

[12] Letter from Hon. C. Stephen Allred, Assistant Secretary, Land and Minerals Management, U.S. Department of the Interior, to Rep. Henry A. Waxman (September 27, 2007).

[13] Letter from Elizabeth A. Eide, Director, Committee on Earth Resources, The National Academies, to Mr. James M. Hughes, Deputy Director, Programs and Policy, Bureau of Land Management (Feb. 2, 2007).

[14] *Id.*

even be referred to as a "study" and no written document will be produced as a result of the effort.[15]

Internal documents show that the Bureau of Land Management decided to proceed with the $15,000 option on September 27, 2007.[16] Yet prior to selecting the $15,000 alternative, an internal BLM report found that it would be only "of limited value" to BLM.[17]

It appears that the agency may have selected this alternative based, in part, upon a desire not to divert any resources from approving additional permits for development. According to the BLM report, "The costs for further review by the Academy would have an impact on BLM's ability to provide sufficient funding to process additional oil and gas Applications for Permit to Drill."[18] An internal BLM e-mail suggests that BLM was also concerned that the National Academy review could identify additional needs for studies: "It is implied that based on review and recommendations, additional studies may be recommended that would cost an unknown amount of money."[19]

Conclusion

Although the National Academy of Sciences has offered to produce a "full Academies report with recommendations, as specified in Section 1811" of the Energy Policy Act, BLM has apparently requested that the Academy provide merely a "meeting and oral summary, without recommendations." If BLM stays on this course, not only will the agency fail to meet the clear requirements of the Energy Policy Act, it will also fail to provide the Congress, the states, the public, and affected citizens with a useful analysis of current practices and necessary policy responses.

I urge you to abandon BLM's approach and engage the National Academy of Sciences to complete a full report as required by law.

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[15] Telephone conversation between House Oversight Committee staff and Elizabeth A. Eide, Director, Committee on Earth Resources, The National Academies (Oct. 29, 2007).

[16] BLM, Energy Policy Act Implementation Accomplishments marked "For Internal Use Only" (Oct. 2, 2007); Bureau of Land Management, Energy Policy Act of 2005: BLM Due Dates and Status (October 2, 2007).

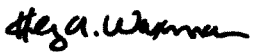
[17] Bureau of Land Management, *Coal Bed Methane Study: Section 1811 of Energy Policy Act* (February 26, 2007).

[18] *Id.*

[19] E-mail from Ray Brady, Manager, Energy Policy Act Team, Bureau of Land Management, to Luke D. Johnson, Bureau of Land Management (February 12, 2007).

If you have any questions about this matter, feel free to contact me or have your staff contact Greg Dotson or Gilad Wilkenfeld on the Oversight Committee at (202) 225-4407.

Sincerely,



Henry A. Waxman
Chairman

cc: Tom Davis
Ranking Minority Member

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

DEC - 5 2007

Peter
Wilderfeld

Hydraulic
Fracturing

The Honorable Henry A. Waxman
Chairman, Committee on Oversight
and Government Reform
House of Representatives
Washington, D.C. 20515-0001

Dear Mr. Chairman:

Thank you for your letter of October 31, 2007, to Secretary of the Interior Dirk Kempthorne regarding implementation of Section 1811 of the Energy Policy Act of 2005 (EPAct). Secretary Kempthorne asked me to respond.

As acknowledged in your letter, the Bureau of Land Management (BLM) began a dialogue with the National Academy of Sciences (NAS) regarding execution of this study shortly after enactment of EPAct and subsequently provided the NAS with copies of existing studies. In February 2007, the BLM received a proposal from the NAS for completion of the study, which outlined four options and associated costs.

We have allocated funds from our Oil and Gas Program for the NAS to review existing studies and those currently underway and to hold a workshop in the March/April 2008 timeframe to hear from experts in the field. The public forum is to serve as a first step to identify the data gaps that may exist and to increase understanding of the issues. The participation of the Environmental Protection Agency will ensure a thorough understanding of their current studies and regulatory efforts related to coalbed natural gas effluent discharges under the Clean Water Act. Upon completion of the forum, we would be pleased to share with you the results and recommendations.

After evaluating the existing body of available research and the shared opportunities inherent in studies already in progress, the full scope of the effort to be funded will be detailed. Additional funding will be allocated at that time to complete the requirements of Section 1811.

I recognize this study is a significant obligation, both in complying with the law and in meeting the expectations of the public. The BLM's approach is measured and fiscally responsible, and I feel it will methodically result in the end product mandated through EPAct.

I continue to recognize the importance of this issue to you and want to assure you that we will work with the NAS and proceed with a phased approach to funding the full study. If you have

any questions, please contact Michael Nedd, BLM Assistant Director for Minerals, Realty and Resource Protection, at 202-208-4201.

Sincerely,

C. Stephen Allred
Assistant Secretary
Land and Minerals Management

Chairman WAXMAN. I want to recognize Mr. Davis, the ranking member.

Mr. DAVIS OF VIRGINIA. Thank you, Mr. Chairman, for holding this important hearing. I want to thank our panel for coming before us today.

In considering this committee's hearings today and next week, one might think the committee seeks to look into regulatory structures of energy exploration and generation, but a closer look reveals something different. These hearings appear to be about the impact on the environment of oil and gas exploration, coal-fired power plants, and although the background materials for this hearing describe such environmental impacts as potential, it appears pretty clear that some people have made up their minds.

Environmental conservation and protection is and should be a top national priority. Certainly, all responsible policymakers can agree on that. But how that priority fits in with others is where the disagreement often begins. I think we can all agree the Nation is moving toward an energy crisis. Oil already costs more than $90 a barrel, and our dependence on oil from unstable and often unfriendly nations continues, really dysfunctional countries. That is what we are dependent on.

Yet, many of my colleagues, as well as interest groups and others, seem unable or unwilling to move toward the middle and find a solution. Instead, we basically have two camps: one which argues we can drill or mine our way out of the problem, and the other which says we should focus on reducing our demand and mitigating carbon emissions.

The reality is we need to do both. We have to find more sources of energy, we must conserve. And I would add a third thing: we need to do major, major investments in alternative energies. We need almost a Marshall plan where we can focus so that 10 years from now we are not dependent on these dysfunctional nations around the world for our energy supply.

The gridlock up here, I will just tell you from one Member's perspective, is very disillusioning that we can't come together. This is something all Americans ought to agree on.

Henry and I may have some differences, but sitting around the table I think we agree that we need some solutions.

I am disappointed that as we go into the 11th month of this new Congress we continue to move further away from the energy independence and national security. Our energy bill not only fails to include any new sources of energy; it takes some existing sources off the table. It provides no new measure for addressing climate change or energy dependence. Meanwhile, some Members seek stringent regulations to provide Kyoto-like carbon dioxide reductions and place off-limits promising sources of energy within our border. To me, in the House bill we didn't even have higher CAFE standards, something I have voted consistently for and has to be part of any conservation package.

Given the widespread concern for the damaging effect of excessive carbon dioxide accumulation, a sensible energy policy should focus on both securing additional sources of domestic available energy and reducing carbon emissions, while ensuring regulations de-

signed to protect the environment are sensible, complete, and enforceable.

What we can't do now is take potential sources off the table. I worry about this in the subtext of the hearing. I worry again about poking small holes in the bottom of the boat.

I look forward to these hearings as an opportunity to work together to create solutions, not bigger problems.

Again, the chairman and I disagree on some issues, but I appreciate him bringing this issue forward and for bringing this distinguished panel today. Thank you very much.

[The prepared statement of Hon. Tom Davis follows:]

Opening Statement of Ranking Member Tom Davis
Full Committee Hearing on Oil and Gas Development
October 31, 2007

Thank you, Mr. Chairman, for holding this important hearing.

In considering this Committee's hearings today and next week, one might think the Committee seeks to look into the regulatory structures of energy exploration and generation. But a closer look reveals something quite different.

These hearings appear to be about the impact on the environment of oil and gas exploration and coal-fired power plants. And although the background materials for this hearing describe such environmental impacts as "potential," it appears pretty clear those on the other side already have their minds made up.

Environmental conservation and protection is and should be a top national priority; certainly, all responsible policymakers can agree on that. But how that priority fits in with others is where the disagreement often begins.

I think we can all agree the nation is moving toward an energy crisis. Oil already costs more than $90 a barrel, and our dependence on oil from unstable and often unfriendly nations continues to grow.

Yet, many of my colleagues, as well as interest groups and others, seem unable or unwilling to move toward the middle and find a solution. Instead, we basically have two camps – one which argues we can drill and mine our way out of the problem, and another which says we should focus solely on reducing our demand for energy and mitigating carbon emissions.

The reality is we need to do both. We must find more sources of energy, and we must conserve.

I am disappointed that as we go into the eleventh month of this new Congress, we continue to move farther away from energy independence and national security. Our so-called "energy bill" not only fails to include any new sources of energy, it takes some existing sources off the table. It provides few, if any, measures for addressing climate change or energy dependence. Meanwhile, some Members seek stringent regulation to provide Kyoto-like carbon dioxide reductions and place off-limits promising sources of energy within our borders.

Given the widespread concern for increasing energy dependence and the damaging effect of excessive carbon dioxide accumulation, a sensible energy policy should focus on both securing additional sources of domestically available energy <u>and</u> reducing carbon emissions, while ensuring regulations designed to protect the environment are sensible, complete, and enforceable.

What we can't do now is take potential sources off the table. I worry that this is the subtext of this hearing. I worry again about poking small holes in the bottom of the boat. I look forward to these hearings as an opportunity to work together to create solutions – not bigger problems.

Chairman WAXMAN. Thank you very much, Mr. Davis.

We will see after this hearing whether we have some disagreements on these issues, but I agree with your sentiment that we need to work together, because that is the only way we are going to get things done.

We have a number of members of the first panel, and I want to introduce them, but Mr. Issa, would you like to make an opening statement?

Mr. ISSA. I would appreciate it. I will be brief.

Chairman WAXMAN. OK.

Mr. ISSA. Thank you, Mr. Chairman, for convening this hearing.

I agree with the ranking member, Mr. Davis, that we should acknowledge and plan for a carbon-constrained world. That, for me, includes nuclear and other forms of zero emissions, something that we have not yet begun to look at in this Congress.

Further, the debate is not a question on additional production or conservation. As Mr. Davis said, we need to do both, especially at a time in which we see oil prices heading toward $100 a barrel, in our home State gasoline heading toward $3.30. We cannot simply say that we need to re-look at issues which, on a bipartisan basis, have been previously resolved and in the courts have been previously heard and in the Clinton administration have been previously resolved as the panacea for fixing all items.

I appreciate that the chairman's consistent view toward clean water has included, for all practical purposes, an end to mining, certainly an end to exploration of natural gas and other petroleum products.

From 2000 to 2005, the Democrat congressional leaders worked in the shadows to stall an agreement on the energy bill. I believe today we should be fair in saying that there were minor changes in the 2005 bill; however, they were minor. For all practical purposes, we operate on an energy basis under laws which have been codified for decades and which the courts and the EPA have reviewed and find reasonable.

What we don't need today is to tell the oil and natural gas markets that the rules of the road are going to be changed, and changed retroactively, as many pieces of legislation and some of the views on the dais would do.

I look forward to this hearing. I certainly look forward to being clear and concise that this practice does not include the use of diesel fuel. That has already been eliminated. In fact, what we are talking about is pressurizing water in order to let loose minerals that are vital to our society. Every drop of oil, every cubic foot of natural gas that we take out of American soil is one less that we need to take out of unstable regions around the world.

With that, I yield back.

Chairman WAXMAN. Thank you very much, Mr. Issa.

Without objection, our colleague, Diana DeGette from Colorado, wishes to sit with our panel, and I would ask unanimous consent that she be permitted to do so.

For the first panel we have Ms. Amy Mall, who is a senior policy analyst at the Natural Resources Defense Council working on issues affecting the environment, public lands, and oil and gas regulation.

Mr. Kendrick Neubecker is the vice president of Colorado Trout Unlimited. Mr. Neubecker has 25 years experience as a land surveyor and has worked for the oil and gas industry in both Colorado and Wyoming.

Dr. Theo Colborn is president of the Endocrine Disruption Exchange. Dr. Colborn has a Ph.D. in zoology, with distributed minors in epidemiology, toxicology, and water chemistry. She also has a master's degree in fresh water ecology.

We are pleased to welcome you.

Mr. Daniel Teitelbaum is a medical toxicologist. He is an associate professor of preventive medicine at the University of Colorado Medical School and adjunct professor of environmental sciences at the Colorado School of Mines. Dr. Teitelbaum works in the field of environmental and occupational toxicology.

Mr. Steve Mobaldi was a resident of Rifle, CO, from 1995 to 2004. Mr. Mobaldi will share the story about how his life and the life of his wife Chris changed after oil and gas development began near their home.

Ms. Susan Wallace-Babb was a resident of Parachute, CO, between 1997 and 2006. Ms. Wallace-Babb is here today to share her story of how oil and gas development affected her life.

And Mr. David Bolin is the deputy director of the Alabama State Oil and Gas Board. Mr. Bolin has held technical and supervisory roles in the State Oil and Gas Board since 1982 and has worked for the State of Alabama for nearly three decades.

We welcome all of you to our hearing today.

It is the practice of this committee that all witnesses who testify before us testify under oath. I would like to ask each of you to please stand and raise your right hands to take the oath.

[Witnesses sworn.]

Chairman WAXMAN. The record will reflect that each of the witnesses answered in the affirmative.

Your prepared statements will be in the record in full. What we would like to ask each of you to do is to limit your oral presentation to no more than 5 minutes so that we can have all the witnesses and opportunity for questions from the panel.

There is a little clock in front, and when it is green that is fine. Last minute it will be on yellow. That means you have a minute to go. And then when it is red it means the 5-minutes is up.

Ms. Mall, why don't we start with you.

STATEMENTS OF AMY MALL, SENIOR POLICY ANALYST, NATURAL RESOURCES DEFENSE COUNCIL; KENDRICK NEUBECKER, ON BEHALF OF TROUT UNLIMITED; THEO COLBORN, PRESIDENT, THE ENDOCRINE DISRUPTION EXCHANGE; DANIEL TEITELBAUM, M.C., P.C., MEDICAL TOXICOLOGIST, PRESIDENT, MEDICAL TOXICOLOGY AND OCCUPATIONAL MEDICINE; STEVE MOBALDI, GRAND JUNCTION, CO; SUSAN WALLACE-BABB, WINNSBORO, TX; AND DAVID E. BOLIN, DEPUTY DIRECTOR, STATE OIL AND GAS BOARD, STATE OF ALABAMA

STATEMENT OF AMY MALL

Ms. MALL. Thank you, Chairman Waxman, Ranking Member Davis, and members of the committee. Thank you for the invitation to appear here today.

My name is Amy Mall and I am a senior policy analyst with the National Resources Defense Council [NRDC]. Today NRDC is releasing a report entitled, Drilling Down: Protecting Western Communities from the Health and Environmental Effects of Oil and Gas Production. You should each have a copy of the report. It discusses hazardous materials associated with oil and gas exploration and production, loopholes in Federal laws that allow industry to release these contaminants into the environment, technologies available to control pollution, and stories of the impacts of contamination reported by individuals in the Rocky Mountain region.

The oil and gas industry is expanding rapidly in the United States and coming closer to homes and communities. The McCoy Elementary School in Aztec, NM, for example, is located less than 400 feet from two wells, and the playground is less than 150 feet.

Among the toxic materials that can be released during oil and gas operations are benzene, toluene, xylene, radioactive materials, hydrogen sulfide, arsenic, and mercury. Their potential health effects range from cancer to respiratory problems to eye and skin irritation.

What are the statutory loopholes for oil and gas exploration and production that need to be closed? The Safe Drinking Water Act has an exemption for hydraulic fracturing, which usually involves the underground injection of toxic chemicals. Hydraulic fracturing is a suspect in impaired drinking water in Alabama, Colorado, New Mexico, Virginia, West Virginia, and Wyoming.

Additionally, the Safe Drinking Water Act has lower daily fines and sets a higher hurdle for regulating certain oil or gas operations than for other industries.

The Clean Water Act has an exemption from stormwater permit requirements, expanded by Congress in 2005. The EPA has interpreted this new exemption as allowing unlimited discharge of sediment into the Nation's streams, even if it contributes to a violation of State water quality standards. In addition, the Clean Water Act definition of pollutant excludes certain materials injected into an oil or gas well.

The Resource Conservation and Recovery Act [RCRA], has an exemption from most hazardous waste associated with oil and gas production, including drilling chemicals, hydrocarbons, and hydraulic fracturing fluids, even if they contain toxic materials.

The Comprehensive Environmental Response, Compensation, and Liability Act [CERCLA], or the Superfund law, has an exemption for petroleum and natural gas which contain toxic substances. The Clean Air Act contains exemptions from the national emission standards for hazardous air pollutants. In addition, hydrogen sulfide, which can be a serious health threat, is exempt from regulation as a hazardous air pollutant.

Exploration and production are not covered by the toxic release inventory of the Emergency Planning and Community Right to Know Act, so that companies can withhold information about chemicals, even if the information is needed to make informed decisions about protecting health.

Why were these exemptions created? The hydrogen sulfide exemption was called a core scientific decision by an EPA official. An EPA study on hydraulic fracturing used to bolster the Safe Drinking Water Act exemption was declared scientifically unsound by an EPA whistleblower.

Another EPA official stated that the RCRA exemption was approved despite a scientific determination of the hazardousness of the waste.

It is time to end these loopholes. There is sufficient evidence that toxic materials that can harm human health are being released into the environment. The oil and gas industry should be required to comply with the same statutory provisions as any other industry.

There are numerous methods available to industry to comply with our environmental laws, and in many cases they are actually profitable. Devon Energy, for example, spent $15,000 to capture gas emissions from a well instead of venting them into the air and sold the methane captured for $35,000. A company representative called it a win/win for everybody.

Regarding hydraulic fracturing, there are nontoxic alternatives to harmful chemicals, one of which is water. Company studies have found that some gas wells fractured with water produce more gas and/or cost considerably less to fracture than wells fractured with chemicals.

For stormwater pollution prevention, there are approaches that are quite low-tech, such as installing vegetative ground cover, berms, or silt fences.

For managing waste, options include closed-loop drilling fluid systems that studies have found can dramatically lower the volume of waste, maximize re-use and recycling of drilling fluids, and create savings in the long run when compared to open air disposal pits, up to tens of thousands of dollars per pit.

Many environmental improvements such as substituting less toxic materials, disclosing information to the public, or improving monitoring and maintenance can be implemented quickly, without new equipment or great burden. Instead, industry is sometimes purchasing the homes of people who voice concerns about their health in return for signed agreements that the complaints will not be made public.

The free pass to pollute given to the oil and gas industry is a privilege that is unjustifiable when weighed against the risks to

human health. The time for Congress to take action is long overdue.

Thank you.

[The prepared statement of Ms. Mall follows:]

Testimony of Amy Mall,
NATURAL RESOURCES DEFENSE COUNCIL

ON
The applicability of federal requirements that protect public health and the environment to oil and gas development

Presented to the Committee on Oversight and Government Reform

United States House of Representatives

OCTOBER 31, 2007, 10:00 AM

Good morning Chairman Waxman, Ranking Member Davis, and members of the Committee. Thank you for the invitation to appear before you today to testify about the environmental and health impacts of oil and gas exploration and production. My name is Amy Mall, and I am a senior policy analyst with the Natural Resources Defense Council (NRDC). NRDC is a national non-profit organization of scientists, lawyers, and environmental policy specialists dedicated to protecting public health and the environment. Founded in 1970, NRDC has more than 1.2 million members and online activists nationwide.

Today NRDC is releasing a report entitled, "Drilling Down: Protecting Western Communities from the Health and Environmental Effects of Oil and Gas Production." This report discusses hazardous materials that can enter the environment during oil and gas exploration and production, the loopholes in federal laws that allow industry to legally release these contaminants into the human environment, and the technologies readily available to control pollution and minimize toxic waste in order to reduce any impacts to human health.

Summary

The oil and gas industry has expanded rapidly during the last decade in the United States, particularly in the Rocky Mountain region, and predictions call for that trend to continue. Oil and gas production is a dirty process; many of the steps involved can be sources of dangerous pollution that can have serious impacts on the region's air, water, and land—and on people's health. Despite the number of dangerous materials involved in oil and gas production—and the frequent proximity of these operations to residences and other community resources—the oil and gas industry enjoys numerous exemptions from provisions of federal laws intended to protect human health and the environment.

Decades of deal-making by the industry, Congress, and regulatory offices have resulted in exemptions for the oil and gas industry from protections in the Clean Water Act, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, also known as the Superfund law), the Resource Conservation and Recovery Act, the Safe Drinking Water Act, and the Clean Air Act. In addition, the oil and gas industry is not covered by public right-to-know provisions under the Emergency Planning and Community Right-to-Know Act, meaning that companies can withhold information needed to make informed decisions about protecting the environment and human health.[1]

Many people who live near oil and gas operations experience symptoms resembling those that may be caused by the toxic substances found in oil and gas or the chemical additives used to produce them. Among the toxic chemicals that can be released during oil and gas operations are benzene, toluene, ethylbenzene, and xylene (known as the "BTEX" chemicals);[2] radioactive materials;[3] hydrogen sulfide;[4] arsenic;[5] and mercury.[6] The illnesses associated with these substances range from eye and skin irritation to respiratory problems, thyroid disorders, and even tumors. Their known health effects are described in the chart below.

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[1] Several of these loopholes were originally discussed in Doyle, J., "Crude Awakening - The Oil Mess in America: Wasting Energy, Jobs & The Environment," (Friends of the Earth 1994), see pp. 154-155.

[2] Williams, S.D., D.E. Ladd, and J.J. Farmer, "Fate and Transport of Petroleum Hydrocarbons in Soil and Ground Water at Big South Fork National River and Recreation Area, Tennessee and Kentucky, 2002-2003," U.S. Geological Survey, Scientific Investigations Report 2005-5104 (2006), p.7.

[3] Smith, K.P., "An Overview of Naturally Occurring Radioactive Materials (NORM) in the Petroleum Industry," Argonne National Laboratory, ANL/EAIS-7 (December 1992). For more information see Argonne National Laboratory's website on Naturally Occurring Radioactive Materials (NORM) at: http://www.ead.anl.gov/project/dsp_topicdetail.cfm?topicid=16.

[4] Illinois Department of Public Health, Fact Sheet, "Hydrogen Sulfide Gas," available at: http://www.idph.state.il.us/envhealth/factsheets/hydrogensulfide.htm.

[5] Puri, B. K. and K.J. Irgolic, "Determination of Arsenic in Crude Petroleum and Liquid Hydrocarbons, "*Environmental Geochemistry and Health*," 11 (3,4) 95-99 (December 1989).

[6] Wilhelm, S.M. et al, "Mercury in Crude Oil Processed in the United States," *Environmental Science & Technology*, 41(13) 4509-4514, 2007.

TOXIC CHEMICALS RELEASED DURING OIL & GAS OPERATIONS

Pollutant	Known Negative Health Effects
Arsenic	Chronic arsenic exposure can cause damage to blood vessels, a sensation of "pins and needles" in hands and feet, darkening and thickening of the skin, and skin redness. It is a known human carcinogen, and can cause cancer of skin, lungs, bladder, liver, kidney and prostate.[7]
Hydrogen Sulfide	Hydrogen sulfide has been linked to irritation of the eyes, nose, and throat, difficulty in breathing, headaches, dizziness, nausea, and vomiting. Low-level exposure might also lead to poor attention span, poor memory, and impaired motor function. Short-term exposure at high concentrations can lead to loss of consciousness and death.[8]
Mercury	Mercury can permanently damage the brain, kidneys, and developing fetus and may result in tremors, changes in vision or hearing, and memory problems. Even in low doses, mercury may affect an infant's development, delaying walking and talking, shortening attention span and causing learning disabilities.[9]
Polycyclic Aromatic Hydrocarbons	Several of the polycyclic aromatic hydrocarbons (PAHs) that can be found in crude oil have caused tumors in laboratory animals and are considered possible or probable human carcinogens. Studies of people have found that individuals exposed for long periods to mixtures that contain PAHs can also develop cancer. In addition, animal tests have found reproductive problems and birth defects.[10]

[7] National Library of Medicine, Hazardous Substances Data Bank (HSDB): http://toxnet.nlm.nih.gov; U.S. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry (ATSDR), "ToxFAQs for Arsenic" (September 2005), available at: http://www.atsdr.cdc.gov/tfacts2.html. See also: U.S. Department of Energy, Office of Environmental Management, Risk Assessment Information System (RAIS), "Toxicity Summary for Arsenic," available at: http://rais.ornl.gov/tox/profiles/arsenic.shtml.

[8] HSDB: http://toxnet.nlm.nih.gov; ATSDR, "ToxFAQs for Hydrogen Sulfide" (July 2006), available at: http://www.atsdr.cdc.gov/tfacts114.html. See also: Hirsch, A.R., "Hydrogen sulfide exposure without loss of consciousness: chronic effect in four cases," *Toxicology and Industrial Health* 18, No. 2 (March 2002), pp. 51-61; Kilburn, K.H., "Effects of Hydrogen Sulfide on Neurobehavioral Function," *Southern Medical Journal* 96, No. 7 (July 2003), pp. 639-646; Legator, M.S. et al, "Health effects from chronic low-level exposure to hydrogen sulfide," *Archives of Environmental Health* 56, No. 2 (March- April 2001), pp. 123-131.

[9] HSDB: http://toxnet.nlm.nih.gov; ATSDR, "ToxFAQs for Mercury" (April 1999), available at: http://www.atsdr.cdc.gov/tfacts46.html. See also: RAIS, Toxicity Summary for Mercury, available at: http://rais.ornl.gov/tox/profiles/mercury_f_V1.shtml.

[10] HSDB: http://toxnet.nlm.nih.gov; ATSDR, "Public Health Statement for Polycyclic Aromatic Hydrocarbons (PAHs)" (August 1995), available at: http://www.atsdr.cdc.gov/toxprofiles/phs69.html.

Volatile Organic Compounds (VOCs)	
Acetone	Acetone can cause nose, throat, lung, and eye irritation; headaches; light-headedness; and confusion. In animals it has been linked to kidney, liver, and nerve damage, and increased birth defects.[11]
Benzene	Benzene is a known human carcinogen and causes leukemia.[12]
Ethylbenzene	Ethylbenzene can cause dizziness, throat and eye irritation, respiratory problems, fatigue and headaches. It has been linked to tumors and birth defects in animals, as well as to damage in the nervous system, livers and kidneys.[13]
Toluene	Toluene can cause fatigue, confusion, weakness, memory loss, nausea, hearing loss, central nervous system damage, and may cause kidney damage.[14] It is also known to cause birth defects and reproductive harm.[15]
Xylene	Xylene can cause headaches, dizziness, confusion, balance changes, irritation of the skin, eyes, nose, and throat, breathing difficulty, memory difficulties, stomach discomfort, and possibly changes in the liver and kidneys.[16]
Radioactive Substances	
Radium	Radium is a known human carcinogen, causing bone, liver, and breast cancer.[17]
Radon	Radon can cause an increased incidence of lung diseases such as emphysema, as well as lung cancer.[18]

[11] HSDB: http://toxnet.nlm.nih.gov; ATSDR, "ToxFAQs for Acetone" (September 1995), available at: http://www.atsdr.cdc.gov/tfacts21.html.
[12] HSDB: http://toxnet.nlm.nih.gov; ATSDR, "ToxFAQs for Benzene" (September 2005), available at: http://www.atsdr.cdc.gov/tfacts3.html. See also: RAIS, "Toxicity Summary for Benzene," available at: http://rais.ornl.gov/tox/profiles/benzene.shtml.
[13] HSDB: http://toxnet.nlm.nih.gov; ATSDR, "ToxFAQs for Ethylbenzene" (June 1999), available at: http://www.atsdr.cdc.gov/tfacts110.html; See also: U.S. Department of Labor, Occupational Safety and Health Administration Guidelines for Ethyl Benzene (April 1999), available at: http://www.osha.gov/SLTC/healthguidelines/ethylbenzene/index.html.
14 HSDB: http://toxnet.nlm.nih.gov; ATSDR, "ToxFAQs for Toluene" (February 2001), available at: http://www.atsdr.cdc.gov/tfacts56.html. See also: RAIS, "Toxicity Summary for Toluene," available at: http://rais.ornl.gov/tox/profiles/toluene_f_V1.shtml.
[15] State of California Environmental Protection Agency, "Chemicals known to the state to cause cancer or reproductive toxicity, (1 June 2007), available at: http://www.oehha.ca.gov/prop65/prop65_list/Newlist.html.
[16] HSDB: http://toxnet.nlm.nih.gov; ATSDR, "ToxFAQs for Xylene" (September 2005), available at: http://www.atsdr.cdc.gov/tfacts71.html. See also: RAIS, "Toxicity Summary for Xylene," available at: http://rais.ornl.gov/tox/profiles/xylene.shtml.
[17] HSDB: http://toxnet.nlm.nih.gov; ATSDR, "ToxFAQs for Radium" (July 1999), available at: http://www.atsdr.cdc.gov/tfacts144.html.
[18] HSDB: http://toxnet.nlm.nih.gov; ATSDR, "ToxFAQs for Radon" (July 1999), available at: http://www.atsdr.cdc.gov/tfacts145.html.

Why don't we hear even more stories about illnesses related to oil and gas operations? Oil and gas companies may claim there is a lack of data proving that industry pollution is a cause of illness. While more research needs to be conducted, important information is available. There are now more wells than ever before, and more of them near where people live. Chemical poisoning is notorious for resulting in nonspecific signs or symptoms that resemble other common diseases, immediate symptoms might be nonexistent or mild despite the risk of long-term severe health effects, and physicians may not recognize the connection between illness and the oil and gas operations.

In a 2004 program sponsored by the Centers for Disease Control and Prevention, two medical toxicologists from the National Center for Environmental Health discussed the challenges of recognizing illness stemming from chemical exposure, including:

- Chemicals do not always cause acute and obvious health effects. Immediate symptoms of chemical exposures might be nonexistent or mild despite the risk for long-term effects. Because of this lag time, it may be difficult for us to recognize the exposure source leading to the illness.
- Another obstacle that could lead to difficulty in recognition might be exposure to multiple chemical agents.
- Chemical poisoning is notorious for resulting in nonspecific signs or symptoms that resemble other common diseases.
- Physicians might be less familiar with recognition and treatment of illness related to chemical agents simply because illness from most chemicals is just not that common or at least not recognized as often as it occurs. [19]

In addition, some individuals choose not to share their stories, especially in communities with local economies dependent on the oil and gas industry. Others move away, sometimes with their homes purchased by energy companies and with signed agreements that prohibit them from telling their stories. And still others have given up on trying to call attention to this matter. One man recently stated at a public meeting, "...if few people are complaining about drilling these days, it's because they've given up after being ignored for so long."[20]

Despite readily available and often economical technological solutions capable of controlling hazardous pollution such as air emission controls and non-toxic or less toxic chemical alternatives, the industry as a whole has failed to take reasonable steps needed to protect families, communities, and the environment. NRDC therefore recommends that the federal government, in coordination with state and local governments:

- Close the legal loopholes granting oil and gas exemptions from laws designed to protect our air, water, and land, and human health;

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[19] Excerpted from: "Recognition of Illness Associated With Chemical Exposure," Centers for Disease Control and Prevention, Public Health Training Network Webcast. August 5, 2004, available at: http://www2.cdc.gov/phtn/webcast/chemical-exp/default.asp.

[20] Webb, Dennis, "Houpt: Gasfield residents will be heard," *The Aspen Times* (7 October 2007).

- Require industry to adopt affordable and available technological solutions for limiting pollution; and
- Evaluate health risks associated with oil and gas production and exploration, including independent testing of air, water, and land; conducting an assessment of the level of toxic exposure of families; identifying chemicals used; and tracking illnesses in workers and communities impacted by oil and gas facilities.

Background

The oil and gas industry is booming. In keeping with America's rising national demand for energy, domestic oil and natural gas production has expanded enormously in recent decades—and much of this growth is occurring in the Rocky Mountain region. According to the U.S. Energy Information Administration, between 1990 and 2005 the number of producing gas wells nationwide (spread across 32 states) increased from roughly 270,000 to 425,000.[21] The American Petroleum Institute (API) reported that 2006 was a record year for gas drilling, with more than 29,000 new wells drilled.[22] New Mexico, Colorado, Wyoming and Montana are among the states with the greatest growth. In addition to recent industry shifts favoring gas production, the number of producing oil wells also ranks in the hundreds of thousands. The year 2006 saw more oil wells completed—more than 15,000—than in any year since the 1980s.[23] Expectations that this buildup will continue unabated were confirmed by the API's recent report that oil and gas drilling hit a 21-year high in the first half of 2007.[24]

Colorado is already home to more than 30,000 active oil and gas wells. At the current rate of development, that number will double in less than six years.[25] State officials in Wyoming have approved more than 50,000 drilling permits since 2000, with more than 9,000 permits approved in 2006 alone.[26] The State of New Mexico approved nearly one-fifth more drilling permits in 2006 than were approved in 2005.[27] In Utah, state officials approved twice as many permits in 2006 as they did in 2004.[28]

Wells can be located near homes and communities, sometimes only hundreds of feet from a home, school, playground, or agricultural operation creating food products. The

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[21] Energy Information Administration, "Number of Producing Gas and Gas Condensate Wells," U.S. Department of Energy. (July 2007). According to the EIA: "Prior to 2001, the well counts for Federal Offshore Gulf of Mexico were included in the well counts for Alabama, Louisiana, and Texas." Available at: http://tonto.eia.doe.gov/dnav/ng/xls/ng_prod_wells_s1_a xls#'1-Number of Gas and Gas Condensate Wells'!A1.

[22] "Industry sets record for drilling, well completions," *Land Letter*, 18 January 2007.

[23] Ibid.

[24] American Petroleum Institute, "U.S. drilling & completion half-year estimates at 21-year high" (1 August 2007), Available at: http://www.api:org/Newsroom/drilling-21year-high.cfm.

[25] Colorado Oil and Gas Conservation Commission, "Colorado Weekly & Monthly Oil & Gas Statistics" (8 August 2007). Available at: http://www.oil-gas.state.co.us/Library/Statistics/CoWkly&MnthlyO&GStats2007.pdf.

[26] Wyoming Oil and Gas Conservation Commission, "All APDs Approved." Available at: http://wogcc.state.wy.us/AllAppcount cfm.

[27] New Mexico Oil Conservation Division, "APD's by County – 2005 and YTD 2006" (10 January 2007). Available at: http://www.emnrd.state.nm.us/ocd/documents/APDs_by_Co011007.xls.

[28] Utah Division of Oil, Gas, and Mining, "Applications for Permits to Drill (APD)-by year," State of Utah Department of Natural Resources (2007). Available at: http://www.ogm.utah.gov/oilgas/STATISTICS/permits/APDcount/apds_annual.htm.

McCoy Elementary School in Aztec, New Mexico, for example, is located less than 400 feet from two wells—and the playground is less than 150 feet from the wells. The Piedra Vista High School in Farmington, New Mexico is located approximately 500 feet from a well pad.

Unfortunately, these are not isolated occurrences. Many wells are in close proximity to places where people farm, work, and live. To illustrate how many people may live close to oil and gas wells, NRDC performed an analysis of the proximity of residential land parcels to oil and gas wells in Garfield County, Colorado and San Juan County, New Mexico.[29] In Garfield County, where there are 7,298 oil and gas wells,[30] NRDC found that 1,179 residential land parcels (8.5 percent of the total) were within 500 meters of at least one well and 276 residential land parcels were within 500 meters of at least five wells.[31]

In San Juan County, New Mexico, NRDC found even more residential land parcels near oil and gas wells (excluding portions of the Navajo and Ute Mountain nations). There are 28,207 residential land parcels in San Juan County and 18,711 oil and gas wells.[32] NRDC determined that most residential land parcels in San Juan County lie within 500 meters of at least one well: 20,048 residential land parcels are near at least one well; 14,540 are near at least two wells; and 3,065 are near at least five wells.[33]

Garfield and San Juan Counties illustrate the proximity of oil and gas wells to homes in the Rocky Mountain region. Many people do not own all of the rights to oil and gas underlying their land, and therefore cannot stop drilling from happening – even on their own property.[34] The increase in the overall number of wells being drilled could exacerbate the risk of health and environmental problems faced by the thousands of people living in communities with these sources of dangerous pollution. In addition, the impacts on workers and their families, to whom they may bring home toxic materials on their clothing or their shoes, are unknown.

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[29] For each county, Geographic Information Systems (GIS) data were obtained in the form of shapefiles, defining the boundaries and indicating the types of individual land parcels within the counties. Databases providing well locations were converted to GIS shapefiles, and buffer circles of 500 meters (1,640 feet) were created around each well. The GIS software was then used to calculate, for each residential land parcel, how many of these well buffer circles overlapped the area of the given residential land parcel. The land parcel shapefiles do not indicate how many people take up residence in a given parcel, and so an estimate of the population living in proximity to oil and gas wells was not performed with these data. Nor did we determine where in the land parcel a residential dwelling may be located.

[30] Colorado Oil and Gas Information System (COGIS) Database, available at: http://www.oil-gas.state.co.us/.

[31] Garfield County Assessor's Office, "Parcels: Property Boundaries and Surface Land Ownership, Garfield County Colorado," CD, 2007.

[32] GO-TECH, New Mexico Petroleum Recovery Research Center, available at: http://octane.nmt.edu/gotech/Petroleum_Data/allwells.aspx.

[33] San Juan County Assessor's Office, "San Juan County, New Mexico, Parcel Data CD," (12 July 2007).

[34] For more information on "split estate" circumstances, see: http://www.earthworksaction.org/SplitEstate.cfm.

Chemicals involved in oil and gas production can harm health

Toxic substances can enter the environment and pose a threat to human health at a number of points in the oil and gas production process. To start, oil and gas contain substances that are known to be very hazardous to human health, and exploration and production operations can release hazardous substances found naturally beneath the earth's surface into the environment.[35] These substances include: benzene, toluene, ethylbenzene, and xylene (known as the "BTEX" chemicals);[36] radioactive materials;[37] hydrogen sulfide;[38] arsenic;[39] mercury;[40] and more. Among the illnesses these substances can cause are cancer, damage to the central nervous system, dizziness, lung diseases and breathing difficulties, headaches, nausea, eye and nose irritation, and more.

Without proper safety measures, and compliance with and enforcement of such measures, toxic substances can be released into the environment from active wells, abandoned wells, and other facilities used in the oil and gas production process. Wells can directly vent toxic materials into the air. Oil spills or leaking wells can introduce contaminants into soils or water. Liquid and solid waste products are often dumped in open pits in the ground or even sprayed into the air. Toxic fluids can seep into the groundwater when these pits are not properly lined, and volatile toxic materials in the pits can evaporate into the air. In addition, stormwater can carry these toxic materials to other locations. Produced water—the fluid that is pumped out of the well and separated from oil and gas—is often nothing like water we drink and can contain oil, chemical additives used in the drilling and production processes, heavy metals, radioactive material, and volatile organic compounds like benzene and toluene. Billions of gallons of produced water are generated each year.[41]

Naturally occurring radioactive substances, which cause a host of adverse health effects, are among the numerous highly toxic substances that may be released during oil and gas exploration and production. According to the U.S. Environmental Protection Agency (EPA), the oil and gas industry is estimated to generate about 34 million gallons of

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[35] Oil and Gas Accountability Project, "Pathways and Sources of Contamination," available at: http://www.earthworksaction.org/contaminantpathways.cfm.

[36] Williams, S.D., D.E. Ladd, and J.J. Farmer, "Fate and Transport of Petroleum Hydrocarbons in Soil and Ground Water at Big South Fork National River and Recreation Area, Tennessee and Kentucky, 2002-2003," U.S. Geological Survey, Scientific Investigations Report 2005-5104 (2006), p.7.

[37] Smith, K.P., "An Overview of Naturally Occurring Radioactive Materials (NORM) in the Petroleum Industry," Argonne National Laboratory, ANL/EAIS-7 (December 1992). For more information see Argonne National Laboratory's website on Naturally Occurring Radioactive Materials (NORM) at: http://www.ead.anl.gov/project/dsp_topicdetail.cfm?topicid=16.

[38] Illinois Department of Public Health, Fact Sheet, "Hydrogen Sulfide Gas." Available at: http://www.idph.state.il.us/envhealth/factsheets/hydrogensulfide.htm.

[39] Puri, B. K. and K.J. Irgolic, "Determination of Arsenic in Crude Petroleum and Liquid Hydrocarbons, "*Environmental Geochemistry and Health*," 11 (3,4) 95-99 (December 1989).

[40] Wilhelm, S.M. et al, "Mercury in Crude Oil Processed in the United States," *Environmental Science & Technology*, 41(13) 4509-4514, 2007.

[41] Veil, J.A. et al, "A White Paper Describing Produced Water from Production of Crude Oil, Natural Gas, and Coal Bed Methane," Argonne National Laboratory (January 2004). See also: EPA (October 2000), p.45. Available at: http://www.epa.gov/compliance/resources/publications/assistance/sectors/notebooks/oilgas.pdf.

radium-contaminated waste each year.[42] The levels of radioactivity can exceed those permitted to be discharged by nuclear power plants.[43]

The Emergency Planning and Community Right-to-Know Act was enacted in 1986 to establish a process for informing people of chemical hazards in their communities. Companies are required to report the locations and quantities of certain chemicals stored, released, or transferred.[44] Some of this information is made available to the public in an annual Toxics Release Inventory (TRI). Congress originally specified which industries were required to report to the TRI, but gave the EPA the authority to add or delete industries. The EPA was also given discretion to require reporting from any facility, based on criteria including the toxicity of the chemicals involved, proximity to other facilities that release a toxic chemical or to population centers, and the history of releases at the facility. While petroleum bulk stations, terminals, refining and related industries are required to report to the TRI, oil and gas exploration and production are not.[45]

According to the Oil and Gas Accountability Project, oil and gas companies generally assert that the composition of the chemical products they use is confidential and legally protected information. The industry has claimed that sufficient chemical ingredient information is provided in so-called Tier II reports (required by the Emergency Planning and Community Right-to-Know-Act) and Material Safety Data Sheets (MSDS) required by the Occupational Safety and Health Administration. Tier II reports, however, apply only to large volumes of stored chemicals and often list only one chemical (even if a product contains multiple ingredients) or are too general to identify specific chemicals. MSDS reports may state that the mixture of chemicals being stored or used is proprietary or may include an incomplete list of the chemicals in the product.[46]

Oil and gas drilling, production, and processing utilize hundreds of chemical additives, many of them toxic to human and animal health. The independent non-profit organization TEDX (The Endocrine Disruption Exchange) has analyzed publicly available documents citing the products and individual chemicals used in oil and natural

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[42] U.S. Environmental Protection Agency, "Oil and Gas Production Wastes." Available at: http://www.epa.gov/radiation/tenorm/oilandgas.html.

[43] U.S. Occupational Safety and Health Administration, "Health Hazard Information Bulletin: Potential Health Hazards Associated with Handling Pipe used in Oil and Gas Production" (26 January 1989). Available at: http://www.osha.gov/dts/hib/hib_data/hib19890126.html.

[44] There are some limitations on what information is available to the public through the TRI. For example, companies are required to report only a limited number of substances. In addition, reporting is only required for hazardous wastes that are discarded, not chemicals actually used in a business. There are also thresholds for reporting – if a facility does not release above the threshold, they do not need to report the release of hazardous chemicals. The Bush Administration raised this threshold in 2006, so that there will be less reporting of dangerous chemicals released into the environment. For more information about the TRI see: Right-to-Know Network, "About TRI Data," at: http://data.rtknet.org/tri/genhelp.php; and Scorecard, "The U.S. Toxic Release Inventory," at: http://www.scorecard.org/general/tri/tri_gen.html.

[45] U.S. EPA, "Standard Industrial Classification (SIC) Codes in TRI Reporting." Available at: http://www.epa.gov/tri/report/siccode.htm#original_industries.

[46] Oil and Gas Accountability Project, Letter to Colorado Department of Public Health and Environment and Colorado Oil and Gas Conservation Commission, 14 June 2006.

gas development and delivery. TEDX has researched the scientific literature on these substances and has documented the negative health effects associated with them.

The TEDX analysis of products used in oil and gas operations in four western states revealed more than 350 products containing hundreds of chemicals; more than 90 percent of these products contain chemicals with one or more adverse health effects. The health effects vary in type and severity, but the four most common effects experienced on immediate exposure are: skin, eye and sensory organ toxicity; respiratory problems; neurotoxicity; and gastrointestinal and liver damage. These substances may also cause health effects without immediate symptoms that progress slowly and are more difficult to diagnose in the short term, such as cardiovascular and reproductive disorders, or certain cancers. Because product ingredients are often listed as proprietary or are unspecified, TEDX makes no claim that its data are complete.[47]

In order to monitor for contamination and protect human health, it is essential to know exactly which chemicals are being used in individual oil and gas operations, along with their quantities and how they are combined.[48] Toxic chemicals may be used in many different combinations in various ways throughout the oil and gas production process, e.g., to facilitate drilling, inhibit corrosion, limit mineral scaling, eliminate bacteria, or fracture underground rock formations.

More research is needed on the impacts of oil and gas exploration and production on the health of nearby communities. A recent study reported a higher prevalence of rheumatic diseases, lupus, neurological symptoms, respiratory symptoms and cardiovascular problems in a New Mexico community built on top of a former oilfield with some nearby active wells when compared to a community with no known similar exposures.[49] Other studies have found increased cancer risks associated with living near oil or gas fields.[50] There have been additional studies on the occupational hazards from working in the industry, but it is shocking that an industrial activity present in 32 states—with more than

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[47] The Endocrine Disruption Exchange, "Analysis of Chemicals Used in Natural Gas Development and Delivery: Four Western United States," (March 2007). Available at: http://www.endocrinedisruption.com/. For more information on pollution outputs from oil and gas, see: U.S. Environmental Protection Agency, Office of Compliance, "Profile of the Oil and Gas Extraction Industry" (October, 2000), p. 73. Available at: http://www.epa.gov/compliance/resources/publications/assistance/sectors/notebooks/oilgas.pdf.

[48] Cottle, M.K.W. and T.L. Guidotti, "Process Chemicals in the Oil and Gas Industry: Potential Occupational Hazards," *Toxicology and Industrial Health* 6, No. 1 (1990), pp. 41-56. See also: Oil and Gas Accountability Project, Letter to Colorado Department of Public Health and Environment and Colorado Oil and Gas Conservation Commission (14 June 2006).

[49] Dahlgren, J. et al, "Cluster of systemic lupus erythematosus (SLE) associated with and oil field waste site: a cross sectional study," *Environmental Health* 6, No. 8 (22 February 2007). Available at: http://www.ehjournal.net/content/6/1/8.

[50] Hurtig, A.K. and M. San Sebastián, "Geographical differences in cancer incidence in the Amazon basin of Ecuador in relation to residence near oil fields," *International Journal of Epidemiology* 31 (2002), pp. 1021-1027; Argo, J., "Unhealthy effects of upstream oil and gas flaring: A report prepared for Save Our Seas and Shores (SOSS) for presentation before the Public Review Commission into effects of potential oil and gas exploration, drilling activities within licences 2364, 2365, 2368," IntrAmericas Centre for Environment and Health (18 January 2002).

half a million locations that could be emitting toxic materials to workers and nearby residents—has seen no comprehensive scientific monitoring or exposure assessment.

The amount of information available to the public about the substances contained in chemical additives used in specific oil and gas exploration and production is currently very limited. Companies should be required to provide information to the public regarding chemicals used in these activities that may pose a risk to the health of local communities.

Activities at oil and gas facilities can pollute our water

The oil and gas industry has exemptions from two major laws established to protect the nation's water—the Clean Water Act and the Safe Drinking Water Act. The Clean Water Act is our bedrock law that protects American rivers, streams, lakes, wetlands, and other waterways from pollution. These surface waters are often the source of drinking water for people and livestock. The Safe Drinking Water Act was enacted to protect public drinking water supplies as well as their sources.

Safe Drinking Water Act

"Hydraulic fracturing" is a method frequently used to increase a well's production of oil and gas. Hydraulic fracturing fluids, which often contain toxic chemicals, are injected underground into wells at high pressures to crack open an underground formation and allow oil and/or gas to flow more freely. More than 90 percent of oil and gas wells in the U.S. undergo fracturing, according to the Interstate Oil and Gas Compact Commission,[51] and these wells can be fractured more than once during their lifetime. While a portion of the injected fluids are transferred to aboveground disposal pits, some of them may remain underground.[52]

"Underground injection" is a method by which wastes and other fluids are injected into rock formations. The EPA classifies injection wells roughly in accordance with the type of fluid to be put into the ground. Oil and gas production wells are referred to as Class II wells. A 1989 investigation by the General Accounting Office into the effectiveness of safeguards in preventing contamination from injection wells found 23 cases of drinking water contaminated by the underground injection of oil and gas waste.[53]

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[51] Carrillo, Victor, "Testimony Submitted to the House Committee on Energy and Commerce" (10 February 2005). Available at: http://www.rrc.state.tx.us/commissioners/carrillo/press/energytestimony.html.

[52] Stahl, R.M. and P.E. Clark, "Fluid Loss During the Fracturing of Coalbed Methane Wells," The 1991 Coalbed Methane Symposium Proceedings, 269, 269 (The University of Alabama 1991), appearing at R6-565; and Palmer, I.D. et al, "Comparison between Gel-Fracture and Water-Fracture Stimulations in the Black Warrior Basin," The 1991 Coalbed Methane Symposium Proceedings, 233, 237, appearing at R6-564, as discussed in Legal Environmental Assistance Foundation v. United States Environmental Protection Agency (EPA), 118 F3d 1467 (11th Cir. 1997).

[53] U.S. General Accounting Office, "Drinking Water: Safeguards Are Not Preventing Contamination From Injected Oil and Gas Wastes," Washington, D.C., GAO/RCED-89-97 (July 1989).

The Safe Drinking Water Act (SDWA) was enacted to protect public drinking water supplies as well as their sources. SDWA authorizes health-based standards for drinking water to protect against both naturally-occurring and man-made contaminants.[54] SDWA's Underground Injection Control (UIC) program protects current and future underground sources of drinking water by regulating the injection of industrial, municipal, and other fluids into groundwater, including the siting, construction, operation, maintenance, monitoring, testing, and closing of underground injection sites. According to the EPA, there are more than 400,000 underground injection wells across the country used by agribusiness and the chemical and petroleum industries.[55] The oil and gas industry, however, is exempt from crucial provisions of the Safe Drinking Water Act intended to protect drinking water.

Hydraulic fracturing is a suspect in impaired or polluted drinking water in Alabama, Colorado, New Mexico, Virginia, West Virginia and Wyoming, where residents have reported changes in water quality or quantity following fracturing operations of gas wells.[56] In 1997, the U.S. Court of Appeals for the 11th Circuit ordered the EPA to regulate hydraulic fracturing under the SDWA after a hydraulic fracturing operation resulted in the contamination of a residential water well.[57] In 2004, however, the EPA issued a study on hydraulic fracturing which concluded that fracturing "poses little or no threat" to drinking water. This study was declared "scientifically unsound" by an EPA whistleblower.[58]

Commenting on the EPA study, the Montana Bureau of Mines and Geology stated:

> The study does not consider the fate of fracture-fluid residuals after decommission of the wells. When hydrostatic pressures recover sufficiently, the residuals will become mobilized in the Powder River Basin's fresh-water regimen that we have already demonstrated to be an active flow system. Twenty or fifty years from now these aquifers will be far more important than they are today, and to have left them contaminated with residuals from hydrofracturing would only be seen as a stupid and costly mistake. It can only be concluded that hydrofracturing in the Powder River Basin must be done only with fresh water, or not at all....[59]

An analysis by the Oil and Gas Accountability Project (OGAP) found that critical information was removed from the study, including a table with estimates for nine chemicals (including benzene, naphthalene, and ethylene glycol) that exceeded water

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[54] These health-based standards, however, are limited in application by economical and technical feasibility for a public water supply system.
[55] EPA, "What is the UIC Program" (February 2006). Available at: http://www.epa.gov/safewater/uic/whatis.html.
[56] Natural Resources Defense Council, "Hydraulic Fracturing of Coalbed Methane Wells: A Threat to Drinking Water" (January 2002). Available at: www.earthworksaction.org/pubs/200201_NRDC_HydrFrac_CBM.pdf.
[57] Legal Environmental Assistance Foundation v. United States Environmental Protection Agency (EPA), 118 F3d 1467 (11th Cir. 1997). This decision, however, was overridden by the Energy Policy Act of 2005.
[58] Letter from Weston Wilson to Senators Allard and Campbell and Representative DeGette (8 October 2004), available at: http://www.latimes.com/media/acrobat/2004-10/14647025.pdf.
[59] See letter from Wayne Van Voast, Montana Bureau of Mines and Geology, 16 October 2002, as discussed in Oil and Gas Accountability Project (April 2005), p. 31.

quality standards and the fact that hydraulic fracturing operations may involve the use of radioactive tracers.[60] According to OGAP, the final report admitted that: (1) many chemicals in hydraulic fracturing fluids are linked to human health effects; (2) in some cases, hydraulic fracturing fluids are injected directly into underground sources of drinking water; and (3) it is possible for hydraulic fracturing fluids, even if they are not injected into these sources of drinking water, to move into adjacent formations.

The EPA Inspector General found that mishandling of this study warranted an investigation. This investigation was put on hold, however, after Congress created a new loophole for industry in the Energy Policy Act of 2005 by exempting hydraulic fracturing by the oil and gas industry from the UIC program.[61]

In addition to the exemption for hydraulic fracturing, there is another aspect of the Safe Drinking Water Act that puts families with private water wells at risk. Because the SDWA protects drinking water by regulating water systems that serve 25 or more individuals or have at least 15 service connections, people who obtain their domestic water from private wells that supply water for less than 25 individuals are not protected by the law's provisions that require monitoring of drinking water quality or treatment of discovered contaminants.[62] While this exclusion of wells that serve less than 25 individuals is not limited to the oil and gas industry, that industry is positioned to greatly affect many private water wells and benefit from this provision. Rural Americans need protection from the risk of contamination of their water supply caused by industrial underground injection of materials that could release toxic substances.

In 1990, the last year the national census asked families about their water source, 30 percent of households in Montana, 20 percent of households in Wyoming, 15 percent of households in New Mexico and eight percent of households in Colorado obtained drinking water from private wells.[63]

Other SDWA exemptions for oil and gas production

- The Safe Drinking Water Act allows fines of up to $10,000 per day for certain violations of the law—unless the violation involves underground injection of fluids related to oil or gas production, in which case the maximum fine is only $5,000 per day.[64]

- The Underground Injection Control program classifies different types of wells. Class I wells are for injection of waste, including hazardous waste as defined in RCRA, and the materials must be injected deep into the ground beneath the

[60] For an extensive analysis of the EPA report, see Oil and Gas Accountability Project (OGAP), "Our Drinking Water at Risk: What the EPA and the Oil and Gas Industry Don't Want Us to Know about Hydraulic Fracturing," (April 2005). Available at: http://www.earthworksaction.org/hydfracking.cfm.
[61] Energy Policy Act of 2005, §322.
[62] 42USC§300h(d)(2)
[63] Stone, A.W., "Ground Water for Household Water Supply in Rural America: Private Wells or Public Systems?" American Ground Water Trust (September 1998).
[64] 42USC§300h-2(c). In both cases the total maximum fine is $125,000.

lowest underground source of drinking water. Class I wells are strictly regulated and even banned in some places. Because many toxic materials associated with oil and gas operations are exempt from the hazardous materials section of RCRA, they do not have to be injected into Class I wells. Instead, they can be injected into Class II wells, which have different standards than Class I wells.[65]

- The EPA may not prescribe requirements which interfere with or impede underground injection related to certain oil or gas operations – "unless such requirements are essential to assure that underground sources of drinking water will not be endangered by such injection." This establishes a higher hurdle for regulating the oil and gas industry that does not apply to other industries.[66]

According to the Oil and Gas Accountability Project, studies show that alternatives to toxic hydraulic fracturing fluids exist that are effective, economical, and less hazardous. Industry has developed non-toxic fluids for offshore oil and gas operations, such as Schlumberger's GreenSlurry, which the company claims is "earth-friendly."[67] In addition, water can be an alternative. At a 2001 EPA expert panel meeting, it was stated that hydraulic fracturing can be performed using water without additives.[68] Two studies conducted in the field by Amoco Production Company found that gas wells fractured with water produced more gas and cost considerably less to fracture than wells fractured with a gel comprised of chemicals. Another study by the Gas Research Institute, Phillips Petroleum Company, Amax Oil and Gas, and Resource Enterprise also found that hydraulic fracturing using water was more effective than fracturing with a gel.[69]

Stormwater Pollution

Stormwater pollution from oil and gas operations causes real problems. Nevertheless, oil and gas companies have been excused from taking simple steps to prevent harm. The Clean Water Act is our bedrock law that protects American rivers, streams, lakes, wetlands, and other waterways from pollution. These waters are often the source of drinking water for people and livestock. The oil and gas industry, however, is exempt from several crucial provisions of the Clean Water Act and is thereby allowed to pollute our waters. Compliance with the law is not onerous and is required for almost every other American industry.

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[65] 42USC§300h-4. For more information on the difference between Class I and Class II wells, see the EPA's "What is the UIC Program" (February 2006), available at: http://www.epa.gov/safewater/uic/whatis.html.

[66] 42USC§300h(b) and 42USC§300h-1(c).

[67] http://www.slb.com/content/services/stimulation/fracturing/greenslurry.asp.

[68] See U.S. Environmental Protection Agency, "Summary of 10/31/01 Expert Panel Meeting on the Hydraulic Fracturing Study" (15 November 2001), p.6, as discussed in OGAP (April 2005), p. 55. Available at: http://www.earthworksaction.org/pubs/DrinkingWaterAtRisk.pdf.

[69] Logan, T.L., "Preliminary results of cooperative research efforts with Phillips Petroleum Company and Amax Oil and Gas Inc., San Juan Basin," Quarterly Review of Methane from Coal Seams Technology, 11(3&4):39-49 (April 1994), as discussed in Oil and Gas Accountability Project (April 2005), p. 56. Available at: http://www.earthworksaction.org/pubs/DrinkingWaterAtRisk.pdf. More information on non-toxic alternatives is available in Chapter 6 of OGAP's April, 2005 report.

During a rain or snowstorm, flowing water causes excessive soil erosion and picks up pollutants along the way—including toxic materials and sediment. Congress amended the Clean Water Act in 1987 to require a stormwater permit for large-scale ground disturbing and other activities that can increase runoff and the risk of water pollution. To obtain a permit, a company or municipality must have a Storm Water Pollution Prevention Plan outlining precautions the company will take to reduce the discharge of pollutants and impacts to receiving waters, and to eliminate illegal discharges.[70]

Unfortunately, the oil and gas industry now enjoys significant exemptions from the Clean Water Act's stormwater permit requirements. Since 1987, oil and gas "operations" have not needed a stormwater permit as long as their stormwater discharges were uncontaminated.[71] In the Energy Policy Act of 2005, Congress expanded this exemption to include the construction of new well pads and the accompanying new roads and pipelines.[72]

The EPA has interpreted this new 2005 exemption as allowing unlimited discharges of sediment into the nation's streams, even where those discharges contribute to a violation of state water quality standards.[73] Oil and gas companies have been excused from putting controls in place to address the erosion and sedimentation of waters even though mounting evidence—including the EPA's own analysis—shows that such sedimentation causes numerous problems for the fish, wildlife, and people that depend on clean water.

Sediment—even without toxic substances attached to it—causes water pollution. Sediment increases water treatment costs for cities and towns responsible for delivering drinking water to their residents. Municipalities across the Rocky Mountain region are becoming increasingly concerned about the impact of oil and gas development on their water supplies.[74] The EPA has reported that "siltation is the largest cause of impaired water quality in rivers."[75] According to the U.S. Government Accountability Office, sediment "clouds water, decreases photosynthetic activity; reduces the viability of aquatic plants and animals; and, ultimately, destroys organisms and their habitat."[76]

According to the EPA, "erosion rates from construction sites are much greater than from almost any other land use."[77] A 2005 modeling study of the Parachute Creek watershed

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[70] For more information, see Washington State Department of Ecology, "How is Stormwater Regulated?" (December 2006), available at:
http://www.ecy.wa.gov/programs/wq/stormwater/municipal/how_regulated.html.
[71] 33USC§1342(l)(2).
[72] Energy Policy Act of 2005, §323.
[73] 71 Fed. Reg. 33628 (June 12, 2006).
[74] "City Takes Stand to Protect Watershed," *Raton Range* (22 August 2007).
[75] 64 Fed. Reg. 68722, 68724 (8 December 1999).
[76] U.S. Government Accountability Office, "Storm Water Pollution: Information Needed on the Implications of Permitting Oil and Gas Construction Activities," GAO-05-240 (February 2005), p.1.
[77] 64 Fed. Reg. at 68729.

in western Colorado estimated that oil and gas construction in a 15,000 acre area would almost double sediment into a creek that runs into the Colorado River.[78]

The City of Grand Junction, Colorado, has identified sedimentation due to surface runoff from areas disturbed by oil and gas activities as one of the main threats to its water supply.[79] According to Grand Junction officials, "sediment loading from gas well sites during storm events . . . has the potential to damage the infrastructure (reservoirs, canals, ditches and conveyance lines) used in Grand Junction's water supply."[80]

The Colorado River Water Conservation District has stated that "[t]he lower Colorado River within Colorado already exceeds water quality standards for selenium and is being monitored for sediment exceedances. A decrease in water quality could impair the beneficial use of water downstream of oil and gas development by requiring increased treatment by municipalities and possibly interfering with agricultural uses."[81]

Because of water pollution problems from oil and gas activities, the Colorado Water Quality Control Commission stepped in and required permits despite the federal exemption. Even with these permit requirements, problems are still occurring. In May, 2007, the Colorado Oil and Gas Conservation Commission cited one company with nine wells that had insufficient stormwater runoff protections. At each of these nine wells, runoff from melting snow had overflowed a pit and flooded the well pad. Oil was seen in pits that were flooded. At one of these wells, runoff flowed into a creek. At another, there were sacks of chemicals in the pit that overflowed and puddles of condensate and chemical residue were observed on the well pad.[82]

Developing a storm water pollution prevention plan is not complicated. It relies in large part on general permits and known approaches that have been available and utilized for years, such as installing vegetative ground cover, berms, temporary fabric barriers known as silt fences, or turnouts (ditches extended into a vegetated area to disperse and filter stormwater runoff). Information on these approaches is widely and easily available from state and federal agencies and other public sources including the International Stormwater Best Management Practices Database.[83]

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[78] "Parachute Creek Sediment Yield Study," Science Applications International Corporation (November, 2005).
[79] Statement of City of Grand Junction before the Colorado Water Quality Control Commission (5 December 2005), at 9.
[80] Ibid, at 7.
[81] Letter from Peter Fleming, General Counsel, Colorado River Water Conservation District to Stephen Johnson, EPA Administrator (17 February 2006).
[82] "Driller leaves mess behind: Nervous neighbors seek answers from oil, gas commission," *Rocky Mountain News*, 19 July 2007.
[83] "International Stormwater Best Management Practice (BMP) Database." Available at: http://www.bmpdatabase.org/

Additional Clean Water Act exemption for oil and gas production
The Clean Water Act definition of "pollutant" excludes materials injected into an oil or gas well to facilitate production, such as hydraulic fracturing fluid, or produced water re-injected into a well for disposal if approved by a state and that state determines that such injection or disposal will not result in the degradation of ground or surface water resources.[84]

The Oil Pollution Act, enacted in 1990 as an amendment to the Clean Water Act, is intended to respond to substantial threats of an oil spill into American waters, and to fund any necessary clean-up. The law applies to 'navigable waters,' which the Clean Water Act defines as "the waters of the United States, including the territorial seas." The use of this broad term by Congress previously led the Courts and administrative agencies to protect the various surface waters that make up our aquatic system, including ponds, streams, and wetlands. Two recent Supreme Court decisions, however, as well as ambiguous 'guidance' from the Bush Administration, have created significant uncertainty about the degree to which many water bodies remain protected today and have suggested that some link to an actually navigable water body is needed to trigger Clean Water Act protections. Many of the waters affected by oil and gas drilling in the West do not contain water all year and thus may enjoy less protection under the Clean Water Act. While this is not a loophole in the statute, it is potentially a major rollback of a much-needed statutory protection from the toxic substances associated with oil and gas production. Congress should clearly define the protected waters of the United States and delete the term "navigable" from the law.[85]

Toxic substnces associated with oil and gas can pollute our land
According to a survey conducted by the American Petroleum Institute, the total estimated volume of waste (including drilling waste, produced water, and other wastes) generated by oil and gas exploration and production operations was 18 billion barrels in 1995, the most recent year for which data are available.[86] Most of this waste is produced water and exempt from the Resource Conservation and Recovery Act (RCRA), the principal federal law designed to ensure safe management of hazardous waste and prevent new toxic waste sites. In addition to its significant exemption under RCRA, the oil and gas industry enjoys a major exemption under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the law known for creating the Superfund program.

While RCRA covers the management of a hazardous material from cradle to grave in order to avoid risks to human health and the environment, CERCLA provides a framework for clean-up of toxic materials that were never given a proper burial. In addition to its remedial aspect, the threat of CERCLA liability encourages strict

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[84] 33USC§1362(6)(B).
[85] 33USC§2701-2761.
[86] American Petroleum Institute (API), "Overview of Exploration and Production Waste Volumes and Waste Management Practices in the United States," prepared for API by ICF Consulting (May 2000), p. 1. Available at: http://www.api.org/aboutoilgas/sectors/explore/waste-management.cfm.

compliance with RCRA's cradle to grave regulation of hazardous substances. The exemptions given to the oil and gas industry in RCRA and CERCLA limit the effectiveness of both laws in protecting communities from toxic materials.

RCRA

The oil and gas industry employs several methods for discarding its waste. Sometimes waste is buried in the ground or injected underground. Another common method is to dump it into open air pits, sometimes called evaporation pits, and allow any volatile organic compounds to evaporate into the air. In addition to potentially contaminating the air, this method may still leave waste in the pits that needs to be treated and/or disposed of.[87]

In 1995, over 90 percent of produced water was injected underground and most drilling wastes were disposed of on-site through evaporation or burial.[88] Waste may also be piled on the ground in a method called "land farming," which is intended to allow the soil—and sometimes added bacteria—to digest the pollutants through a technique called bioremediation. According to the Argonne National Laboratory: "Land farming is the controlled and repeated application of wastes to the soil surface, using microorganisms in the soil to naturally biodegrade hydrocarbon constituents, dilute and attenuate metals, and transform and assimilate waste constituents."[89]

Enacted in 1976 and significantly amended in 1980, RCRA sets standards for management of hazardous waste throughout its life cycle from cradle to grave—including generation, transportation, treatment, storage, and disposal—in order to prevent harm to human health and the environment. These standards are a powerful incentive for a company to minimize waste and pollution through methods such as changing the industrial process and using substitute materials that are not hazardous.

When Congress wrote RCRA, it gave the EPA the authority to determine whether the law should cover hazardous wastes associated with oil and gas exploration, development, or production.[90] The EPA sampled drilling fluids and produced water at field sites and found pollutants at levels that exceeded 100 times the agency's standards, including benzene, lead, arsenic and uranium. The agency found 62 documented cases where waste from oil or natural gas operations had endangered human health. The EPA also found

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[87] More information on various techniques used to treat and/or dispose of waste can be found at: "Oil and Gas Waste Disposal," available at: http://www.earthworksaction.org/oilgaswastedisposal.cfm and Argonne National Laboratory: http://web.ead.anl.gov/dwm/techdesc/index.cfm. For more details on the hazards to human health and the environment associated with disposal pits, see Oil and Gas Accountability Project, "Pit Pollution" (May 2004), at: http://www.earthworksaction.org/pubs/PitReport.pdf. Additional documentation of contamination across the country can be found in Doyle, J., "Crude Awakening - The Oil Mess in America: Wasting Energy, Jobs & The Environment," (Friends of the Earth 1994).

[88] API (May 2000), p. 2.

[89] Argonne National Laboratory, "Fact Sheet: Land Application, Drilling Waste Management Information System," available at: http://web.ead.anl.gov/dwm/techdesc/land/index.cfm.

[90] 42USC6921(b)(2).

that, while there were some federal and state regulations in place to control hazardous oil and gas wastes, there were gaps in some places as well as inadequate enforcement.[91]

EPA staff recommended that some hazardous oil and gas wastes be regulated, but were overruled by senior agency officials in 1988 when the EPA exempted wastes uniquely associated with oil and gas exploration and production from RCRA's hazardous waste provisions. At the time, the assistant to the EPA's then-Director of Hazardous Site Control told a reporter, "This is the first time that in the history of environmental regulation of hazardous wastes that the EPA has exempted a powerful industry from regulation for solely political reasons, despite a scientific determination of the hazardousness of the waste."[92] The majority of exploration and production wastes are covered by this exemption,[93] and the list of exempt wastes includes drilling fluids, produced water, hydrocarbons, hydraulic fracturing fluids, sludge from disposal pits, drilling muds, and sediment from the bottom of tanks.[94]

Disposal pits, evaporation ponds, misting systems, and land farms are sometimes adjacent to or within residential communities, and guidelines vary in each state. The federal statutory guidelines of RCRA are critical to ensure that, when methods such as these are used for waste management, treatment or disposal, they are employed in ways that are safe for the environment.

During May and June of 2007, the New Mexico Oil Conservation Division collected fluid and soil samples from 21 drilling/reserve pits, two production pits, and two closed-loop tanks. Testing found various hazardous substances including arsenic, lead, benzene, mercury, acetone, toluene, ethylbenzene, xylenes, and others at some of these locations.[95] In 2003, New Mexico state officials identified over 6,700 instances of pit-caused contamination since the mid-1980s, with over 550 resulting in groundwater contamination.[96]

Congress should close the RCRA loophole for hazardous wastes associated with oil and gas exploration, development, and production. This would provide a powerful incentive for companies to minimize waste, use non-toxic alternatives, recycle and reuse toxic

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[91] "Regulatory Determination for Oil and Gas and Geothermal Exploration, Development and Production Wastes," 53 Federal Register 25446 (6 July 1988). Ironically, the EPA stated that it would work to improve the Clean Water Act and Safe Drinking Water Act to fill some of these gaps in environmental protection. Since then, the Clean Water Act and Safe Drinking Water Act have actually been weakened by the creation of even more exemptions for the oil and gas industry.

[92] Dixon, J., "EPA Said To Bow To Political Pressure In Oil Wastes Ruling," *Associated Press*, 19 July 1988.

[93] Puder, M.G. and J. A. Veil, "Offsite Commercial Disposal of Oil and Gas Exploration and Production Waste: Availability, Options and Costs," Argonne National Laboratory, ANL/EVS/R-06/5 (August 2006), p. 74.

[94] U.S. Environmental Protection Agency, "Exemption of Oil and Gas Exploration and Production Wastes from Federal Hazardous Waste Regulations," p. 10.

[95] New Mexico Oil Conservation Division, "Analytical Results of OCD's Pit Sampling Program" (2007). Available at: http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental.

[96] Anderson, R.C., New Mexico Oil Conservation Division, Letter to Jennifer Goldman, Oil and Gas Accountability Project (23 October 2003).

substances where possible, and treat waste so that it is no longer toxic. When toxic waste remains, its disposal should minimize risk to the environment and human health. Protection of soil, water, and air is needed, as well as disclosure of hazardous materials and sampling and monitoring of the waste. The oil and gas exploration and production industry should not be allowed to follow a different standard than other industries.

Industry can comply with RCRA's hazardous waste provisions thanks to available technologies that minimize hazardous waste and, in some cases, are profitable for industry to adopt. For example, oil and gas companies have economical and effective alternatives available to open pits that would allow them to comply with requirements to control hazardous waste.

According to the Oil and Gas Accountability Project, one option called a closed-loop drilling fluid system which uses storage tanks and other equipment instead of pits is used by many companies, and comparisons have found these systems to be cost-effective and even profitable.[97] An industry study found that these systems "dramatically lower"[98] the volume of waste, and they also maximize the ability to reuse and recycle drilling fluids. Any waste that is created can easily be transported to an appropriate facility instead of dumped in an open pit. While initial costs may be higher, closed-loop drilling systems create savings in the long run. There is no need to construct a pit, drilling waste is virtually eliminated, water use can be reduced by as much as 80 percent, truck traffic -- which can often involve 50 truck trips each day on one road, seven days a week -- is reduced by as much as 75 percent, and tanks can be reused.

Comparisons have found closed-loop drilling can result in a cost savings of up to $180,000 per pit.[99]

CERCLA

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) was enacted in 1980 and amended in 1986. The reach of CERCLA is not limited to materials defined as waste under RCRA. Rather, it kicks in when there is a release—or a substantial threat of a release—of a substance hazardous to the environment. When the responsible parties cannot be identified or do not have the finances to pay for cleanup, CERCLA provides for Superfund to cover the costs.

The money for Superfund used to come from taxes on the oil and gas industry, as well as other industries that were the major sources of hazardous substance pollution. This tax was part of a political compromise where, in return for the oil and gas industry paying into the fund, the substances petroleum and natural gas were exempted from CERCLA.[100]

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[97] Oil and Gas Accountability Project, "Alternatives to Pits." Available at: http://www.earthworksaction.org/alternativestopits.cfm.

[98] Rogers, D., G. Fout and W.A. Piper, "New Innovative Process Allows Drilling Without Pits in New Mexico," 13th Annual International Petroleum Environmental Conference, (17-20 October 2006), page 5. Available at: http://ipec.utulsa.edu/Conf2006/Papers/Piper_5.pdf.

[99] Ibid.. pages 9-10. For more information, see: Rogers, D, et al, "Closed-loop drilling system: A viable alternative to reserve waste pits," *World Oil Magazine*, Vol. 227 No. 12 (December 2006).

[100] 42 U.S.C. §9601(14).

Although the Superfund tax expired in 1995, oil and gas have remained exempt from CERCLA's critical provisions for cleaning up hazardous sites. Clearly, the oil and gas industry got the better part of the deal.

The exemption for oil and gas created an umbrella of exemption for many substances toxic to human health, such as benzene, toluene, and xylenes, polycyclic aromatic hydrocarbons, arsenic, and mercury, when they occur naturally in oil or gas. CERCLA requires the EPA to compile a National Priorities List of sites, known as Superfund sites, where there is a known or threatened release of hazardous substances, in order to prioritize investigation and clean-up. The law also requires federal agencies to compile a priority list of toxic substances that are most commonly found at these contaminated sites nationwide and which are determined to pose the most significant potential threat to human health due to their known or suspected toxicity and potential for human exposure at these sites.[101] The latest list of toxic substances, from 2005, contains 275 different substances. When these substances naturally occur in oil and gas, however, CERCLA has been interpreted to exempt these substances from regulation.[102]

In order to ensure that contaminated sites are made safe as soon as feasible, CERCLA generally authorizes the government to clean the sites and pursue payment from potentially responsible parties. Private parties who incur costs to clean up hazardous substance spills and other sites governed by CERLCA can also, in many circumstances, pursue payment for clean up directly from the responsible parties. This avenue is not available for sites contaminated with oil and natural gas.

Given the growth in oil and gas drilling, the likelihood of oil or gas being released into the environment and threatening human health will also increase if there is no incentive, in the form of potential CERCLA liability, for industry to take preventive measures. If oil and natural gas were covered under CERCLA, companies could be held responsible for cleaning up oil or gas where it is being released into the environment and poses a threat to human health. The EPA could add sites contaminated by oil or gas to the National Priorities List and use federal funds, if any are available, to clean up the site while pursuing reimbursement from the primary responsible party. The threat of a CERCLA enforcement or cost-recovery action would provide a strong incentive to industry to not only clean up hazardous waste released in the past, but to change polluting practices. Regulators and people who are affected by oilfield pollution would have a powerful tool with which to pursue the polluter to pay for cleanup.

Closing the CERCLA oil and gas loophole need not require new technology or equipment for industry. There are economical measures to avoid leaks or uncontrolled disposal of oil and gas. Perhaps the most simple is regularly scheduled preventive maintenance on equipment, pumps, valves and engines.

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[101] More information on the priority list of toxic substances is available at: http://www.atsdr.cdc.gov/cercla/.

[102] McKay D.L., "RCRA's Oil field wastes exemption and CERCLA's petroleum exclusion: are they justified?" *Journal of Energy, Natural Resources, & Environmental Law*, 1995.

The Railroad Commission of Texas Oil and Gas Division reports that numerous companies have implemented preventive maintenance programs and found them to be "quite successful" at minimizing the occurrence of leaks and releases of materials into the environment. According to the Commission, preventive maintenance programs "have resulted in more efficient operations, reduced regulatory compliance concerns, reduced waste management costs, and reduced soil and/or ground water cleanup costs."

Other techniques recommended by the Commission to reduce leaks and spills include: remote monitoring of leaks; leak-proof storage containers; proper containment devices like drip pans; plating that reduces wear on valve stems and pipe threads; methods to avoid pipe corrosion; and impermeable wellhead sumps during drilling preparation. This last item collects crude oil leakage associated with workover operations, and in 2001 was reported to be available for $800.[103]

Unchecked emissions from oil and gas facilities can pollute our air

According to the State of Colorado, oil and gas production facilities can release more than 50 toxic air pollutants from a variety of sources, including "venting, dehydration, gas processing, compression, leaks from equipment (fugitive emissions), open pit waste ponds, and land application of volatile wastes."[104] There may be more than 26 individual sources of toxic air pollution associated with the production of oil and gas.[105]

Of the dangerous air emissions emitted from oil and gas production operations, chemicals referred to as volatile organic compounds (VOCs) are the largest group and typically evaporate easily into the air. They are primarily found in oil and gas itself, but are also a byproduct of fuel combustion to operate pumps and engines and are found in chemical additives used in oil and gas production. Benzene, toluene, ethylbenzene, xylene, hexane, acrolein, acetaldehyde, and formaldehyde are common VOCs released during oil and gas production.[106] VOCs pose health threats ranging from short-term illness to cancer or death. Other harmful VOCs that may be released include methanol,[107] triethylene glycol,[108] and a multitude of chemicals used in hydraulic fracturing.[109]

VOCs react with sunlight to form ground level ozone, or smog, which is known to be extremely hazardous to human health. Ozone can cause problems such as chest pain,

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[103] Railroad Commission of Texas, Oil and Gas Division (RCT), "Waste Minimization in the Oil Field" (July 2001). Available at: http://www.rrc.state.tx.us/divisions/og/key-programs/manual/wastemin.pdf.
[104] Colorado Department of Public Health and Environment (CDPHE), Air Pollution Control Division, "Hazardous Air Pollutants from oil and gas exploration and production" (October 2006). Available at: http://www.cdphe.state.co.us/ap/uat/atoilgas.pdf
[105] Russell, J. and A. Pollack, "Oil and Gas Emission Inventories for the Western States." Final Report Prepared for the Western Governors' Association by ENVIRON (27 December 2005). Available at: http://www.wrapair.org/forums/ssjf/documents/eictts/OilGas/WRAP_Oil&Gas_Final_Report.122805.pdf.
[106] CDPHE (October 2006).
[107] CDPHE, "Produced Water Evaporation Ponds, Emissions Estimates and Control Requirements" (31 May 2007).
[108] U.S. Environmental Protection Agency, Office of Compliance, "Profile of the Oil and Gas Extraction Industry" (October, 2000), p. 73. Available at: http://www.epa.gov/compliance/resources/publications/assistance/sectors/notebooks/oilgas.pdf.
[109] CDPHE (October 2006).

coughing, and throat irritation, and can worsen bronchitis, emphysema, and asthma. Recent studies have even linked ozone to premature mortality.[110] Several Rocky Mountain counties with oil and gas production are already violating federal standards for ozone or are at risk of doing so.

A 2005 Western Governors' Association report found that oil and gas production operations released more than 430,000 tons of VOCs in Colorado, New Mexico, Utah, Wyoming and Montana in 2002. It projected that oil and gas operations in these states will release more than 965,000 tons of VOCs annually by 2018, more than doubling in fifteen years.[111] This would equal the average amount of VOCs released annually from approximately 50,000 gas stations,[112] or the VOC pollution released by more than 25 million passenger cars each driven 12,500 miles.[113] More recent estimates by the same researchers indicate that the increase in VOC pollution between now and 2018 is likely to be substantially higher.[114]

The high level of VOC emissions means that oil and gas operations are one of the largest sources of harmful air pollution in the Rocky Mountain region. In Colorado, oil and gas operations are the largest source of the VOCs formaldehyde, benzene, acetaldehyde, acrolein, hexane, toluene, and xylenes among stationary sources in the state.[115] In Garfield County, Colorado, where oil and gas drilling has increased by 132 percent since 2004,[116] sampling and testing conducted by the county near oil and gas operations within its boundaries has detected fifteen VOCs at high levels.[117] Oil and gas operations release more VOCs than cars, trucks, and all other sources combined in Garfield County; 77 percent of all human-caused VOC emissions countywide and 95 percent of stationary VOC emissions countywide result from gas industry facilities.[118]

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[110] See generally: http://www.cleanairstandards.org/wp-content/uploads/2007/07/7-7-07-ozone-kills-fact-sheet.pdf.

[111] Russell and Pollack, "Oil and Gas Emission Inventories for the Western States," available at: http://www.wrapair.org/forums/ssjf/documents/eictts/OilGas/WRAP_Oil&Gas_Final_Report.122805.pdf.

[112] For gasoline service stations using stage II vapor recovery controls. See EPA Clearinghouse for Inventories and Emissions Factors, "Compilation of Air Pollutant Emission Factors AP-42, Fifth Edition, Volume I: Stationary Point and Area Sources" (January 1995), available at: http://www.epa.gov/ttn/chief/ap42/ch05/final/c05s02.pdf.

[113] According to the EPA, a standard vehicle releases 77.1 pounds of VOCs annually, assuming an average annual throughput of one million gallons of gasoline at a rate of 3.1 lbs of VOCs/1,000 gallons of throughput. See EPA Consumer Information, "Average Annual Emissions and Fuel Consumption for Passenger Cars and Light Trucks" (April 2000). Available at: www.epa.gov/otaq/consumer/420015.htm.

[114] Pollack, A., J. Russell, et al, "Ozone Precursors Emission Inventory for San Juan and Rio Arriba Counties, New Mexico," Final Report Prepared for New Mexico Environment Department (2006).

[115] Colorado Department of Health and Environment, Air Pollution Control Division. "Emission Inventory Data" (2004). Available at: http://emaps.dphe.state.co.us/APInv.

[116] Colorado Oil and Gas Conservation Commission, "Staff Report" (10 March 2007). Available at: http://oil-gas.state.co.us/Staff_Reports/2007/May%202007%20SR.pdf.

[117] "Status of Garfield County's Air Quality Monitoring Program," Power point presentation (6 April 2006), available at: http://www.garfield-county.com/docs/air_quality_study__4.6.06.ppt; and Frey, D., "Something in the air?" *Mountain Business Journal* (3-9 May 2006).

[118] McKibbin, M., "Air concerns rise with gas drilling," *The Daily Sentinel*, 22 October 2006.

In addition to VOCs, other toxic substances may be released into the air during oil and gas production, such as hydrochloric acid and hydrogen sulfide. Although oil and gas wells, condensate tanks, compressor stations, and waste sites have collectively become one of the largest sources of toxic air pollution in the Rocky Mountain region, they are largely unregulated under the Clean Air Act's program to control hazardous air pollutants.

First passed in 1970, and significantly amended in 1977 and again in 1990, the Clean Air Act limits emissions of nearly 190 toxic air pollutants known to be hazardous to human health by causing cancer, birth defects, reproductive problems, or other serious illnesses. Oil and gas production operations release many of these pollutants, such as benzene, toluene, and xylene. The Clean Air Act established two programs to control these pollutants: one for major sources of the pollutants and a second for smaller sources.

The program to control major sources of hazardous pollutants established limits called the National Emission Standards for Hazardous Air Pollutants ("NESHAPs").[119] To meet these standards, a company must install the maximum level of emission control of hazardous pollutants that is technically achievable by the cleanest facilities in an industry sector. Small sources of toxic air pollution that are under common control and are grouped together to perform similar functions in close proximity to each other are required to be added together and considered as one source of emissions. If the aggregate emissions of these small sources meet the thresholds for major sources, then they must comply with NESHAPs. This "aggregation requirement" is intended to protect the public from smaller sources that might seem individually harmless but cumulatively account for the release of large volumes of toxic substances into the air.

The Clean Air Act completely exempts oil and gas exploration and production activities from this aggregation requirement.[120] Even if wells, compressor stations, condensate tanks and disposal pits are adjacent to each other and owned by the same company, they do not have to comply with NESHAPs. For example, in Garfield County, Colorado, more than 30 tons of benzene are released into the air from 460 oil and gas wells.[121] This is nearly 20 times more benzene than is released by a giant industrial oil refinery in Denver, Colorado,[122] yet none of the toxic emissions from these oil and gas wells are subject to NESHAPs.

The Clean Air Act established a separate NESHAPs program to regulate individual small sources of toxic emissions. This program also has a substantial loophole for the oil and gas industry: oil and gas wells and their associated equipment are not on the list of small hazardous air pollutant sources and are therefore exempt from this provision.[123] While the EPA can regulate individual small oil and gas facilities like wells and pits if they are

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[119] NSHAPs apply to any source that emits or has the potential to emit ten tons or more of any single hazardous air pollutant, or 25 tons or more of any combination of hazardous air pollutants.
[120] 42USC§7412(n)(4)(A).
[121] CDPHE, "Emission Inventory Data" (2004).
[122] Ibid.
[123] 42USC§7412(n)(4)(B).

within a metropolitan area with a population greater than one million people, the Denver metropolitan area is the only place in the Rocky Mountain region that meets this condition, and the vast majority of small oil and gas operations in the region are outside this area. Oil and gas operations in the Rocky Mountain region, therefore, are virtually exempt from the provisions of the Clean Air Act intended to protect Americans from small sources of hazardous air pollutants.[124]

The effects are especially evident in the case of condensate storage tanks, which are typically associated with many natural gas wells.[125] In Colorado alone, there are more than 5,500 condensate storage tanks, some of which can release in excess of 100 tons of VOCs annually—including benzene and other hazardous air pollutants.[126] No condensate tanks at oil and gas wells in the state of Colorado are currently regulated under the hazardous air pollutant protections of the Clean Air Act.

Hydrogen Sulfide

Hydrogen sulfide released during oil and gas production has been associated with irritation to the eyes, nose, or throat, difficulty in breathing for asthmatics, nausea, vomiting, and headaches. Some studies suggest that even low exposure may be linked to poor attention span, poor memory, and impaired poor motor function Hydrogen sulfide can cause loss of consciousness and even death in extreme cases.[127] Estimates indicate that 15 to 25 percent of all natural gas wells in the United States may contain hydrogen sulfide.[128] It can be released by wellheads, pumps, piping, separation devices, storage tanks, and flaring. According to the EPA, "the potential for routine H_2S [hydrogen sulfide] emissions [at oil and gas wells] is significant."[129]

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[124] "Revision of December 2000 Regulatory Finding on the Emissions of Hazardous Air Pollutants From Electric Utility Steam Generating Units and the Removal of Coal- and Oil-Fired Electric Utility Steam Generating Units From the Section 112(c) List; Final Rule, " Federal Register 79:59 (29 March 2005). Available at: http://earth1.epa.gov/ttn/atw/utility/fr29mr05.pdf.

[125] Condensate is defined as liquid petroleum extracted with natural gas that condenses upon separation. See "National Emission Standards for Hazardous Air Pollutants: Oil and Natural Gas Production and Natural Gas Transmission and Storage; Final Rule," Federal Register 64:116 (17 June 1999), p. 32629. Available at: http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=1999_register&docid=fr17jn99-24.pdf.

[126] CDPHE, "Emission Inventory Data." 2004.

[127] National Library of Medicine, Hazardous Substances Data Bank (HSDB): http://toxnet.nlm.nih.gov; U.S. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry (ATSDR), "ToxFAQs for Hydrogen Sulfide" (July 2006), available at: http://www.atsdr.cdc.gov/tfacts114.html. See also: Hirsch, A.R., "Hydrogen sulfide exposure without loss of consciousness: chronic effect in four cases," *Toxicology and Industrial Health* 18, No. 2 (March 2002), pp. 51-61; Kilburn, K.H., "Effects of Hydrogen Sulfide on Neurobehavioral Function," *Southern Medical Journal* 96, No. 7 (July 2003), pp. 639-646; Legator, M.S. et al, "Health effects from chronic low-level exposure to hydrogen sulfide," *Archives of Environmental Health* 56, No. 2 (March- April 2001), pp. 123-131.

[128] Dalrymple, D.A., Skinner, F.D. and Meserole, N.P., "Investigation of U.S. Natural Gas Reserve Demographics and Gas Treatment Processes," Gas Research Institute, Topical Report GRI-91/0019 (1991), pp. 3-1 to 3-13; Hugman, R.H., Springer, P.S. and Vidas, E.H., "Chemical Composition of Discovered and Undiscovered Natural Gas in the United States: 1993 update," Gas Research Institute, Topical Report GRI-93/0456 (1993), pp. 1-3.

[129] U.S. Environmental Protection Agency, Office of Compliance, "Profile of the Oil and Gas Extraction Industry" (October, 2000), p. 73. Available at:

The oil and gas industry has options for controlling hydrogen sulfide emissions. In May, 2007, Kerr-McGee Corporation agreed to install scrubbing systems on its facilities in eastern Utah to remove hydrogen sulfide.[130]

The Clean Air Act entirely exempts hydrogen sulfide from regulation as a hazardous air pollutant. Hydrogen sulfide was on the original list of hazardous air pollutants in the Clean Air Act, but was subsequently removed by Congress.[131] In 1997, the *Houston Chronicle* published a series of articles on the harms caused by hydrogen sulfide across the country.[132] One article quoted three former EPA officials explaining the removal of hydrogen sulfide from the list of hazardous air pollutants. One official described it as "a political deal" in which "[c]ompanies in Texas were very successful in removing [hydrogen sulfide] from the list because of its presence in the extraction of oil." Another official "couldn't believe they did that," and thought "it was a poor scientifically based decision, extremely poor," since "[w]e all know it is extremely deadly." "It's clearly known, from industrial exposures, that it's a very toxic gas," said another.[133]

Not only are pollution control methods widely available, they can yield a payback for industry, offsetting the capital, operation, and maintenance costs of installing controls -- sometimes significantly. As one study reported, "Each volume of gas not vented or leaked to the atmosphere is a volume of gas sold."[134] According to the EPA, paybacks to industry from some pollution control techniques can come within less than one year.[135] Depending on the technology and the facility, industry's return on investment can be as high as 1,321 percent.[136]

The oil and gas industry has many options available to control its toxic air emissions, and actually stands to benefit from readily available, cost-effective technologies. For example, a recent report in the *Journal of Petroleum Technology* discussed 25 cost-effective ways to reduce methane emissions, VOC emissions, and hazardous air pollutants at small to mid-size oil and gas operations.[137] The EPA's Natural Gas STAR Program has identified more than 89 different control options available to industry that

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http://www.epa.gov/compliance/resources/publications/assistance/sectors/notebooks/oilgas.pdf.

[130] U.S. v. Kerr-McGee Corp., Consent Decree (2007). Available at: http://www.epa.gov/compliance/resources/decrees/civil/caa/kerr-mcgee-cd.pdf.

[131] U.S. General Accounting Office,"Clean Air Act: EPA Should Improve the Management of Its Air Toxics Program: Report to Congressional Requesters" (June 2006). Available at: http://www.gao.gov/new.items/d06669.pdf.

[132] See Morris, J., "Brimstone Battles: A Houston Chronicle Special Report," *The Houston Chronicle.* Available at: http://www.chron.com/content/chronicle/nation/h2s/index.html.

[133] Morris, J., "Lost opportunity; EPA had its chance to regulate hydrogen sulfide," *The Houston Chronicle*, 9 November 1997.

[134] Fernandez, R. et al, "Cost-effective methane emissions reductions for small and midsize natural gas producers," *Journal of Petroleum Technology*, (June 2005). Available at: http://www.epa.gov/gasstar/pdf/CaseStudy.pdf.

[135] EPA, "Natural Gas STAR Program: Recommended Technologies and Practices," Available at: http://www.epa.gov/gasstar/techprac.htm.

[136] Fernandez et al (2005).

[137] Ibid.

involve the recovery of methane and the reduction of air pollution.[138] These options range from basic inspection and preventive maintenance to equipment upgrades, heightened monitoring, and even process changes.

A production engineering manager for Williams Production Company recently stated, "We realized we can make money with this instead of letting the gas escape to the air." Williams has estimated that it has recovered up to $10.00 for each dollar it invested in new equipment to drill and then separate gas from hydraulic fracturing fluids and sands.[139]

Solutions to oil and gas pollution problems are available and often economical

Based on widely available information sources, there are numerous methods to reduce and prevent toxic pollution—and in many cases they are profitable. To best protect human health and decrease environmental contamination, oil and gas exploration and production operations should start by utilizing the internationally accepted waste management hierarchy that is based on the concepts of reduce, reuse, and recycle.

The top priority for reducing pollution from oil and gas operations should be an effort to minimize the use of toxic substances through changes in technology or substituting non-toxic alternatives. Any toxic substances that must be used should be recycled or reused to the greatest extent possible, including products such as drilling fluids, produced water, and lube oil.

In the case of waste products that cannot reasonably be recycled or reused, the remaining waste should be treated to the greatest extent possible to reduce the risk to the environment and human health. Although disposal is the least preferred option for dealing with toxic materials—due to the likelihood of residual pollutants causing future environmental or health risks—when there is remaining waste, it should be disposed of safely.

Many methods to reduce or recycle toxic materials have been documented to produce significant cost savings after initial up-front costs. Some even help the industry to recover more of their product and increase revenue. A company in Alaska reusing drilling fluid reduced its costs from $7 million to $3.25 million.[140] Devon Energy spent $15,000 to capture methane emissions from a new well, instead of venting those emissions into the air, and sold the methane captured for $35,000. A Devon Energy official said, "It's a win-win for everybody." BP tested an air emissions control unit that cost $1.4 million but in two years led to income of more than $1.6 million.[141] Another

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[138] See EPA, Natural Gas STAR Program, "Recommended Technologies and Practices." Available at: http://www.epa.gov/gasstar/techprac.htm.

[139] McKibbin, Mike, "Gas producer: Emissions cut by about 90 percent," *The Daily Sentinel* (12 September 2007).

[140] U.S. Environmental Protection Agency (EPA), Office of Compliance, "Profile of the Oil and Gas Extraction Industry" (October, 2000), p. 73. Available at: http://www.epa.gov/compliance/resources/publications/assistance/sectors/notebooks/oilgas.pdf.

[141] Bleizeffer, Dustin, "Capturing Greenhouse Gas Pays Big," *Casper Star-Tribune*, (31 August 2005)

company experienced annual savings of $272,000 and paid off initial capital costs in less than four years after starting to reclaim crude oil from sludge.[142]

Devon Energy spent $15,000 to capture methane emissions from a new well, instead of venting those emissions into the air, and sold the methane captured for $35,000. A Devon Energy official said, "It's a win-win for everybody."

In instances when pollution prevention technology does not pay for itself, the industry can afford to comply with our laws. For the second quarter of 2007, 22 major energy companies reported overall net income of $30.7 billion,[143] and net income was $5.5 billion for 38 independent energy companies.[144] Since 1990, the oil and gas industry has ranked in the top 20 industries for total campaign giving to federal candidates and political parties.[145] Surely it also has enough money to protect human health and our environment.

Public sources provide information on hundreds of ways reported to utilize the waste management hierarchy and minimize the potential for toxic substances to be released into the environment. Some of the approaches recommended by these sources include:

- planning and design of site construction and equipment to minimize waste, such as minimizing the number of wells;
- using less toxic product alternatives, such as low toxicity glycols, lead-free and biodegradable pipe dope, chrome-free lignosulfonates, or non-toxic solvents;
- modifying equipment, such as adding lubricating oil purification units or vapor recovery systems in condensate tanks;
- modifying processes, such as implementing downhole separation of produced water, reclaiming water, or increasing efficiency of drilling fluid use; and
- implementing preventive maintenance, alarms, and monitoring.

Information on the universe of approaches and technologies for reducing pollution is publicly available and easily accessible. Some examples include:

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[142] EPA (October, 2000), p. 77.
[143] U.S. Energy Information Administration, "Financial News for Major Energy Companies" (Second Quarter 2007). Available at: http://www.eia.doe.gov/emeu/perfpro/news_m/index.html.
[144] U.S. Energy Information Administration, "Financial News for Independent Energy Companies" (Second Quarter 2007). Available at: http://www.eia.doe.gov/emeu/perfpro/news_i/index.html.
[145] Center for Responsive Politics, "Oil and Gas: Long-term Contribution Trends," Available at: http://www.opensecrets.org/industries/indus.aps?Ind=E01.

- A 2000 EPA report on oil and gas extraction discusses dozens of pollution prevention opportunities that companies have used to "improve efficiency and increase profits while at the same time minimizing environmental impacts."[146]

- The website of the U.S. Export-Import Bank encourages several ways to reduce environmental contamination such as minimizing hazardous air pollutants to the extent possible, using closed loop systems, minimizing or avoiding toxic additives to drilling fluids, using the least toxic alternative chemicals, actively monitoring hydrogen sulfide wherever it may accumulate, and more.[147]

- "Waste Minimization in the Oilfield," published by the Oil and Gas Division of the Railroad Commission of Texas in 2001, offers more than 100 ways for companies to minimize wastes, including those currently exempt from RCRA.[148]

- The Illinois Environmental Protection Agency website lists close to 100 best management practices for oil exploration and extraction to reduce and prevent pollution.[149]

- Argonne National Laboratory offers an on-line Drilling Waste Management Technology Identification Module to help companies identify drilling waste management strategies for a given well location and circumstances. The module uses a hierarchy based on level of impact to encourage waste management options with the lowest environmental impacts.[150]

- Research is ongoing; the Integrated Petroleum Environmental Consortium is a joint effort of four research universities established to develop cost-effective technologies and tools to comply with environmental regulations in the industry.[151] For more than ten years it has held an annual conference where research papers on new methods to solve environmental problems are presented.

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[146] EPA (October, 2000), pp. 65-79.
[147] Export-Import Bank of the United States, "Environmental Guidelines: Oil & Gas Development" (29 August 2007). Available at: http://www.exim.gov/products/policies/environment/envtbl5.cfm.
[148] RCT (July 2001).
[149] Illinois EPA, Office of Pollution Prevention, "Best Management Practices for Oil Exploration and Extraction." Available at: http://www.epa.state.il.us/p2/fact-sheets/bmp-oil-exploration.html. For additional information on solutions, see Oil and Gas Accountability Project., "Resources on 'Best' or Alternative Technologies and Practices," in *Oil and Gas at Your Door?* (2005), pp: V-3 and V-4.
[150] See Argonne National Laboratory, "Drilling Waste Management Technology Identification Module," available at: http://web.ead.anl.gov/dwm/tim/index.cfm.
[151] Consortium members are the University of Tulsa, the University of Oklahoma, Oklahoma State University, and the University of Arkansas. See the Integrated Petroleum Environmental Consortium website, available at: http://ipec.utulsa.edu.

Conclusion and recommendations

Oil and gas operations that can emit hazardous substances into the environment are booming in the Rocky Mountain region, many of them closer and closer to where people live and where children go to school in western communities. Although this report focuses on oil and gas operations in the Rocky Mountain region, statutory exemptions allow toxic releases into the environment from oil and gas operations throughout the country, as well as offshore.

The network of interrelated exemptions from environmental regulation given to oil and gas companies is a 'regulatory void' unique to the industry.[152] And while some state laws regulate the hazards of oil and gas operations, these laws vary widely. The health of Americans should not be harmed—or even put at risk—by toxic contamination that can be readily and economically controlled; modernizing the regulation of oil and gas exploration and production is long past due.

At a minimum, oil and gas exploration and production should be subject to the same environmental measures with which other industries must comply to adequately protect human health and the environment. Technologies are readily and often economically available to reduce environmental contamination and to protect the health of communities across the nation. The free pass to pollute given to the oil and gas industry is a privilege that is unjustifiable when weighed against the potential harm that will come from continued unchecked pollution by oil and gas companies. The time for Congress to step into the void is long overdue.

Recommendations

Close the loopholes for the oil and gas industry

Close all the loopholes in federal environmental laws that allow oil and gas exploration and production to pollute our environment and jeopardize the health of communities.

- **Ensure the Public's Right-to-Know**
    1. Require oil and gas exploration and production companies to report to the Toxic Release Inventory to provide information to the public regarding chemicals that may pose a risk to the health of local communities.

- **Protect Underground Sources of Drinking Water**
    1. Subject all hydraulic fracturing by the oil and gas industry to the Underground Injection Control program of the Safe Drinking Water Act;
    2. Increase daily fines for violations by the oil and gas industry to equal those for other industries;
    3. Require that the underground injection of materials associated with the oil and gas industry that meet RCRA's definition of hazardous waste meet the standards of Class I injection.

[152] Cox, J. R., "Revisiting RCRA's Oilfield Waste Exemption as to Certain Hazardous Oilfield Exploration and Production Wastes," *Villanova Environmental Law Journal* 14 (2003).

- **Protect American Waters**
    1. Delete the term "navigable" from the Clean Water Act;
    2. Require stormwater permits for all oil and gas industry activities;
    3. Apply the Clean Water Act definition of "pollutant" to all materials used in oil and gas operations.

- **Protect the Air**
    1. Require aggregation of the emissions of oil and gas exploration and production activities under the National Emission Standards for Hazardous Air Pollutants;
    2. Include oil and gas wells and their associated equipment on the list of small hazardous air pollutant sources wherever they are located;
    3. Add hydrogen sulfide to the list of hazardous air pollutants.

- **Protect the Land**
    1. Include all toxic wastes associated with oil and gas exploration and production under RCRA's cradle to grave hazardous waste provisions;
    2. Include oil and gas under the Superfund law—CERCLA.

Monitoring and Health Assessment

While the science on the hazards and toxicity of many of these substances is long established, the exposure from living near oil or gas operations must be further studied, as outlined below. The lack of such studies, however, should not dissuade Congress from taking immediate legislative action as discussed above.[153]

- **Ensure extensive independent environmental monitoring** of air, water, and soil that could be affected by oil and gas exploration and production sites. Monitoring includes recording observations of existing conditions and collecting various data and samples of air, water, soil and more to measure changes in the environment and contamination.

- **Assess the toxic exposures of families living near oil and gas exploration and production sites.** An exposure assessment attempts to determine who is being exposed to a particular substance or chemical, how the exposure occurs (through breathing air, drinking water, skin contact or any other routes), how much exposure is occurring, and the frequency and duration of exposure. The results of an exposure assessment are often considered in coordination with a hazard assessment of the chemical. Exposure assessments based on monitoring data are important to provide real-world data for risk assessment.[154]

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[153] The precautionary principle calls for precautionary measures when an activity raises threats of harm to human health or the environment, even if some causal relationships are not conclusively established.
[154] EPA, "What is An Exposure Assessment?" Available at: http://www.epa.gov/opptintr/exposure/pubs/exposurep.htm.

- **Identify the toxic effects of the typical chemical mixtures found at oil and gas sites.** In order to fully analyze all risks, federal agencies, independent researchers, and the public must have comprehensive information on the chemicals used by industry. This information is combined with the results of monitoring and exposure assessment to help develop a full profile of the risks to human health.

- **Utilize the best available methods to monitor and track health outcomes in communities and in workers exposed to oil and gas exploration and production activities** in comparison with similar but unexposed groups. Tracking the rates of medical problems along with information on geography, lifestyle, occupation, and other indicators will provide essential information pertaining to whether chemical contamination may be contributing to illness in workers and nearby residents and to monitoring the overall health impact of living near oil and gas activities.

- **Conduct health impact assessments for oil and gas activities on public land.** Under the National Environmental Policy Act (NEPA), an Environmental Impact Statement (EIS) is required for federal projects likely to have significant environmental effects. Environmental Impact Statements analyzing the impacts of oil and gas exploration and production on federal lands should include a comprehensive assessment of potential human health impacts.

Chairman WAXMAN. Thank you very much, Ms. Mall.

Mr. Neubecker.

STATEMENT OF KENDRICK NEUBECKER

Mr. NEUBECKER. Mr. Chairman and members of the committee, thank you for this opportunity to testify. My name is Ken Neubecker. I live and work in western Colorado and have been involved in water issues through Trout Unlimited for many years.

Today I am testifying on behalf of Trout Unlimited, the National Wildlife Federations, including the Colorado, Montana, and Wyoming Wildlife Federations, and the Back Country Hunters and Anglers. I am here to testify about our concerns with the current stormwater discharge exemptions from the Clean Water Act for the oil and gas industry.

TU and our partners urge Congress to take action to repeal the Clean Water Act exemptions that the oil and gas industry currently enjoy.

I have been in the land development business for nearly 30 years, most of that in western Colorado. I have personal experience with the damage caused by sediment and uncontrolled erosion from constructionsites, including those for oil and gas.

This damage impacts all of us, whether we are avid fishermen, farmers and ranchers, or small town water providers. Nearly all land development in Colorado and the west are required to comply with stormwater discharge regulations. The fact that the oil and gas industry is not simply defies logic.

Over the past few years, this industry has become the largest single developer in the west. Well pads, roads, pipelines, compression and pumping stations, man camps, and other related infrastructure cover large areas of the intermountain west like a vast spider web. Thousands of acres of disturbed land lay open and exposed to runoff. The land doesn't care who owns the bulldozer or what political connections they may have; it erodes freely in the face of any disturbance.

Subsequent damage to fish and wildlife habitat also occurs without regard to the source. Oil and gas activity is no exception.

Sediment in a stream can be extremely damaging to aquatic and riparian life, wildlife habitat, and to the local communities. Aquatic insects upon which fish and other organisms feed are smothered. The gravel bars fish need for spawning are buried. The eggs and developing fry in the gravel are lost. Gas development often occurs in the smaller tributary drainages, some of which are among the last refuges of cut-throat trout. These fish are particularly vulnerable to sediment from uncontrolled stormwater runoff.

Over 80 percent of the wildlife in Colorado depends on riparian areas for all or part of their lives. For the elk, in particular, these areas are their nurseries. I have seen tributaries of the Colorado River choked with sediment from constructionsites, well pads with unstable fill slopes ready to collapse into a stream, and constructionsites with deeply cut gullies filling large debris fans into the fields and streams below.

Further, this is not just a sportsmen and recreation issue. Sediment chokes the intakes from municipal water supplies, irrigation ditches, and damages the irrigated field where it comes in with the

water. Just as the riparian and wetland areas, layers of mud and silt can wash over a field, smothering the crops and poisoning the soil. When sediment buries native vegetation, noxious weeds come in, rendering the area unusable by wildlife and humans, alike.

Any further loss and degradation of streams, riparian areas, and wetlands in Colorado and the West are a matter of grave concern for sportsmen and for the bedrock economies and values of the small communities that dot the area. Hunting and fishing and a myriad of other recreation-based activities form the fundamental economy of much of the West. This brings in billions of dollars each year.

The oil and gas boom may go on for another 10 or 20 years, but what then? Without adequate controls and environmental protection on all types of land development, including and especially oil and gas, there will be precious little left in 20 years to support the wildlife and recreation that our economy will then be even more dependent on.

Because of this Federal exemption, individual States have been forced to deal with this significant problem as best they can. The Colorado Water Quality Control Commission ruled twice to make the oil and gas industry comply. Support for this mandatory compliance was overwhelming throughout western Colorado and included a bipartisan mix of local governments, water districts, various organizations, and numerous State and Federal legislators.

In Colorado the industry has agreed to comply fully with the stormwater discharge regulations and permitting requirements. Despite predictions of higher production costs and delayed development, the rush to drill doesn't seem to have slowed down at all.

This success needs to be translated to oil and gas construction activity uniformly throughout the West. Water is the most precious natural resource we have, not oil and gas. Water quality in the West is a vital concern, especially given climate change. To continue exempting the oil and gas industry from Federal water quality and land use regulations is unconscionable.

Thank you.

[The prepared statement of Mr. Neubecker follows:]

TESTIMONY OF

KEN NEUBECKER

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SUBMITTED TO THE

HOUSE COMMITTEE ON OVERSIGHT AND GOVERNMENT REFORM

ON

HEARING ON OIL AND GAS DEVELOPMENT: EXEMPTIONS IN HEALTH AND ENVIRONMENTAL PROTECTIONS

OCTOBER 31, 2007

Mr. Chairman and Distinguished Members of the Committee on Oversight and Government Reform, I appreciate the opportunity to appear today to give you the views of Trout Unlimited ("TU") on "Oil and Gas Development Exemptions in Health and Environmental Protections" under the Federal Water Pollution Control Act, better known as the Clean Water Act ("CWA").

My name is Ken Neubecker. I am a resident of Colorado, and I have been actively involved with Trout Unlimited at both the State and local level for 14 years. In this capacity I have been very involved with a number of State issues regarding water supply and water quality. I have and currently participate in the Colorado River Headwaters Forum and am the Environmental Representative to the Colorado River Basin Roundtable, which is a part of the statewide Inter-Basin Compact process. I was also closely involved with the work to require oil and gas industry compliance with storm water discharge permitting regulations through the Colorado Water Quality Control Commission in 2005 and 2006.

The CWA regulates discharge of sediments from point-source storm water runoff events through its National Pollutant Discharge Elimination System ("NPDES"). The Energy Policy Act of 2005 exempted oil and gas-related construction activities from the NPDES program. This means that during construction of roads, well pads, pipelines, compressor stations, and associated facilities, the discharge of massive amounts of sediments into our nation's streams, rivers, and lakes goes unregulated under federal pollution laws. TU has serious concerns with this exemption because of the considerable impacts of sediments on public health and the environment.

Sportsmen in the West, in particular, are adversely affected by this, and other exemptions, from federal pollution laws. Important populations of fish (including highly vulnerable cutthroat trout), big game, and bird species are already stressed due to the rapid pace of mineral development and resulting habitat destruction and fragmentation. Clean water is essential to the health and survival of these animals. TU, in conjunction with the National Wildlife Federation and the Theodore Roosevelt Conservation Partnership, has developed the Sportsmen's Public Lands Energy Agenda, which identifies sportsmen's concerns with current energy policies and offers solutions for consideration by Congress. One specific recommendation contained in the Sportsmen's Energy Agenda, on behalf of the millions of sportsmen represented by these groups, is that Congress should overturn the CWA exemptions of the Energy Policy Act of 2005 and require energy companies to comply with the construction storm water discharge permitting provisions of in the CWA.

TU is the nation's largest coldwater fisheries conservation group dedicated to the protection and restoration of our nation's trout and salmon resources and the watersheds that sustain them. TU has over 150,000 members in 400 chapters in 38 states. Our members generally are trout and salmon anglers who give back to the waters they love by voluntarily contributing substantial amounts of their personal time and resources to fisheries habitat protection and restoration efforts. The average TU chapter donates 1,000

hours of volunteer time annually. Members' time is often donated to partnership projects with state and federal fisheries and water quality agencies designed to restore fish habitat in streams and rivers of vital interest to our members in their local areas.

I am here to share today TU's concerns with the current storm water discharge permit exemptions for the oil and gas industry. In doing so, I would also like to share my first-hand experience the State of Colorado's implementation of state-specific regulations necessary to fill-in the federal regulatory gap. I will briefly summarize the storm water discharge exemption, highlight known impacts to public health, the environment, and sportsmen arising from unregulated discharge of sediments from oil and gas sites, and explain the regulations put in place by the State of Colorado.

Brief History of the Clean Water Act Exemption:

Since 1987, storm water discharges from most oil and gas operations have been exempt from NPDES permitting requirements.[1] In 1990, the Environmental Protection Agency implemented regulations requiring storm water discharge permits for discharges associated with construction activities that disturb five acres or more (known as the "Phase I" regulations).[2] The Phase I regulations provided no exemption for oil and gas construction sites. In 1999, the EPA adopted storm water regulations for additional activities, including construction activities that affect between one and five acres (known as the "Phase II" regulations).[3] Like the Phase I regulations, the EPA did not include an exemption for oil and gas-related construction activities in the Phase II regulations.

In 2003, after becoming aware that close to 30,000 oil and gas sites annually could be affected by the Phase II regulations (i.e. would involve construction activities affecting between one and five acres), the EPA deferred implementation of the Phase II regulations as applicable to oil and gas construction sites until 2005.[4] EPA extended this deferral again until 2006.[5] The EPA did not, however, defer applicability of the Phase I

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[1] *See* Federal Water Pollution Control Act, 33 U.S.C. § 1342(l)(2).

[2] *See National Pollutant Discharge Elimination System--Regulations for Revision of the Water Pollution Control Program Addressing Storm Water Discharges* 55 Fed. Reg. 47990 (Nov. 16, 1990).

[3] *See National Pollutant Discharge Elimination System--Regulations for Revision of the Water Pollution Control Program Addressing Storm Water Discharges* 64 Fed. Reg. 68721(Dec. 8, 1999).

[4] *Modification of National Pollutant Discharge Elimination System (NPDES) Permit Deadline for Storm Water Discharges for Oil and Gas Construction Activity That Disturbs One to Five Acres of Land*, 68 Fed. Reg. 11325 (March 10, 2003). .

[5] *Extension of National Pollutant Discharge Elimination System (NPDES) Permit Deadline for Storm Water Discharges for Oil and Gas Activity That Disturbs One to Five Acres*, 70 Fed. Reg. 11560 (March 9, 2005).

regulations to the oil and gas industry, meaning that construction disturbances of five acres or more had always been subject to the construction storm water discharge permitting requirements. While the EPA's deferral of the Phase II regulations was still pending, the Energy Policy Act of 2005 specifically exempted all oil and gas-related construction activities from NPDES permit requirements, regardless of the amount of acreage disturbed.[6] Under this exemption, only sediment that comes in contact with reportable quantities of hazardous substances or oil is subject to NPDES permitting.[7]

The adverse impacts from discharge of sediment are well-document, and they are significant, including impacts to public health, water quality, and aquatic life, as well as social and economic costs to communities affected by sediment discharge. TU's concerns are particularly relevant in light of the explosive pace of oil and gas exploration and development in the arid West. According to existing Bureau of Land Management planning documents, over 118,000 new wells are expected to be drilled in Colorado, Montana, New Mexico, Utah, and Wyoming in the next 15 to 20 years. Miles of new roads and pipelines will be constructed as part of this development. Yet storm water runoff from none of these activities will be regulated by the federal government.

The Adverse Effects of the Exemption

Impacts from sediment runoff and deposition associated with oil and gas-related activities can arise from initial road construction, site and well-pad construction, and pipeline installation. Further, although the impacts associated with construction may appear to be short-term, sediment erosion from construction sites can continue at harmful levels well after the initial ground disturbance is completed.[8] In the West, short but intense storm events often occur and can be very destructive and erosive forces during the time that site disturbance from construction is happening.

The EPA recognizes that "[s]tormwater runoff from construction activities can have a significant impact on water quality. As stormwater flows over a construction site, it picks up pollutants like sediment, debris, and chemicals. Polluted stormwater runoff can harm or kill fish and other wildlife. Sedimentation can destroy aquatic habitat and high

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[6] Energy Policy Act of 2005, Pub.L. 109-58, § 323 (Aug. 8, 2005).

[7] 40 C.F.R. § 122.26(c)(1)(iii).

[8] *See id.*

volumes of runoff can cause stream bank erosion."[9] In 1998, the EPA reported that "siltation is the largest cause of impaired water quality in rivers."[10]

Suspended sediment in streams causes increased turbidity, causing drinking water to have poor appearance and taste unless treated. The burden for treating sediment-polluted water falls on individual communities or water suppliers, which incur costs for settlement ponds, filtration, or chemical treatment.[11] Moreover the presence of sediments can cause the equipment used for treatment to become clogged or to wear out rapidly.

In addition, other industrial water users – who are not exempted from EPA's storm water discharge permitting requirements – are negatively affected by sedimentation. For example, sediment can clog cooling water systems at power plants and other large industrial facilities.[12] Sediments fill irrigation ditches and clog irrigation water diversion structures.

Sediment discharge also affects the public's ability to enjoy water recreational activities. For example, turbidity may contribute to boating, swimming, and diving accidents by obscuring submerged hazards.[13] Sediment pollution may also decrease the quality of fishing experience by displacing fish, reducing fish population numbers, and decreasing opportunities to catch fish.[14]

Sediment in a stream can be extremely damaging, both to the aquatic and riparian life and habitats and to the local communities. According to a 1999 EPA report, suspended sediments also impair the ability of young fish to emerge from their eggs, reduce light penetration, clog the gills of fish and aquatic invertebrates, and reduce spawning and juvenile fish survival.[15] In slower moving waters where sediment is deposited, aquatic

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[9] U.S. Environmental Protection Agency, *Stormwater Discharges from Construction Activity: Overview* (Dec. 1999); available at: http://cfpub1.epa.gov/npdes/stormwater/const.cfm?program_id=6.

[10] *National Pollutant Discharge Elimination System – Regulations for Revision of the Water Pollution Control Program Addressing Storm Water Discharges*, 64 Fed. Reg. 68722, 68724 (Dec. 8, 1999).

[11] Science Applications International Corp. *Review of Sediment Impacts from Construction Sites*, submitted to Western Resource Advocates, p.4 (Nov. 26, 2005).

[12] *See id.* at 5.

[13] *See id.* at 5.

[14] *See id.* at 4.

[15] U.S. Environmental Protection Agency, *Protocol for Developing Sediment TMDLs*, at Table 3-1, EPA-841-B-99-004 (1999) (available at www.epa.gov/owow/tmdl/sediment/pdf/sediment.pdf)

insects upon which fish and other organisms feed are smothered. The gravel bars fish need for spawning are buried. The eggs and developing fry in the gravel are lost. Much of the development occurs in small tributary drainages, some of which are among the last refuge of the vulnerable populations of native cutthroat trout. Sediments also cause more rapid filling of small impoundments (which create the need for costly dredging), and reduction of aesthetic values.[16] Hydrocarbons have a strong affinity for sediments and will tend to adsorb to sediment particles that eventually settle to the bottom of the stream or lakes, where they may persist for long periods of time. [17] These impacts are occurring throughout the West, which is home to vulnerable populations of sensitive and endangered species, including several species of cutthroat trout.

Big game, bird species, and other non-game species also can be adversely affected by the presence of high levels of sediments in water. These animals are already stressed due to the rapid pace of mineral development and resulting habitat destruction and fragmentation.

As these examples demonstrate, storm water runoff of sediments into our streams, rivers and lakes causes a wide array of negative – and costly – impacts to public health, the environment, and users of water resources for recreational, industrial, or agricultural purposes. Despite the clear evidence of these impacts, though, the oil and gas industry remains exempt from compliance with the very federal pollution law aimed at protecting the public and the environment. Because of the federal government's exemption of this industry from federal pollution prevention laws, individual western states and their resident are left with the social and economic cost of dealing with the impacts.

Colorado-Specific Regulation of Storm Water Discharge

In Colorado, the Colorado Water Quality Control Commission (the "Commission") adopted regulations mirroring the EPA's Phase I and Phase II construction storm water regulations. After the EPA initially deferred application of its Phase II regulations to the oil and gas industry in 2003, the Commission likewise deferred application of the state-based regulations. When the EPA again deferred application of the permitting rules to the oil and gas industry in March 2005, however, Colorado Trout Unlimited and other organizations appealed to the Commission to have the Colorado regulations enforced, arguing that implementation of the state-based rules was necessary to protect public health and water quality. The Commission agreed, rejecting continued deferral of the regulations. The Colorado Oil and Gas Association and Colorado Petroleum Association sued the Commission, challenging the decision to implement Phase II regulations to oil and gas construction sites of one to five acres. While this suit was pending, the Energy Policy Act of 2005 exempted oil and gas construction sites between one and five acres from the federal NPDES program.

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[16] Science Applications International Corp. *Review of Sediment Impacts from Construction Sites*, submitted to Western Resource Advocates, p.3 (Nov. 26, 2005).

[17] *See id.* at 4.

In the spirit of "good government" the Commission held a second hearing in January 2006 regarding implementation of the state-based regulations in light of the Energy Policy Act exemption. Faced with overwhelming evidence and outcry by the public, the Commission unanimously decided to continue regulation of oil and gas-related construction sites between one and five acres. The Commission had the full support of over 50 Colorado counties, cities, water conservation and conservancy districts, organizations and elected officials, including Congressman John Salazar, in whose district a large proportion of oil and gas construction and development activity is occurring, and Senator Ken Salazar.

Colorado and the Intermountain West is dry country. Most of the landscape is sparsely vegetated and the soils are composed largely of highly erodeable sedimentary material derived from the native shales, sandstones and evaporates that dominate the western surface geology. These soils are open and exposed to the frequent torrential rain storms common to the region. Native erosion and sedimentation is, and always has been, perhaps the biggest single water pollution and quality problem in the west. Flash flooding from these storm events is common and the waters bring down tremendous amounts of sediment and debris. Uncontrolled activities by man only exacerbate this situation.

Because of extensive, expensive and pervasive problems related to sediment and uncontrolled storm water discharge in the West, it came as no real surprise to me that the Commission refused to go along with the EPA's deferral – and then Congress's outright exemption – of the oil and gas industry from stringent and mandatory storm water discharge control regulations. The EPA itself has stated that "until passage of the Energy Policy Act of 2005, EPA had taken the position that storm water discharges from oil and gas construction activities were not eligible for the NPDES permit exemption in CWA section 402(l)(2)."[18] In fact, prior to the Energy Policy Act exemption, oil and gas-related construction activities affecting five acres or more were always subject to storm water discharge permitting requirements.

Nearly all land developers in Colorado and the West are required to comply with the CWA storm water discharge regulations – and for good reason. The fact that the oil and gas industry is not boggles the mind. Over the past few years this industry has become the largest single developer in the West, by far. Well pads, roads, pipelines, compression and pumping stations, man camps and all of the other related infrastructure cover enormous regions of Colorado, Utah, Montana, Wyoming and New Mexico like a vast spider web. Thousands of acres of recently disturbed lands lie open and exposed to storm events. Many are creased with eroded gullies and tons of sediment have washed into the nearby stream channels and rivers.

TU supports responsible development of our nation's minerals, which includes protection of water resources. Uniform regulation of oil and gas construction activities throughout the West must be implemented. Federal pollution laws are in place to protect public health and the environment, and the federal government's continued exemption of the oil

[18] 71 Fed. Reg. 33628, 33630 (June 12, 2006).

and gas industry from these regulations – regulations under which all other land developers must comply -- is simply unconscionable. Congress should overturn the CWA exemptions of the Energy Policy Act of 2005 and require energy companies to comply with the construction storm water discharge permitting requirements of in the CWA.

On behalf of Trout Unlimited, thank you for the opportunity to provide this testimony.

Chairman WAXMAN. Thank you very much for your testimony.
Dr. Colborn.

STATEMENT OF THEO COLBORN

Ms. COLBORN. Mr. Waxman and members of the committee, good morning. I am Theo Colborn, president of TEDX, a nonprofit organization concerned about the adverse health and environmental effects of chemicals.

I am here to speak as an environmental health analyst and as a resident of western Colorado whose watershed and air are being threatened by natural gas production and delivery.

I had no intention of getting involved with natural gas development when I began in 2002 to set up my nonprofit in Colorado, until someone handed me the formula for the fracturing fluid to be used in 17 proposed gas wells on the Grand Mesa National Forest, which my family and I consider our back yard. When I found out that each fracturing incident, commonly called fracking, uses approximately one million gallons of fluid, and that each well can be fracked as much as 10 times or more, that caught my attention.

Soon TEDX became a clearinghouse for any information about the products that were being used in natural gas operations. To handle the data, we set up computerized spreadsheets, searched the peer-reviewed literature, and Government and industry documents for the adverse health effects of the chemicals on our list. We now have over 1,500 citations to back up the Colorado health data.

The last time TEDX updated the Colorado spreadsheet, there were 171 products and 245 chemicals on the list. Of the products, 92 percent had adverse health effects. The other 8 percent are products for which there is no information because it is either proprietary or no health studies could be found.

Most of the products had multiple health effects, with some having as much as 14. And, much to our surprise, some of the products are developmental toxicants, as well as endocrine disruptors; that is, they have the potential for adverse health effects on the hormone systems that control the construction of our bodies and how we function.

As the list of products grew, a consistent pattern of health effects kept emerging. From 68 percent to 83 percent of the volatile chemicals on the list cause mild to severe irritation of the skin, eyes, sinuses, nose, throat, lungs, and the stomach. And they have neurotoxic effects ranging from headaches, blackouts, memory loss, confusion, complete exhaustion, and permanent neuropathies. Many of these chemicals are called sensitizers because they have a tendency to cause allergies. Less frequently, but about 55 percent of the chemicals cause disorders that develop slowly and would not appear immediately, such as cardiovascular and kidney damage, with cancer at about 35 percent.

Physicians have no way to link health effects like these with an environmental contaminant.

We also found out that drilling muds are not as safe as industry claims; their health pattern matches the health pattern of our overall analysis. It is not general knowledge that when methane surfaces it is wet. When this water is removed, it is called condensate

water. In most instances, it is being stored in open evaporation pits, often on the well bed, or stored in tanks on the site and then trucked to huge offsite fluid receiving pits.

It takes fleets of trucks to handle the water coming off the wells around the clock. This condensate water disposal problem will continue for the life of each well, which could be as long as 20 years.

It is also not general knowledge that when methane surfaces it brings along with it some very toxic gases called volatile organic compounds [VOCs], that are being vented by the tons each year from each operational unit. And vast amounts of fugitive methane, itself a VOC and a greenhouse gas, escapes during numerous stages of production and delivery.

In addition, tons of nitrogen oxide gases are produced to keep the equipment running, from the combustion of diesel and natural gas, during drilling, fracturing, trucking the water, and compressing the gas.

In the presence of sunlight, VOCs and nitrogen oxides produce ground-level ozone that damages lung tissue and vegetation. Ozone is now an emerging environmental and health issue that extends beyond the gas fields as the result of natural gas development.

Recently we were sent results of the chemical analysis of the residues for six waste pits. The 51 chemicals that were detected in those pits produced a health pattern far more toxic than anything we found so far.

Most important is that 45 of the 51 chemicals detected in the pits were not on our list of chemicals being used during natural gas operations. And many of the oil's chemicals had concentrations well above State and Federal safety levels. Of the chemicals detected, 72.5 percent are on the CERCLA Superfund list, which suggest the possibility that every well pad and waste pit has the potential to become a Superfund site when it is closed.

Findings such as these have raised a number of questions that only adequately designed testing requirements and protocols can address, but only after full disclosure.

In our conclusion, our data show that the operations that are involved in natural gas production are releasing large amounts of volatile toxic substances directly into the air. They are introducing water soluble and volatile compounds into the ground, posing long-term, unpredictable hazards to our already marginal water resources, and an undetermined amount of toxic products are ending up in our soils, threatening our life support systems, the outcomes of which have the potential to adversely affect public health and the quality of our western environment.

Thank you.

[The prepared statement of Ms. Colborn follows:]

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October 25, 2007

Written testimony of Theo Colborn, PhD, President of TEDX, Paonia, Colorado before the House Committee on Oversight and Government Reform, hearing on The Applicability of Federal Requirements to Protect Public Health and the Environment from Oil and Gas Development, October 31, 2007.

Good morning Mr. Waxman and members of the Committee. Thank you for this opportunity to speak to you about the emerging public health and environmental issues as a result of natural gas production in the west. My name is Theo Colborn. I am here to speak as an environmental health analyst and as a resident of western Colorado whose watershed and air are being threatened by natural gas production and delivery. I have a B.S. in pharmacy from Rutgers University, an M.A. in fresh water ecology from Western State College of Colorado, and a PhD in zoology, with distributed minors in epidemiology, toxicology, and water chemistry from the University of Wisconsin, Madison. My field and laboratory research for these degrees looked at the mobilization of low levels of toxic trace metals in high altitude streams in Colorado. In 1985 I moved to Washington DC on a Fellowship from the US Congress, Office of Technology Assessment and later established and ran the Wildlife and Contaminants Program at World Wildlife Fund until 2002. I have served on the EPA Science Advisory Board and several EPA panels; on a Canada/US International Joint Commission Health Committee since 1989; advised Environment Canada, Health Canada, the US Fish and Wildlife Service, the US Department of the Interior, the ATSDR; and advised similar government agencies in Europe, the UK, and Japan. I have published in scientific journals and books on the effects of low level and/or ambient exposure to toxic chemicals called endocrine disruptors which has triggered action at the state, national, and international level to improve the protocols for testing chemicals when determining their safety.

In 2002, I returned to Paonia, Colorado where I established TEDX (The Endocrine Disruption Exchange) and became its president. At that time I also accepted a Professorship at the University of Florida, Gainesville.

I had no intention of getting involved with natural gas development when I set up my non-profit until someone handed me the formula for the fracturing fluid to be used in 17 proposed gas wells on the Grand Mesa National Forest, which my family and I consider our back yard. After looking at the possible health effects of just one of the chemicals the company planned to use, I decided to submit a letter to the regional US Forest Service and BLM Director who were issuing the drilling permits. In the letter I described the structure and physical characteristics of the chemical 2-butoxy ethanol (2-BE), as well as a long list of bizarre health effects that were possible at relatively low levels of exposure. 2-BE is odorless, colorless,

tasteless, and evaporates at room temperature. If this chemical were to surface as a gas or get into a drinking water supply, it could cause health problems in domestic and wild animals and humans that could baffle veterinarians or physicians. See Appendix A.

Two years later, a woman from Silt, Garfield County, Colorado called to tell me that she had developed a very rare adrenal tumor and had to have the tumor and her adrenal gland removed. One of the effects of 2-BE was adrenal tumors. She told me that she lived within 900 feet of a busy gas well pad where frac'ing took place frequently. During one frac'ing episode her domestic water well erupted. She also began describing the health problems of others who lived near her. This prompted me to begin to find out more about how natural gas is produced. When I found out that each fracturing incident, commonly called frac'ing, uses approximately one million gallons of fluid and that each well can be frac'ed 10 times or more, I became very interested.

Soon TEDX became a clearing house for information about the products that were being used in natural gas operations. In order to organize the data we set up computer spreadsheets. We also searched the peer reviewed literature and government and industry documents for the health effects of the chemicals on our list and added the information to the spreadsheets. We have over 1,700 citations to back up the Colorado data. See Appendix B.

It is impossible to provide quantitative information about what is being used at any stage of developing natural gas because much of this information is proprietary. For example, in what quantities and mixtures are the products being used? How much water or other fluids are used to attain the million gallons needed to fracture a well? TEDX believes that every citizen has a right to know what is being introduced into our pristine and very fragile, arid ecosystems where every drop of potable water is precious. Nonetheless, we are certain of one thing, even at extremely low levels one would not want to drink the majority of the chemicals on the list.

The last time TEDX updated the Colorado spreadsheet, there were 171 products and 245 chemicals on the list. 92% of the products had health effects. The other 8% are products for which there is no information because it is either proprietary or no health studies could be found. Most of the products had multiple health effects with some having as many as 14 effects. See Appendix B.

As the list of the products grew, a consistent pattern of health effects kept emerging. Taking into consideration that air and water were the most likely pathways of exposures, we broke out the chemicals into two groups: volatile chemicals and water soluble. We also realize now that air is the most immediate pathway. From 68% to 86% of the volatile chemicals cause mild to severe irritation of the skin, eye, sinuses, nose, throat, lungs, and the stomach, and cause effects on the brain and nervous system ranging from headaches, blackouts, memory loss, confusion, fatigue or exhaustion, and permanent neuropathies. Many of these chemicals are called sensitizers; they can lead to the development of allergic reactions. 35% to 55% of the chemicals cause disorders that develop slowly such as cardiovascular, kidney, immune system changes, and reproductive organ damage and are toxic to wildlife. Medical practitioners have no way to link health effects such as these with an environmental contaminant. See Appendix B.

We also found that the muds used in drilling are not as safe as industry claims. Using data from a drilling operation where there had been a blowout, the pattern of the possible health effects of the chemicals used in that operation, matched the general health pattern of our overall analyses. See Appendix C.

It is not general knowledge that when methane surfaces it brings along with it some very toxic gases that are being vented by the tons every year from each operational unit. These include benzene, toluene, ethyl benzene, and xylene, often referred to as BETX. These VOCs, (Volatile Organic Compounds) plus the VOCs in the products being used and the vast amounts of fugitive methane (which is a VOC and powerful greenhouse gas) plus the NOx (Nitrogen Oxide) produced from diesel and gas burning stationary and mobile equipment to produce and pump the gas are contributing to a growing increase in ozone in the west, that heretofore has been ignored.

And it is not general knowledge that when methane surfaces, it is wet, and this water, called condensate water, is often put into an evaporation pit on the well pad, or stored in condensate tanks and later picked up by "water trucks" and moved to large, receiving, open evaporation facilities. It takes fleets of water trucks to handle the volume of water surfacing. Last year, it was estimated that 5,500 condensate tanks across western Colorado released over 100 tons of VOCs each, including BTEX. This gas field activity will be a continuing source of NOx and VOCs for the life of each well, which can be as long as 20 years.

We had been unable to find any information on the chemical content of waste pits until we were sent results of a chemical analysis of the residues from six waste pits in New Mexico. The 51 chemicals that were detected in those pits produced a health pattern even more toxic than anything we found in the past. Most important is that 43 of the 51 chemicals detected in the pits were not on our list of chemicals being used during natural gas operations. And 13 of the chemicals were at concentrations above state and federal safety levels. We found out later that except for those eight chemicals, their study design did not include testing for the chemicals on our list of what is used during production and delivery. We also discovered that 84% of the chemicals detected in the pits are on the CERCLA superfund list. See Appendix D.

A finding such as this raises a number of questions that only adequately designed testing requirements and protocols can address --- **and points out the need for full disclosure**. Data such as this also suggests that eventually, as each pit and well pad is closed down, it has the potential to become a new superfund site.

APPENDIX A

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RE: **An Analysis of Possible Increases in Exposure to Toxic Chemicals in Delta County, Colorado Water Resources as the Result of Gunnison Energy's Proposed Coal Bed Methane Extraction Activity**

BACKGROUND
Gunnison Energy is proposing to extract coal bed methane in Delta County, Colorado. In its notices to the public it makes claims that "...the threats posed by hydraulic fracturing of CBM wells to USDWs [US drinking water supplies] are low and do not justify additional study." They also claim that the "...fluids used to extract coal bed methane from the ground do not substantially threaten public health." [1] The following addresses these claims and looks at possible direct and indirect health effects of CBM extraction on the citizens, domestic animals, and wildlife in Delta County.

THE FRACTURING FLUIDS
Gunnison Energy proposes to use a solvent, ethylene glycol monobutyl ether (2-butoxyethanol), hereafter designated as 2-BE, in a liquid fracturing mixture to facilitate the extraction of coal bed methane in Delta County. 2-BE will be present in the liquid component of the fluid at approximately 7 ppm (parts per million) based on data provided to Delta County Commissioners following three local Area Planning Committee meetings by Gunnison Energy Corporation (GEC), May 29, 2002.

The structural formula for 2-BE is:

CH3-CH2-CH2-CH2-O-CH2-CH2-OH

2-BE is a highly soluble, colorless liquid with a very faint, ether-like odor.[2] At the concentration it is to be used in Delta County, it might not be detectable through odor or taste. 2-BE has low volatility, vaporizes slowly when mixed with water, and remains well dissolved throughout the water column.[Error! Bookmark not defined.] Photolysis (degradation by sunlight) is not a factor in the breakdown of 2-BE. It mobilizes in soil and can easily leach into groundwater.[Error! Bookmark not defined.] Because of these characteristics, it could remain entrapped underground for years and eventually migrate to a domestic well or to a surfacing spring. This contaminated water in

[1] The Daily Sentinel, Sunday, September 8, 2002. p. 8C

[2] Agency for Toxic Substances and Disease Registry . US Department of Health and Human Services. (1998) Toxicological Profile of 2-Butoxethanol and 2-Butoxyethanol Acetate.

some cases might not reach wells, springs, and rivers in Delta County until long after GEC will have gone out of business.

The half-life of 2-BE in natural surface waters ranges from 7 to 28 days.[2] With an aerobic bio-degradation rate this slow, humans, wildlife and domestic animals could come into direct contact with 2-BE through ingestion, inhalation, dermal sorption, and the eye in its liquid or vapor form as the entrapped water reaches the surface. Aerobic biodegradation requires oxygen and therefore the deeper 2-BE is injected underground the longer it will persist. To date the aerobic biodegradation breakdown products of 2-BE have not been identified. The chemistry to detect the glycol ethers, including 2-BE, in environmental samples is very difficult and therefore there are few laboratories with the ability to accurately quantify its presence.[Error! Bookmark not defined.]

DIRECT HEALTH EFFECTS OF 2-BE

Immediate/Direct

Following inhalation or swallowing, 2-BE is distributed rapidly to all tissues in the body via the blood stream in laboratory animals. When applied directly to the skin, 2-BE is rapidly absorbed.[Error! Bookmark not defined.] In solution, it is absorbed more rapidly. It is broken down to its toxic component, 2-butoxyacetic acid (BAA) in both humans and laboratory animals following all three exposure pathways[3]. Breakdown and excretion of BAA through the urine is identical regardless of the pathway of exposure according to laboratory studies[Error! Bookmark not defined.] No laboratory studies could be found that assessed cumulative effects from simultaneous ingestion, inhalation, and dermal exposure to 2-BE, which could be the scenario in Delta County.

Hemolytic Effects - Primary

The most critical direct effect of 2-BE as the result of laboratory studies is its impact on red blood cells. It causes hemolysis (breakdown of red blood cells) by dissolving the fat in the cell membrane and causing the membrane to break down. 2-BE causes hematuria (blood in the urine) and blood in the feces. Blood appears in the urine as a result of kidney damage which can eventually lead to kidney failure. It is especially toxic to the spleen, the bones in the spinal column, and bone marrow (where new blood cells are formed) and the liver, where chemicals are detoxified (broken down for easy excretion from the body).[Error! Bookmark not defined.] Chronic exposure can cause anemia, and in laboratory animals it leads to insufficient blood supply, cold extremities, and tail necrosis (a condition where the tail rots away.)[4]

Other Effects - Secondary

In a sub-chronic study over a period of 14 weeks, mice exposed to 2-BE exhibited the hemolytic effects mentioned above as well as a number of secondary problems involving the spleen and liver, and degeneration of kidney tubules.[5] In addition, females were more sensitive to fore-stomach necrosis, ulceration, and inflammation occurring at half the dose required to cause the same problems in males. Female fertility was also significantly reduced in mice because of embryo

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[3] US Environmental Protection Agency. Toxicological Review of Ethylene Glycol Monobutyl Ether (EGBE) In Support of Summary Information on the Integrated Risk Information System (IRIS), October 1999

[4] Nyska A, Maronpot RR, PH Long, JH Roycroft, JR Hailey, GS Traylor, BI Ghanayem (1999) Disseminated thrombosis and bone infarction in female rats following inhalation exposure to 2-butoxyethanol. Toxicol Pathol 27(3):287-294.

[5] National Toxicology Program (NTP). 1998 NTP Technical report on the toxicology and carcinogenesis studies of 2-butoxyethanol (Cas No. 111-76-2) in F344/N rats and B6C3F1 mice (inhalation studies). US Department of Health and Human Services, Public Health Service, National Institutes of Health, Research Triangle Park, NC NTP TR 484. NIH Draft Publ. No. 98 -3974.

mortality.[6] In this study, the dead embryos were discarded, and as a result, the prenatal effects of 2-BE on the embryos were not determined.

EPA recommends that 2-BE be classified as a mild eye irritant.[Error! Bookmark not defined.] However, a recent study published after EPA reached this classification could lead to a higher risk classification. Using oral exposure in rats, severe damage to the eye was discovered that led to retinal detachment, photoreceptor degeneration and occlusion resulting from multiple thrombosis of the blood vessels in the eye.[7] In this study, females were more susceptible.

With few exceptions most of the evidence mentioned above was derived from inhalation studies. All of the studies used standard, high-dose testing protocols to detect obvious birth defects and organ damage, cancer, mutations, convulsions, and skin and eye irritation. No long-term, multigenerational, chronic oral studies at environmentally relevant concentrations are available that could rule out prenatal damage.

Immunotoxicity

Early studies suggested that perhaps 2-BE does not affect the immune system[8,9] more recent studies using more sophisticated measures and lower doses have determined otherwise. In an early immunotoxicity study, the lowest doses significantly increased the natural killer (NK) cell response in males and females, and the highest doses induced no response.[Error! Bookmark not defined.] The investigators never did find the lowest dose at which there would be no effect. However, they did not consider this an indication of adversity.

In another study, rats exposed to 2-BE in water for 21 days showed no structural effects in the liver or the testes, however their livers were significantly heavier and the animals experienced reduced body weight even at the lowest dose. However, they were surprised to find that at the lowest 2-BE dose NK cell responses were increased. A more recent study exposing female mice topically for 4 days once again confirmed the elevated NK cell response.[10]

A 2002 study reports that 2-BE at unusually low doses inhibits a normal contact hypersensitivity response in female mice.[11]

Carcinogenicity

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[6] Heindel,JJ, Gulati, DK, Russell, VS, et al. (1990) assessment of ethylene glycol monobutyl and monoethyl ether reproductive toxicity using a continuous breeding protocol in Swiss CD-1 mice. Fundam Apply Toxicol 15:683-696.

[7] Nyska A, RR Maronpot, BI Ghanayam. (1999) Ocular thrombosis and retinal degeneration induced in female F344 rats by 2-butoxyethanol. Hum Exp. Toxiol 18(9):577-582.

[8] Smialowicz, RJ, Williams, WC, Riddle,MM. etal. (1992). Comparative immunosuppression of various glycol ethers orally administered to Fischer 344 rats. Fundam Apply Toxiocl 18:621-627.

[9] Exon JH, GG Mather, JLBussiere, DP Olson, PA Talcott. (1991) Effects of subchronic exposure of rats to 2-methoxyethanol or 2-butoxyethanol: thymic atrophy and immunotoxicity. Fudam Appl Toxicol 16(4):830-840.

[10] Singh P, Zhao S, Blaylock RL. ()2001). Topical exposure to 2-butoxyethanol alters immune responses in female BALB/c mice. Int Jrl Toxicol 20:383-390.

[11] Singh P, Morris B, Zhao S, Blaylock RL. (2002) Suppresssion of the contact hypersensitivity response following topical exposure to 2-butoxyethanol in female BALB/c mice. Int Jrl Toxicol, 21:107-115.

At the end of a two year chronic bioassay, elevated numbers of combined malignant and non-malignant tumors of the adrenal gland were reported in female rats and male and female mice.[Error! Bookmark not defined.] Low survival rates in the male mice in this study may have been the result of the high rate of liver cancers in the exposed animals.[Error! Bookmark not defined.] This study revealed that long-term exposure to 2-BE often led to liver toxicity before the hemolytic effects were discernible. [Error! Bookmark not defined.]

No human epidemiological studies are available to assess the potential carcinogenicity of 2-BE. However, from the results of laboratory studies, using Guidelines for Carcinogenic Risk Assessment (1986), 2-BE has been classified by the USEPA as a *possible human carcinogen.* [Error! Bookmark not defined.]

SENSITIVE POPULATIONS

A number of laboratory studies confirmed that aging increases susceptibility to the effects of 2-BE. Older animals have reduced ability to metabolize the toxic metabolite BAA and this, combined with reduced kidney function that accompanies aging reduces their ability to excrete it in the urine.[Error! Bookmark not defined.]

Females are more susceptible to the hematological effects in laboratory animal and human studies. There is an obvious gender and age sensitivity to 2-BE in humans as determined from accidental poisonings with females being more sensitive. In addition, among humans there may be sub-populations that might be more sensitive than others.[Error! Bookmark not defined.]

A list of risk factors for people exposed to 2-BE includes those:
(1) using the pharmaceuticals hydralazine, dilantin, chloramphenicol, and sulfonamides;
(2) with infections, such as herpes, malaria, parasites, and rubella;
(3) with a family history of gallstones, cholestectomy, jaundice, Rh and APO positive;
(4) with iron deficiency; and
(5) with systemic illnesses, such as cardiac, gastrointestinal, liver, and kidney disease, and hypothyroidism.[Error! Bookmark not defined.,12]

From a wildlife and domestic animal perspective, it is important to note that a variety of studies with laboratory animals revealed that some species are more sensitive to 2-BE than others.[Error! Bookmark not defined.] For example, rats are more sensitive than mice to the toxic effects of 2-BE on the liver. No studies were found using wildlife or domestic animals.

INDIRECT HEALTH EFFECTS OF 2-BE

2-BE is widely used as an emulsifying agent and as a solvent for mineral oils[Error! Bookmark not defined.]. This makes it an excellent candidate for releasing the natural, oily, coal-tar hydrocarbons found in coal that have been recognized for over a century to cause cancer.

CUMULATIVE AND AGGREGATE HEALTH HAZARDS

As mentioned above, no cumulative exposure studies have been done that evaluate the simultaneous impact of ingestion, inhalation, and topical exposure to 2-BE, which could be the mode of exposure to residents in Delta County. If 2-BE comes directly into the home via a well it will be used for drinking, bathing, showering, and doing laundry and dishes. Laboratory studies have revealed that in the case of bathing or applying 2-BE to the skin, it is readily absorbed through the skin rather than volatilizing. If water containing 2-BE is heated, as it comes out of the tap some of the 2-BE will off-

[12] (Berliner N, Duffy, TP, Abelson HT. (1999) Approach to adult and child anemia. In: Hoffman, R ed. Hematology:Basic Principles and Practice. 2nd ed. New York, NY: Churchill Livingtsone, pp.468-483.

gas into the home environment. Most of the studies mentioned above used inhalation as the pathway of exposure to 2-BE. Inhalation of 2-BE in the home could become a problem. For example, concern about exposure to the volatile by-products (trihalomethanes or THMs) in chlorine treated tap water[13] led to the discovery that taking a bath or a shower can lead to excessively high dose exposure to THMs. This exposure can exceed the level of exposure from drinking the water and add to the dose from drinking the water. Because of the volatility of 2-BE, the same pathway of exposure could become of concern for Delta County residents if 2-BE reaches their wells and especially if the water is heated.

Of increasing concern by federal health agencies are the *unpredictable,* interactive effects of mixtures of chemicals.[14] Under the scenario described in Gunnison Energy's prospectus, the concentrations of three classes of chemicals that are toxic individually at very low concentrations could become introduced or increased in the environment of Delta County. These include (1) the trace elements arsenic, molybdenum, and selenium, already a problem in Delta county, (2) a synthetic solvent, 2-BE, and (3) the polyaromatic hydrocarbons and coal tars found in coal beds. Arsenic, 2-BE, and aromatic coal bed tar derivatives are known carcinogens. In aggregate, whether their effects would be additive or synergistic has not been determined. However, in one study, the authors were surprised to find that 2-BE potentiated the lethality of low level exposure to another toxicant, a bacterially produced lipopolysaccharide (LPS) that is found in the human gut under certain conditions.[Error! Bookmark not defined.]

Additional contamination of potable water could come from the impurities in the 2-BE product used in the extraction process. Commercial grade 2-BE can range in impurities depending upon the production process, manufacturer, and grade of the solvent. One impurity, sodium hydroxide (lye), a strong caustic, might possibly contribute to the alkalinity of the water. It was discovered in one product at 0.25%. Even high grade 2-BE with greater than 99% purity can contain 0.2% w/w ethylene glycol (anti-freeze), diethylene glycol, and diethyl monobutyl ether, sister compounds to 2-BE with much higher toxicity.[Error! Bookmark not defined.]

ENVIRONMENTAL EFFECTS

Increased salinity

2-BE leaves an alkaline residue upon evaporation which might slightly add to the alkalinity problem that increases as surface water approaches the lower reaches of Delta County. Because of the solubility of sodium salts they can travel long distances in rivers and could increase the salinity problem in the Colorado River downstream.

Locally, any additional water that increases the salinity could also increase the mobilization of some of the alkaline soluble, problem elements such as arsenic and selenium, already posing health risks in Delta County. Health advisories are already in effect for Sweitzer Lake warning people not to eat the fish because of the high levels of selenium in the fish tissue.

A peer reviewed report by the US Forest Service on the threat of increased selenium contamination in the Mancos and La Plata River drainages describes a scenario similar to the Gunnison River

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[13] Nester AM, Singer PC, Ashley DL, Lynberg MC, Mendola P, Langlois PH, Nichols JR. (2002). Comparison of trihalomethanes in tap water and blood. Env Sc Techn. 36(8):1692-1698.

[14] Department of Health and Human Services, Agency for Toxic Substances and Disease Registry , (2001). Guidance Manual for the Assessment of Joint Toxic Action of Chemical Mixtures. Draft for Public Comment.

drainage in Delta County where selenium is already at levels of concern.[15] The hazards include threats to wetlands, aquatic habitat, invertebrates, fish, birds and other wildlife reproduction. Delta County is in a unique and fragile situation – (1) it already has the natural geological existence of selenium, (2) its local hydrology that has been embellished and complicated through extensive irrigation activity, and (3) a climate prone to drought .

There is a growing collection of scientific papers on the adverse health effects of selenium in wildlife exposed to elevated concentrations of selenium in seep-like situations (natural and human-induced) in the West. Waterfowl, fish, and invertebrates have experienced decreased hatching success and increased birth defects as a result of exposure in the egg. Chicks of avocets, stilts, ducks, coots, etc. have been found with crossed bills, missing eyes, and other deformities in aquatic systems where irrigation run off water collects.

HEALTH RISKS TO BE TAKEN INTO CONSIDERATION

Although no standard has been established yet for 2-BE in drinking water, in 1993 the EPA set a minimum risk level (MRL) for 2-BE at 0.07 mg/kg/day based on an adult 70 kg male drinking two liters of water a day. This value is based on liver toxicity studies in rats and not on more sensitive immune, developmental, and functional health effects that have become of concern over the past decade. In 1998 EPA derived a reference dose RfD for 2-BE at 0.5 mg/kg/day for non-cancer effects. This is based on lifetime exposure. EPA admits " Since drinking water exposures are highly complex and variable, a simplifying assumption was used in all simulations ....". EPA had no human data to derive its value.[3]

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[15] Lemly AD (1997). Environmental hazard of selenium in the Animas La Plata water development project. Ecotoxicol Environ Safety 37:92-96.

GEC is planning to inject fluid into the ground in Delta County at 7 ppm. If this fluid reaches the taps in Delta County at that concentration, it will be providing 0.2 mg/kg/day per two liters of water, approximately three times higher than the MRL and a little more than half the RfD.

RECOMMENDATIONS

1. First and most important, it is imperative to understand the hydrology of Delta County better. In addition, the complex diversions of potable water for irrigation and domestic use throughout the county must be factored into this knowledge.

2. Second, it is imperative to determine the current concentrations of the toxic chemicals in the coal bed water to be released during extraction prior to introducing the fracturing liquids. This must include the entire scope of trace elements from alkaline to acid based derivatives in both their dissolved and suspended form. In addition, the entire scope of polyaromatic hydrocarbons (both parent and alkylated forms) in the underground coal bed water should be quantified prior to any activity. Because of the toxicity of the elements and compounds of concern, detection limits throughout this monitoring should be no higher than a part per trillion. Information such as this will allow for determining if the fracturing liquid releases additional toxic components, and in the case of the PAHs, through dissolution by the 2-BE.

3. Throughout the mining life of the well, the underground fluid with which it will interface should be monitored on a regular basis for its toxic components. See those components mentioned in Number 2. If the concentrations of the contaminants decrease, this could indicate that precious potable subsurface or surface water is being drained from above. This provides an approach for detecting dewatering before too much potable water is lost.

4. If exploration begins, GEC must keep daily inventories of the total amount of fracturing liquid injected, including the exact amount of each component in the fluid.

5. GEC should be required to retrieve all surfacing liquid for containment. The volume of the retrieved liquid should be reported and the concentrations of the chemicals in that liquid quantified on a regular basis for auditing purposes to account for the toxic chemicals that were introduced under Number 4.

5. GEC's plans for disposal of this toxic liquid should be presented to the residents of Delta County for approval before any leases are approved.

6. Any changes in the composition of the fracturing liquid must be reported to the citizens of Delta County for consideration before the liquid is used.

7. If GEC should find that it needs or wants to use anything other than sand for propping, it must provide to the citizens of Delta County for consideration all the components in the alternative material before the material is used. The purity of the alternative products used must be provided as well. Trade names will not be acceptable.

APPENDIX B

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ANALYSIS OF CHEMICALS USED IN NATURAL GAS DEVELOPMENT AND DELIVERY in COLORADO

April 4, 2007

Introduction

This project was designed to explore the health effects of the products and chemicals used in drilling, fracturing, and recovery of natural gas. It provides a glimpse at the pattern(s) of possible health hazards for those living in regions where gas development is taking place. In order to do this, we collected lists of products and chemicals which we placed in a spreadsheet. We make no claim that this list is complete.

In the process of researching the literature, we discovered that drilling companies have access to hundreds of products, the components of which are in many cases unavailable for public scrutiny. This analysis addresses only those chemicals and products for which there is evidence that they are being, or have been used in Colorado.

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1. Our list consists of 171 products used in natural gas development and delivery. These products contain 245 chemicals and cover all stages of production and development.

2. The four most common adverse health effects for the chemicals on the list are skin and sensory organ toxicity, respiratory problems, neurotoxicity, and gastrointestinal and liver damage.

3. Examination of the products used in gas development and delivery shows that 92% have one or more adverse health effects. Of the 14 products without health effects, we have little or no data on 8 of them.

4. The following figures are based on the data in the Chemicals Used in Natural Gas Development and Delivery in Colorado Spreadsheet. They include the percentage and the actual number of chemicals in each health category. They are presented to define a pattern of the possible health effects of the chemicals and products that are being used. Health effects of the 245 chemicals break out as follows:

Percentage	Number	Effect
63%	154	skin and sensory organ toxicants
58%	143	respiratory toxicants
50%	122	gastrointestinal and liver toxicants
34%	84	neurotoxicants
30%	73	kidney toxicants
28%	69	cardiovascular and blood toxicants
26%	63	immunotoxicants
23%	56	carcinogens
22%	55	reproductive toxicants
21%	52	wildlife toxicants
20%	50	developmental toxicants
14%	34	endocrine disruptors
14%	35	result in other disorders
12%	29	mutagens

Of the **65** (27%) of the chemicals on the list that can vaporize:

Percentage	Number	Effect
83%	54	skin and sensory organ toxicants
77%	50	respiratory toxicants
75%	49	gastrointestinal and liver toxicants
68%	44	neurotoxicants
55%	36	cardiovascular and blood toxicants
55%	36	kidney toxicants
43%	28	developmental toxicants
43%	28	reproductive toxicants
37%	24	immunotoxicants
37%	24	wildlife toxicants
35%	23	carcinogens
22%	14	mutagens
22%	14	endocrine disruptors
22%	14	result in other disorders

Of the **69** (28%) of the chemicals on the list that are soluble, or miscible:

Percentage	Number	Effect
86%	59	skin and sensory organ toxicants
83%	57	respiratory toxicants
75%	52	gastrointestinal and liver toxicants
52%	36	neurotoxicants
42%	29	cardiovascular and blood toxicants
36%	25	immunotoxicants
36%	25	kidney toxicants
32%	22	wildlife toxicants
29%	20	reproductive toxicants
28%	19	developmental toxicants
26%	18	result in other disorders
23%	16	carcinogens
22%	15	endocrine disruptors
17%	12	mutagens

5. Forty-nine percent of the 245 chemicals listed have between four and 14 different reported health effects. Twenty-four percent of the chemicals have between one and three known health effects, and 27% have no health effects.

6. Many of the citations used to establish the health effects of the chemicals are old. For some of the chemicals we were unable to find studies newer than those done in the 60's or 70's. In some cases we were able to get data only from an abstract, not the full report or manuscript. In other cases, we were able to get quotations about the health effect(s) from toxic chemical databases, such as TOXNET, HAZMET, etc. Many reports submitted to the Environmental Protection Agency for the registration of some of these chemicals are not accessible.

7. Several reasons led to the lack of data about the health effects of some of the products and chemicals on the spread sheet:

(a) We found no health effect data for a particular chemical or product.
(b) Some products list no ingredients.
(c) Some products provide only a general description of the content, such as "plasticizer", "polymer" etc.
(d) Some products list the ingredients as "proprietary" or provide only the name of one or two chemicals plus "proprietary".

8. Much of the information about the composition of the products on the list comes from the Materials Safety Data Sheet (MSDS) for that product. The information on these sheets is limited to only those chemicals that are required by law to be disclosed. Ingredients are often labeled as "proprietary", or "no hazardous ingredients" even when there are significant health effects listed on the MSDS.

9. MSDS sheets are designed to provide information to protect those who handle, ship, and use the product(s). The sheets are also designed to protect emergency response crews in case of accidents or spills. The data in the MSDSs do not generally take into consideration the health impacts resulting from chronic or long-term, continuous, and/or intermittent exposure. Many chemicals have not gone through a rigorous and extensive scientific peer-review process that would permit conclusions to be drawn about "safe" and "hazardous" exposure levels.

10. The MSDSs are often sketchy and provide health effects information for only one or two chemicals in a product. In many cases the chemicals listed equal less than 100% of the product. In the case of mixtures, the health effects warnings are often not chemical specific.

Comments

Chemical use and disposal

Fracturing of wells is a common practice in parts of the west, in which a million gallons of fluids are injected underground, creating a mini-earthquake that facilitates the release of natural gas. The gas industry claims that 70% of the material it injects underground is retrieved. While the fate of the remaining 30% is unknown, the recovered product is placed in holding pits on the surface and allowed to evaporate. This results in many highly toxic chemicals being released into the air, as well as being dispersed into local surface waters. The condensed residues remaining in the pits are taken off-site and dealt with in two ways: (1) They can be re-injected in the ground posing concerns for aquifers, or (2) they can be "land farmed" by which they are incorporated into the soil through tilling. Land farming can release toxic chemicals to the air via volatile substances and dusts, or result in accumulation of mixtures of toxic metals in the soil.

At some locations, because of regional differences in geology and technology, 100% of the injected material may remain underground. The mobility of these residues in the environment, or their ability to contaminate ground water and aquifers has not been evaluated.

After development ceases on a pad and the well(s) goes into production, the residues in the evaporation pits are often bulldozed over. It is impossible to predict how long the buried chemicals will remain in place. Highly persistent and mobile chemicals could migrate from these pits into underground water resources.

Prior to use, these products must be shipped to and stored somewhere before being transported to the well site. They pose a hazard on our highways, roads, and rail systems, as well as to people living and working near the storage facilities. The recent evacuation of a neighborhood in New Mexico after a leak at a storage facility is one example of the dangers posed by these facilities.

It is important to note that once a well goes into production, the gas passes through a dehydrator to remove the water which is often stored in holding tanks on the pad. It is sometimes re-injected on site or can be trucked or piped to an evaporation pit where volatile chemicals escape. Any chemicals used during drilling and fracturing could be mingling with this gas production source of water.

Health Effects

We were unable to find health effects associated with 66 of the chemicals on the list. Of these, only 14 had been assigned a chemical identification number (CAS number) by the American Chemical Society enabling us to search the literature. We found no adverse health effects for these. However, we were unable to determine the safety of the other 52 chemicals either because they were listed as mixtures, proprietary or unspecified (15), or had chemical names that were so general that the specific chemical could not be identified (37).

Many of the chemicals on this list have been tested for lethality and acute toxicity based on short-term contact. The majority have never been tested at realistic, environmentally relevant, chronic exposure levels, or for delayed effects that may not be expressed until long after exposure. Nor have adequate ecological studies been done. For example, most of the chemicals have not been tested for their effects on terrestrial wildlife or birds, fish, and invertebrates. It is reasonable to assume that the health endpoints listed above could very well be seen in wildlife, domestic animals, and pets.

The products labeled as biocides are among the most lethal on the list, and with good reason. Bacterial activity in well casings, pipes and joints can be highly corrosive, costly, and dangerous. Bacteria can also alter the chemical structure of polymers and make them useless. Nonetheless, when these products return to the surface either through deliberate retrieval processes or accidentally they pose a significant danger to workers and those living near the well and evaporation ponds. They can also sterilize the soil and inhibit normal bacterial and plant growth for many years.

In general, the volatile chemicals have more adverse health effects associated with them than the soluble chemicals. Not only are they more toxic, but in the area of skin and sensory organ toxicity, gastrointestinal and liver, and the respiratory system toxicity, over 75% of them cause harm. They also show a higher percentage of adverse effects overall than the soluble chemicals.

The soluble chemicals are associated with more adverse health effects than the total number of chemicals. While they do not show as high a percentage of effects as the volatile chemicals, between

75% and 86% can cause harm to the same systems as listed above. They are slightly more harmful than the volatiles in these systems only.

The use of respirators, goggles and gloves is advised on many of the MSDSs for products on this list. This indicates serious, acute toxicity problems that are not being addressed in the recovery process when the chemicals come back to the surface. It raises concern over possible hazards posed to those living in regions where development activity is taking place

Full Disclosure

When comparing the toxicity of the chemicals used in the four western states, the need for full disclosure became more evident. If it had not been for several accidents or spills where local citizens took it upon themselves to find out the names of products that were involved, TEDX would not have learned as much as we have. These accidents provided unique situations in which companies were inclined to more fully disclose product information and thus we gained greater insight about chemicals used to develop and deliver natural gas. We know for certain, that a great deal more than water and soap is being used to drill a gas well.

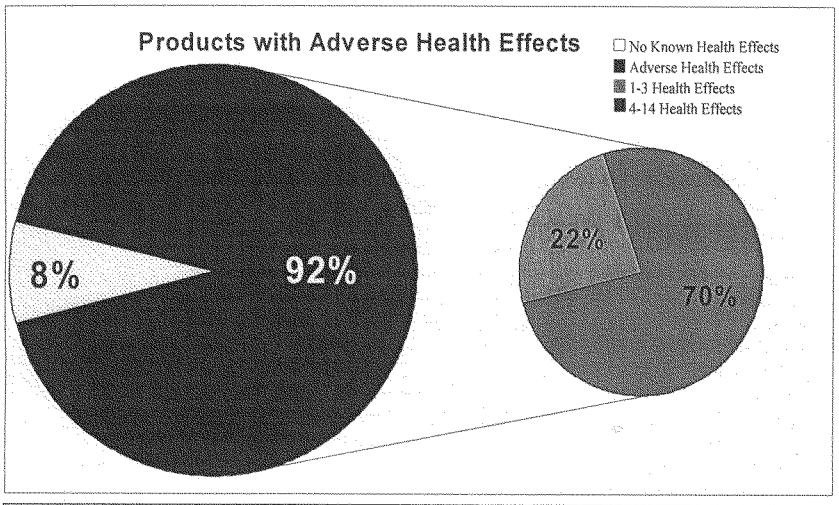
The information we have for many products in Colorado is limited. The health effects for the chemicals and products used in Colorado are consistently lower as compared with those in Wyoming, Washington or New Mexico. The percentage of health effects in Colorado are, in fact, between 4 and 14 percentage points lower than the averages for the other three states. The major difference between these states is the amount of information available on the products in use. In Wyoming and Washington we have all the MSDS sheets for the products on our list. In New Mexico we have a high proportion of MSDS sheets and data from Tier II reports, which are required by the Emergency Planning and Right to Know Act for stored materials. The Colorado information comes from far fewer MSDS sheets and other specific sources of product data. As we have gained access to product MSDS sheets from other states, this information has been incorporated into the same products on the Colorado list, with a corresponding rise in the percentage of adverse health effects.

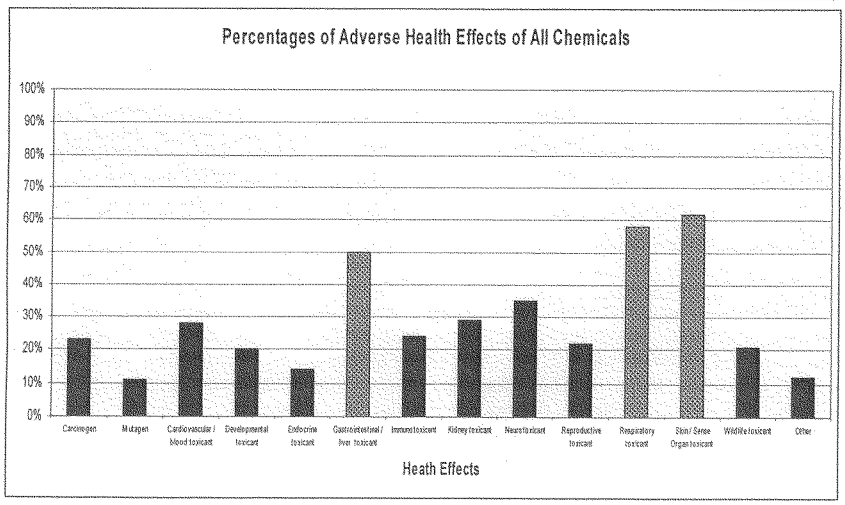
Through these comparisons we feel it is safe to say that our report *underestimates* the hazards of the situation.

A number of chemicals can be toxic when encountered in high concentrations, or, perhaps, during certain exposures (such as inhalation versus skin contact). Because only a small percentage of the total composition of most of the products on this list is available, we cannot say for certain whether such chemicals are harmless in their application. Under the present system, there are not enough data to determine the safety of products that contain mixtures of relatively "benign" ingredients and unknown chemicals, when the actual percentage composition is not provided.

This list provides only a hint of the combinations and permutations of mixtures possible and the possible aggregate exposure. Each drilling and fracturing incident is custom designed depending on the geology, depth, and resource available. The chemicals and products used, and the amounts or volumes used can differ from well to well. The only way to get a realistic picture of what is being introduced into our watersheds and air is for a complete record of information of the specific well site (state, county, township, section, etc.), the formulation of chemicals and products used at each stage, the quantity of each product (weight and/or volume), total volume injected and recovered, and the depths at which material/mixtures were injected and recovered, the composition of the recovered liquids and those liquids and solids removed from site. This needs to be public information.

As we have added products to the list, the percentages of health effects occasionally shifted. Changes such as this will continue as more products and chemicals are entered into the database. Thus far, despite small increases or decreases in percentage, the top four health effects of concern have remained the same. They are skin and sensory organ, gastrointestinal and liver, respiratory, and neurological system damage.





APPENDIX C

TEDX
The Endocrine Disruption Exchange
211 Grand Ave, Ste. 114, P.O. Box 1407, Paonia, CO 81428
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Crosby 25-3 Well – Windsor Energy, Park County Wyoming

Analysis of Products Used for Drilling

September 11, 2007

Introduction

This analysis was designed to explore the health effects of the products and chemicals used in drilling a natural gas well, Crosby 25-3, northwest of Clark, Park County, Wyoming. This well was directionally drilled with a total vertical depth of 8,038 feet. Natural gas, petroleum condensate, and drilling fluids were accidentally released from the ground adjacent to the well. The release occurred over a period of about 58 hours between 11 and 13 August 2006 and resulted in surface soil impacts in an area estimated to cover approximately 25,000 square feet.[16]

This analysis provides a glimpse at the pattern(s) of possible health hazards for those living in the region. We were able to do this analysis because we were provided the Materials Safety Data Sheets (MSDS) for the products in use at the time of the blowout. We make no claim that this list of products is complete.

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1. Our list consists of 25 products used in natural gas drilling. These products contain 36 chemicals.

2. The four most common adverse health effects for the chemicals on the list are skin and sensory organ toxicity, respiratory problems, cardiovascular and/or blood damage, and gastrointestinal and/or liver damage.

3. Examination of the products used in drilling in Wyoming on this list shows that 100% have one or more adverse health effects.

4. The following figures are based on the data in TEDX's Chemicals Used to Drill the Crosby 25-3 Well in Wyoming Spreadsheet. They include the percentage and the actual number of chemicals in each health category. They are presented to define a pattern of the possible health effects of the chemicals and products that are being used. Health effects of the 36 chemicals break out as follows:

[16] Monitoring Report, April 2007, Prepared by Terracon Consulting Engineers and Scientists.

Percentage	Number	Effect
94%	34	respiratory toxicants
89%	32	skin and sensory organ toxicants
72%	26	gastrointestinal and liver toxicants
50%	18	cardiovascular and blood toxicants
44%	16	immunotoxicants
44%	16	kidney toxicants
44%	16	neurotoxicants
39%	14	reproductive toxicants
39%	14	wildlife toxicants
33%	12	carcinogens
28%	10	developmental toxicants
28%	10	result in other disorders
25%	9	endocrine disruptors
11%	4	mutagens

Of the **8** (22%) of the chemicals on the list that can vaporize:

Percentage	Number	Effect
100%	8	gastrointestinal and liver toxicants
100%	8	respiratory toxicants
100%	8	skin and sensory organ toxicants
75%	6	neurotoxicants
63%	5	cardiovascular and blood toxicants
63%	5	immunotoxicants
63%	5	kidney toxicants
63%	5	reproductive toxicants
50%	4	wildlife toxicants
38%	3	developmental toxicants
38%	3	result in other disorders
25%	2	carcinogens
25%	2	mutagens
25%	2	endocrine disruptors

Of the **14** (39%) of the chemicals on the list that are soluble, or miscible:

Percentage	Number	Effect
100%	14	skin and sensory organ toxicants
93%	13	respiratory toxicants
86%	12	gastrointestinal and liver toxicants
64%	9	wildlife toxicants
50%	7	neurotoxicants
50%	7	result in other disorders
43%	6	cardiovascular and blood toxicants
43%	6	immunotoxicants
43%	6	kidney toxicants
36%	5	reproductive toxicants
21%	3	mutagens
21%	3	developmental toxicants
14%	2	carcinogens
7%	1	endocrine disruptors

5. Sixty-seven percent of the 36 chemicals listed have between four and 14 different reported health effects. Thirty-three percent of the chemicals have between one and three known health effects.

6. Many of the citations used to establish the health effects of the chemicals are old. For some of the chemicals we were unable to find studies newer than those done in the 60's or 70's. In some cases we were able to get data only from an abstract, not the full report or manuscript. In other cases, we were able to get quotations about the health effect(s) from toxic chemical databases, such as TOXNET, HAZMET, etc. Many reports submitted to the Environmental Protection Agency for the registration of some of these chemicals are not accessible.

7. Several reasons led to the lack of data about the health effects of some of the products and chemicals on the spread sheet:

(a) We found no health effect data for a particular chemical or product.
(b) Some products list no ingredients.
(c) Some products provide only a general description of the content, such as "no hazardous substances."

8. All of the information about the composition of the products on the list comes from either the MSDS for that product, or information disclosed in the Terracon Remedial Investigation Work Plan – Amended Draft, dated July 2, 2007. The information on the MSDSs is limited to only those chemicals that are required by law to be disclosed. Ingredients are often labeled as "no hazardous ingredients" even when there are significant health effects listed on the MSDS. The information disclosed by the Terracon report lists chemicals included in the products, but there is no indication if that information is the complete composition of the product.

9. A number of chemicals can be toxic when encountered in high concentrations, or, perhaps, during certain exposures (such as inhalation versus skin contact). Because only a small percentage of the total composition of most of the products on this list is available, we cannot say for certain whether such chemicals are harmless in their application. Under the present system, there are not enough data to determine the safety of products that contain mixtures of relatively "benign" ingredients and unknown chemicals, when the actual percentage composition is not provided.

10. MSDSs are designed to provide information to protect those who handle, ship, and use the product(s). The sheets are also designed to protect emergency response crews in case of accidents or spills. The data in the MSDSs do not generally take into consideration the health impacts resulting from chronic or long-term, continuous, and/or intermittent exposure. Many chemicals have not gone through a rigorous and extensive scientific peer-review process that would permit conclusions to be drawn about "safe" and "hazardous" exposure levels.

11. The MSDSs are often sketchy and provide health effects information for only one or two chemicals in a product. In many cases the chemicals listed equal less than 100% of the product. In the case of mixtures, the health effects warnings are often not chemical specific.

Comments

Health Effects

We found adverse health effects for all the chemicals on this list. This is true even though MSDSs for four of the products stated that they contained no hazardous substances. All of the MSDSs for these

products contained information that the ingredients were eye or skin irritants or toxicants, 75% were respiratory toxicants, 50% were dangerous to wildlife, and one was a gastrointestinal toxicant.

Many of the chemicals on this list have been tested for lethality and acute toxicity based on short-term contact. The majority have never been tested at realistic, environmentally relevant, chronic exposure levels, or for delayed effects that may not be expressed until long after exposure. Nor have adequate ecological studies been done. For example, most of the chemicals have not been tested for their effects on terrestrial wildlife or birds, fish, and invertebrates. It is reasonable to assume that the health endpoints listed above could very well be seen in wildlife, domestic animals, and pets.

In general, the volatile chemicals have more adverse health effects associated with them than the soluble chemicals. Not only are they more toxic, but in the area of skin and sensory organ toxicity, gastrointestinal and liver, and the respiratory system toxicity, 100% of them cause harm.

The soluble chemicals are associated with more adverse health effects than the total number of chemicals. While they do not show as high a percentage of effects as the volatile chemicals, between 85% and 100% can cause harm to the same systems as listed above.

The use of respirators, goggles and gloves is advised on many of the MSDSs for products on this list. This indicates serious, acute toxicity problems that are not being addressed when the chemicals come back to the surface, either during the recovery process or, as in this case, during a blowout. It raises concern over possible hazards posed to those living in regions where development activity is taking place.

Prior to use, these products must be shipped to and stored somewhere before being transported to the well site. They pose a hazard on our highways, roads, and rail systems, as well as to people living and working near the storage facilities. The recent evacuation of a neighborhood in New Mexico after a leak at a storage facility is one example of the dangers posed by these facilities.

Full Disclosure

While this list was compiled from MSDS information, it is still far from a complete picture of what is in use. The limitations of MSDS data are outlined above. Also, this list provides only a hint of the combinations and permutations of mixtures possible and the possible aggregate exposure. Each drilling and fracturing incident is custom designed depending on the geology, depth, and resource available. The chemicals and products used, and the amounts or volumes used can differ from well to well. The only way to get a realistic picture of what is being introduced into our watersheds and air is for a complete record of information of the specific well site (state, county, township, section, etc.), the formulation of chemicals and products used at each stage, the quantity of each product (weight and/or volume), total volume injected and recovered, and the depths at which material/mixtures were injected and recovered, the composition of the recovered liquids and those liquids and solids removed from site. This needs to be public information. From the data in this list, we know for certain that a great deal more than water and soap is being used to drill a natural gas well.

APPENDIX D

TEDX
The Endocrine Disruption Exchange
211 Grand Ave, Ste. 114, P.O. Box 1407, Paonia, CO 81428
970-527-4082
tedx@tds.net

Number of chemicals detected in reserve pits for 6 wells in New Mexico that appear on national toxic chemicals lists

November, 2007

Toxic chemicals lists and the 51 chemicals detected

LIST	# of chemicals on list	Percentage
CERCLA 2005	37	72.5%
EPCRA 2006	24	47%
EPCRA List of Lists	30	58.8%

Chemicals not on any list:

N-Propylbenzene	O-Terphenyl	2-Fluorobiphenyl	Dibromofluoromethane
4-Bromochlorobenzene	2,3,4-Trifluorotoluene	2-Fluorophenol	Tetrachloro-m-xylene
Diesel range organics[1]	2,4,6-Tribromophenol	Decachlorobiphenyl[2]	Uranium
Gasoline range organics[1]			

[1] Too general to be included on lists that categorize by CAS numbers
[2] a PCB

Toxic chemicals lists and the 13 chemicals detected over state limits

LIST	# of chemicals on list	Percentage
CERCLA 2005	11	84.6%
EPCRA 2006	9	69%
EPCRA List of Lists	9	69%

Chemicals not on any list:

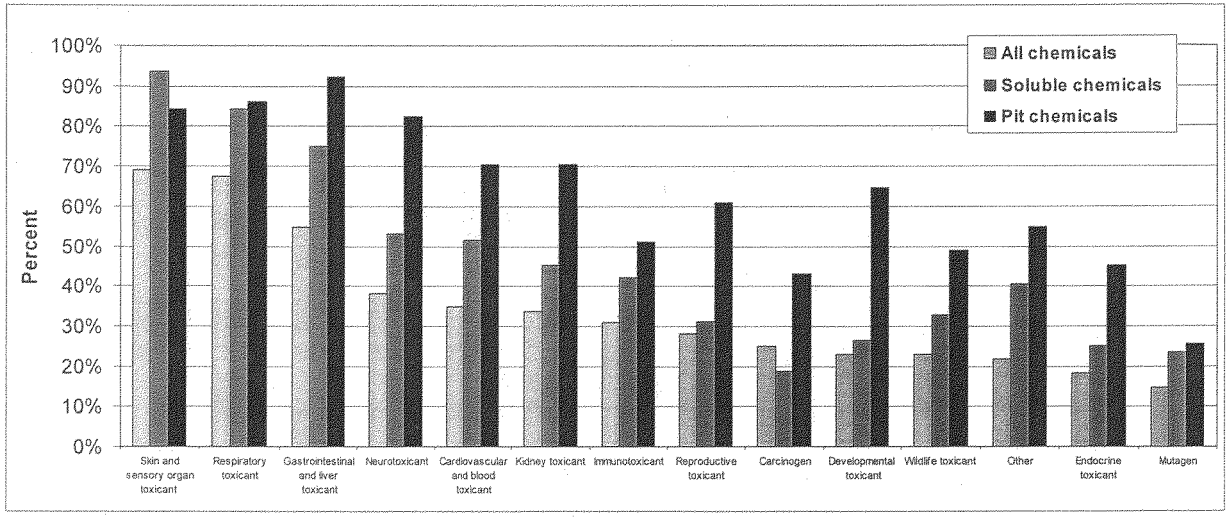
N-Propylbenzene
Diesel range organics[1]

[1] Too general to be included on lists that categorize by CAS numbers

CERCLA 2005: Comprehensive Environmental Response, Compensation, and Liability Act Summary Data for 2005 Priority List of Hazardous Substances
EPCRA 2006: Emergency Planning & Community Right to Know Act Section 313 Chemical List For Reporting Year 2006 (including Toxic Chemical Categories)
EPCRA List of Lists: Consolidated List of Chemicals Subject to the Emergency Planning and Community Right-To-Know Act (EPCRA) and Section 112(r) of the Clean Air Act

Comparison of the patterns of adverse health effects associated with 175 chemicals on the TEDX Chemicals Used in Oil and Gas Development and Delivery in New Mexico spreadsheet:

1) **All chemicals**
2) **Soluble chemicals only**
3) **Chemicals detected in 6 reserve pits**



Chairman WAXMAN. Thank you very much, Dr. Colborn.

Dr. Teitelbaum.

STATEMENT OF DANIEL TEITELBAUM

Dr. TEITELBAUM. Good morning, Chairman Waxman, Mr. Davis, and members of the committee. Thank you for allowing me to express my concerns about the public health implications of oil and gas development on the western slope in Colorado and New Mexico.

I am Daniel T. Teitelbaum, M.D., a board certified occupational physician and medical toxicologist from Denver, CO. For more than 40 years I have practiced as an occupational toxicologist in Denver, and I have evaluated and treated many patients whose medical problems arose from within industry and from side effects of industry.

There is a web of laws to protect the integrity of the environment and to prevent some toxic exposures to humans from industrial activities, but because exemptions have been granted to the oil and gas industry from some environmental laws and regulations that require them to identify and mitigate the impact of their activities on human health through air, water, and soil contamination, toxic exposures can take place.

Despite the extraction activity underway, the toxic impact on the human and animal populations of the resource areas is unevaluated. There is no public health oversight. There is no data base of those exposed at work or as residents. No surveillance of the human impact of the activities on worker families and other resident populations near the extraction and processing sites is underway or planned. No meaningful evaluation of exposure of these persons to such toxics as crude oil or its components, benzene, toluene, xylene, naphthalene, produced mercury or arsenic, of hydrogen sulfide—sour gas and its co-riders—nor of MTBE, barites, or any other drilling chemicals used in the industry is done.

There have been documented health complaints by residents of the area. There are also anecdotal stories of medical problems in those exposed. Although it is likely that there are completed pathways to residents of the oil and gas extraction areas as defined by the Agency for Toxic Substances and Disease Registry, no investigation of exposure by any route has been called for. Contaminated water sources, point emission sources, and soil contamination are not identified, nor is mitigation of contaminated sites required.

Use of oil and gas toxics contaminated well water as domestic water sources leads to much larger exposure to volatile hydrocarbons like benzene through shallow water and by other routes than through the drinking water.

Point source air contamination and soil contamination with oil and gas and extraction materials can lead to respiratory and dermal irritation, and to respiratory and dermal absorption of toxins and carcinogens.

Some of the natural components of oil and gas and the chemicals formulated into extraction materials are allergens, respiratory irritants, neurotoxins, developmental and reproductive toxins, and carcinogens.

In past mineral extraction programs, the workers and area resident populations have suffered life-threatening and even fatal out-

comes as the result of fugitive emissions, abandoned recovery waste, and air and water pollution. For example, mining tremolite asbestos contaminated vermiculite in Libby, Montana, impacted the entire town of Libby and beyond. Numerous cases of death and illness occurred there.

Extraction of uranium at the Summitville Mine in Colorado and in Uravan, CO, has caused serious environmental damage that threatens human health. The residues of lead, cadmium, and arsenic left behind from smelting and refining in the Globeville neighborhood of Denver has impacted the area residents, and the cleanup has cost huge amounts of money.

All of these environmental toxic impacts were ignored until well after the activity was underway. In some instances, nothing was done until the work had been abandoned. Had the hazards been recognized or anticipated earlier, health and economic outcomes would have been far less.

Prevention of late consequences of oil and gas extraction must be undertaken now. The health consequences of oil and gas extraction must be identified, assessed, and addressed. Measurement of point air exposures using saturation monitoring, assessment of local potable water supply contaminants, and soil contaminate evaluation should begin immediately. A data base of those exposed must be assembled now so that the ultimate outcome of the exposures they have undergone can be followed and secondary prevention can be undertaken.

The ATSDR has undertaken registry activities for groundwater contaminant populations in other areas and with other toxic chemicals like benzene and trichloroethylene, and it follows the exposed populations. The ATSDR should immediately be directed to address the issues in the oil and gas regions on the western slope. We cannot wait until years after the oil and gas extraction have taken a toll like that in Libby, in Uravan, or other places.

We must close the loopholes in toxic exposures to residents of the oil and gas extraction areas, and identify and quantitate the pathways and extent of toxic exposures.

The opportunity to do the studies is clear. The fact that neither Government nor industry has undertaken these critical exposure outcome studies is inexcusable. When the bells are tolled for those injured, who will be willing to take the blame for these failures in preventive medicine?

Thank you for your attention.

[The prepared statement of Dr. Teitelbaum follows:]

Testimony of Daniel Thau Teitelbaum, M.D.
October 31, 2007

Good morning Chairman Waxman, Mr. Davis, and ladies and gentlemen of the Committee. Thank you for allowing me to express my concerns about the public health implications of oil and gas development on the Western Slope in Colorado and in New Mexico.

I am Daniel T. Teitelbaum, MD, a board certified occupational physician and medical toxicologist from Denver, Colorado. I am Adjunct Professor of Environmental Sciences at the Colorado School of Mines and Associate Clinical Professor of Preventive Medicine and Biometrics at the University of Colorado Health Sciences Center at Denver. For more that forty years I have practiced as an occupational toxicologist in Denver, and I have evaluated and treated many patients whose medical problems arose within industry and from the "side effects," of industry. I have watched with growing concern, the widespread development of the oil and gas industry in our State in the absence of any rational public health oversight of the consequences of this development, and of any resource for the evaluation and treatment of human illnesses that have arisen and will arise as a consequence of these activities.

The physical and environmental consequences of energy development are obvious. Large human and capital demands, heavy construction, mechanical resource extraction, traffic and other physical and environmental impacts are the rule. Air pollution and soil contamination, as well as ground, surface and potable water impacts are in principle, evaluated in environmental impact assessments. There is a web of laws to protect the integrity of the environment and to prevent some toxic exposures to humans from industrial activities. But, because exemptions have been granted to the oil and gas industry from some environmental laws and regulations that require them to identify and mitigate the impact of their activities on human health through air, water and soil contamination, toxic exposures can take place. Despite the extraction activity under way, the toxic impact on the human and animal populations of the resource areas is unevaluated. There is no public health oversight. There is no database of those exposed at work or as residents. No surveillance of the health impact of the activities on worker families, and other resident populations near the extraction and processing sites is underway or planned. No meaningful evaluation of exposure of these persons to such toxics as crude oil or its components, benzene, toluene, xylene, and naphthalene, of produced mercury or arsenic, of hydrogen

sulfide (sour gas and its co-riders,) nor of MTBE, barites, or any other drilling chemicals used in the industry is done.

There have been documented health complaints by residents of the area. There are also anecdotal stories of medical problems in those exposed. Although it is likely that there are completed toxic exposure pathways to residents of the oil/gas extraction areas as defined by the Agency for Toxic Substances and Disease Registry, no investigation of exposure by any route is called for. Contaminated water sources, point emission sources, and soil contamination are not identified, nor is mitigation of contaminated sites required. Use of oil and gas toxics contaminated well water as domestic water sources leads to much larger exposures to volatile toxic hydrocarbons like benzene through shower water and by other routes than through the drinking water. Point source air contamination and soil contamination with oil and gas and the extraction materials can lead to respiratory and dermal irritation, and to respiratory and dermal absorption of toxins and carcinogens.

Some of the natural components of oil and gas, and the chemicals formulated into extraction materials are allergens, respiratory irritants,

neurotoxins, developmental and reproductive toxins and carcinogens. In past mineral extraction programs, the workers and area resident populations have suffered life threatening and even fatal outcomes as a result of fugitive emissions, abandoned recovery wastes, and air and water pollution. For example, mining tremolite asbestos contaminated vermiculite in Libby, Montana, impacted the entire town of Libby and beyond. Numerous cases of death and illness have occurred there. Extraction of Uranium at the Summitville Mine in Colorado and in Uravan, Colorado has caused serious environmental damage that threatens human health. The residues of lead, cadmium and arsenic left behind from smelting and refining in the Globeville neighborhood of Denver has impacted the area residents and the cleanup has cost large amounts of money. All of these environmental toxic impacts were ignored until well after the activity was underway. In some instances, nothing was done until the work had been abandoned. Had the hazards been recognized or anticipated earlier, the health and economic impacts would have been far smaller.

Preventable late consequences of oil and gas extraction must be undertaken now. The health consequences of oil and gas extraction must be identified, assessed and addressed. Measurement of point air exposures using saturation

monitoring, assessment of local potable water supply contaminants and soil contamination evaluation must begin immediately. A data base of those exposed must be assembled now, so that the ultimate outcome of the exposures they have undergone can be followed and secondary prevention can be undertaken. The ATSDR has undertaken registry activities for groundwater contaminant populations in other areas and with other toxic chemicals like benzene and trichloroethylene, and it follows the exposed populations. The ATSDR should immediately be directed to address the issues in the oil and gas regions on the Western Slope and to formulate an assessment and registry program. We cannot wait until years after the oil and gas extraction activities have taken a toll like that in Libby, or in Uravan or other places. We should identify the sources and nature of toxic exposures now from oil and gas development. We must close the loopholes in toxic exposures to residents of the oil and gas extraction areas, and identify and quantitate the pathways and extent of toxic exposure. The problem of widespread unidentified and unquantified toxic exposure to settled and mobile itinerant populations in the drilling fields of the Western Slope is obvious. The complete absence of a systematic approach to the identification of the exposures, and their quantification, and the establishment of a registry of the exposed persons so that exposure-outcome

studies can be done, is a disgrace. The opportunity to do the studies is clear. The fact that neither government nor industry has undertaken these critical exposure/outcome health studies is inexcusable. When the bells are tolled for those injured, who will be willing to take the blame for these failures in preventive medicine.

Chairman WAXMAN. Thank you very much, Dr. Teitelbaum.

Mr. Mobaldi.

STATEMENT OF STEVE MOBALDI

Mr. MOBALDI. Good morning, Chairman Waxman, Mr. Davis, ladies and gentlemen. My name is Steve Mobaldi. My wife, Elizabeth, and I moved to Rifle, CO, in June 1995 to a 10-acre ranch. Soon after, the oil and gas industry moved in. They began drilling on a property about 3,000 feet to the west. Within a few weeks of the drilling, Chris and I began to experience burning eyes and nosebleeds. Later, Chris began to experience fatigue, headaches, hand numbness, bloody stools, rashes, and welts on her skin. When she showered, she would turn red. Tiny blisters covered her entire body. The blisters would weep, then her skin would peel.

This happened several times. Canker-type sores appeared in her mouth and down her throat, and they would disappear the next day.

She explained the feeling on her skin was like little wheels of needles turning. The racking pain was unbearable.

She saw her doctor and was given lotions and told she was going through menopause, prescribed pain medication, and then sent home. The blisters continued for weeks. She would return with complaints of pain many times, and was given different pain medications. Nothing worked.

Soon after she was diagnosed with chemical exposure, but the doctor was unaware of what the chemicals were that were causing her symptoms. We were baffled and sought another doctor, who diagnosed the same. Chris' joints began swelling and large bumps started appearing on her elbows and hands. Months had gone by, and the pain continued. I began to experience rectal bleeding, and two of our dogs developed tumors. Our neighbor's dogs also had a tumor.

We planted trees on the property that year, and they all died.

We noticed several dead birds at different times in our yard through the next few years. Existing trees on the property were dying.

In 1997, employees from the oil and gas company were on our property when we arrived home. We were informed a natural gas well was being placed across the street and drilling was going to go under our property. They operated for months about 300 feet from our house. There was an open unlined pit closer than the road, and they began flaring. It shook the house day and night for weeks.

Chris lost her voice. We had headaches, burning eyes, and odor. The gas well was finished in 1998 and, already having problems with her health, the neighbor's water well had exploded and fracking fluid spewed, causing them to evacuate their home.

The next day, oil and gas employees came to our door and told us to stop drinking our water. They said water would be provided. This went on for about 4 months, and the same employees told us the water was tested safe for drinking. Although the water would fizz like soda with small bubbles, we were told the water was safe.

Sand began to accumulate in our water. If we set a glass of water out overnight, an oily, thin film would float on top. We stopped drinking it.

In 2000, Chris began saying words that sounded like a foreign accent. A few words in a sentence. Months later, more. Now Chris has a severe speech disorder which continues.

In March 2001, she developed a pituitary tumor. In 2001 our water well pump had to be reinstalled 10 feet higher because the sand was filling the water well shaft.

In 2000 we started raising llamas, and we had our first baby, which died about 8 months later of respiratory problems. Our llama became pregnant again, and that baby died.

In March 2003 she had another pituitary tumor. In 2003 our house was sided with a high-quality siding. In 2004 the paint began peeling on the siding. The siding company wouldn't warranty the chemical damage. The insurance company wouldn't honor the claim from industrial pollution.

Later, in 2005 Chris' gallbladder had to be removed. It was the size of a small pineapple with excessive adhesions in it and a tail growing from it.

In 2006 she was diagnosed with severe chemical sensitivity from exposure by an environmental specialist and is being treated. Several times Chris said, Something is killing me living in this house, so we packed up and abandoned the house after trying to sell it for years. We now believe the oil and gas industry is to blame for the unexplained illnesses. We now have learned by many of our old neighbors that animals and they are still suffering from exposures.

If they were required to produce the information on the chemicals used, less people would suffer.

Thank you.

[The prepared statement of Mr. Mobaldi follows:]

Testimony of Steve Mobaldi
October 31, 2007

My name is Steve Mobaldi. My wife Elizabeth (Chris) and I moved to Rifle Co. in June 1995 to a 10 acre ranch. Soon after, the oil and gas industry moved in.

They began drilling on a property about 3000 feet to the west. Within a few weeks of the drilling Chris and I began to experience burning eyes, and nosebleeds.

Later Chris began to experience fatigue, headaches, hand numbness, bloody stools, rashes and welts on her skin, when she showered she would turn red and tiny blisters covered her entire body, the blisters would weep then her skin would peel. This happened several times, canker type sores appeared in her mouth and down her throat then they would disappear the next day. She explained the feeling on her skin was like little wheels of needles turning. The racking pain was unbearable.

She saw her doctor and was given lotions then told she was going through menopause, prescribed pain medication and sent home. The blisters continued for weeks, she returned with complaints of pain many times and given different pain medication, nothing worked.

Soon after she was diagnosed with chemical exposure but the doctor was un-aware of what the chemicals were that caused her symptoms. We were baffled and sought another doctor who also diagnosed the same. Chris's joints began swelling and large white bumps started appearing on her elbows and hands. Months had gone by and the pain continued. I began to experience some rectal bleeding and two of our dogs developed tumors. Our neighbors dog also had a tumor.

We planted trees on the property that year and they all died.

We noticed several dead birds at different times in our yard through the next few years. Existing trees on the property were dying.

In 1997 employees from an oil and gas company were on my property when I arrived home.

We were informed a natural gas well was being placed across the street and the drilling was to go under our property. The rig operated for months about 300 feet from our house. There was an open unlined pit closer than the rig. Then they began flaring and it shook our house day and night for weeks.

Chris lost her voice. We had headaches, burning eyes and odor. The gas well finished in 1998 and already having problems with her health, the neighbors water well had exploded and fracing fluids spewed causing them to evacuate their home. The next day oil and gas employees came to our door and told us to stop drinking our water, they said water would be provided. This went on for about 4 months then the same employees told us our water was tested and safe for drinking.

Although the water would fizz like soda with smaller bubbles we were told the water was safe. Sand began to accumulate in our water filter, if we set a glass of water out overnight a thin oily film would float on top. We stopped drinking it.
In 2000 Chris began saying words that sounded like a foreign accent, a few words in a sentence, months later more. Now Chris has a severe speech disorder which continues.

In March 2001 she developed a pituitary tumor.

In 2001 our water well pump had to be re-installed 10' higher because sand was filing the water well shaft.
In 2002 we started raising Llamas and we had our first baby

llama which died about 8 months later of respiratory problems. Our llama became pregnant again and that baby died also of the same problem diagnosed by our veterinarian .

In March 2003 Chris had another pituitary tumor.

In 2003 we had our house sided with a very high quality metal siding. In 2004 the paint began to peel on the siding. The siding company would not warranty chemical damage, and the insurance company would not honor a claim from industrial pollution.

Later in 2005 Chris's gallbladder had to be removed. It was the size of a small pineapple with excessive adhesions and it had a tail growing from it.

In 2006 she was diagnosed with severe chemical sensitivity from exposure by an environmental specialist, and is being treated.

Several times Chris said "something is killing me living in this house" so we packed up and abandoned the house in 2004 after trying to sell it for years.

We now believe the oil and gas industry is to blame for the unexplained illnesses, we now have learned many of our old neighbors and animals are suffering from exposure. If they were required to produce the information on the chemicals used less people would suffer.

Chairman WAXMAN. Thank you for your testimony. I am sorry to hear what you have all gone through, you and your wife.

Ms. Wallace-Babb.

STATEMENT OF SUSAN WALLACE-BABB

Ms. WALLACE-BABB. Thank you, Mr. Waxman and Mr. Davis, for hearing me today.

In January 1997, I purchased my property in Morrisania Mesa above the town of Parachute, CO. Its residents enjoy 360-degree views of varied geological formations, wildlife, irrigation water, and mostly excellent neighbors, the kind who still know one another and come to help when you need it.

I had seven irrigated acres for pastures for my horse and hay fields, where I grew my own hay. I had a barn, outbuildings for the equipment used for haying and organic gardening. I could ride my horse from my property onto the BLM lands that surrounded me. It was my life's dream come true.

But it was all ending as the oil and gas industry moved in to foul the water, air, land, and lives. My personal experience with the oil and gas industry led me narrowly to avoid death. I now live a very different life from the one I was living seconds before I became chemically damaged.

I knew about the wells at the end of my rural road that were fractured in 2003 or 2004. I wasn't concerned, because I believed this industry was regulated to prevent damage, that human lives would be deemed worth protecting. In late March 2005, I began working near the wells as an irrigator. I was unknowingly exposed to fugitive gases coming from the two wells and open condensate tanks less than 100 feet from the water headgate. Within 10 minutes of being at the headgate, I experienced a pounding heart rate, weakness, burning sinuses, eyes, and skin, coughing, ringing in my ears, and blurred vision, but the symptoms gradually abated at home. I didn't suspect the wells.

On April 4th and April 11, 2005, I went to my family doctor and an ENT because my sinuses were so raw and painful. I was given two rounds of antibiotics, resulting in no improvement. My symptoms worsened.

During May 2005, I was near the wells on a daily basis, sometimes twice a day. The original symptoms were greatly intensified. I had shooting pain in the nerves of my legs and bottoms of my feet, making walking nearly impossible.

Being home, away from the wells, reduced the symptoms.

On June 7th and June 15, 2005, I was back at the ENT's getting more antibiotics and medicines to reduce respiratory inflammation and breathing difficulties. Had I made the connection between my symptoms and my increasing time near the wells, I would not be writing this. But I didn't.

At 9 p.m. on June 24, 2005, arriving at work, I stepped out of my truck into a cloud of gas from the condensate tanks. With one leg out on the ground, I turned to reach the charcoal mask I had taken to wearing while I worked at the headgate. Suddenly, a crushing headache overcame me and I began to collapse. As I was falling, I grabbed the top of my truck door and clung there as my consciousness faded. I don't know how long I was there.

As clarity returned, I dove into my truck, grabbed my mask, and sat there until I could think.

From home I called the sheriff to report something going on at the wells. I called the fire department and the Williams Production representative to the site. They were still down there at 1 a.m. when I finally fell asleep, despite extreme nausea, body pain, and a crippling headache.

The next morning I awakened to the meaning of being chemically sensitized: all the original symptoms plus vomiting, explosive diarrhea, bloody mucus from nose and lungs, headaches, tiny ulcers, mental fogginess, and neurological problems.

On July 4th I called the Colorado Oil and Gas Conservation Commission [COGCC]. I heard nothing until I told my story in front of a full audience during a COGCC meeting in Rifle, CO, on July 11, 2005.

I finally was given a report that said one of the condensate tanks created the gas cloud. The report said this off-gassing was a common event.

Williams Production's solution was to place a top on the tank. No one was concerned about the damages I received. One of the two regulators for hundreds of wells in Garfield County came to my house during July or August, along with the Williams Production representative, promising to help me in any way possible. When I called the Williams representative asking what chemicals I was exposed to for my doctor's information, I was told no one in that company knew what chemicals were in condensate and no records were kept of such incidents.

The next I heard from Williams was by letter from their senior attorney in Oklahoma. She assured me Garfield County had everything under control and there were no chemicals involved with oil and gas production that were harmful to people. Since I no longer could expose myself to the air inside or outside my house without triggering all the symptoms, I put little faith in her words.

My family doctor diagnosed me as chemically sensitized by the event, and said I wouldn't be able to tolerate the environment that had been healthy for me for nearly 10 years.

I must avoid the air until I could sell my house and find some environment I could tolerate. I purchased three powerful air cleaners, closed my house up tight, and wore a full-face respirator with gas-neutralizing cartridges each time I went outside to do minimal chores.

The approaching winter showed me my natural gas heating used for nine previous winters now triggered all my symptoms, plus hives. With four electric space heaters, I maintained a 58-degree temperature inside and was a prisoner inside my house.

Through intense research online and conversations with scientists, doctors, and EPA toxicologists in Denver, it became apparent that one of the chemicals that had damaged me was hydrogen sulfide. Each scientist I spoke with told me I was lucky to be alive, because I had been exposed to high levels of hydrogen sulfide that caused my collapse and loss of consciousness. The fact I was able to cling to the truck door avoided me hitting the higher levels of gas.

It took 9 months to find a place where I could breathe the air without triggering symptoms. I have spent thousands of dollars being evaluated and treated by environmental doctors. I still don't know the full extent of the physical damage. I am hopeful the resultant neurological problems will stabilize.

So has the oil and gas industry changed my life? Yes. It has caused me to lose my home, my friends, my way of life, my health, and my belief in my Government. I once believed Governmental agencies like the EPA protected its citizens. I now know the EPA has been stripped of its power to do its defined job.

All of the activities related to exploration for and recovery of oil and gas are exempt from the laws made to protect our environment and citizens. The oil and gas industry in Colorado is regulated by those who benefit from irresponsible actions. In a situation where the fox guards the hen house, it is deadly being a hen.

Thank you.

[The prepared statement of Ms. Wallace-Babb follows:]

Testimony submitted by Susan Wallace-Babb 10-31-07

IS THE OIL AND GAS INDUSTRY WORTH **YOUR** LIFE?

TO ALL REPRESENTATIVES:

In January, 1997, I purchased and moved to my "dream property" after searching for it for several years while living in Rifle, CO. I'm speaking of the unique treasure known as Morrisania Mesa, an 880 acre area east of Battlement Mesa above the town of Parachute, CO. These 880 acres were subdivided in the late 1800's into 10 or more acre parcels. The residents enjoy 360 degree views of the most varied geological formations around, wildlife, irrigation water and mostly excellent neighbors; the kind who still know one another and come to help as a matter of course when needed. They share similar interests and yearly convene for the Annual Pie and Ice Cream Social at the Community House.

I had seven irrigated acres with pastures for my horse as well as hay fields where I yearly grew my own hay. I had a wonderful barn and various outbuildings needed to house all the equipment I used in the haying process and organic gardening. I could ride my horse from my property onto the BLM lands that surrounded me. My house was totally remodeled inside and out and one of the original houses from 1906. It was my life's dream come true.

What could be sadder than to see it all ending? But ending it was as the oil and gas industry moved in to foul the water, air, land and lives.

My narrative takes you through my personal experience with the oil and gas industry. I narrowly avoided death and now live a life very different from the one I was living seconds before I stepped out of my truck into a cloud of gas from an open condensate tank. I am "chemically damaged" for the rest of my life.

Though I had known about the original well at the dead end of my rural road, I was not concerned because I believed this industry was regulated to prevent damaging all living things and that human lives would be deemed worth protecting. Being a dead end road, I was never close to the well until

I began working next to them (the one well had been fractured in 2003 or 2004, thereby creating two wells) as an irrigator in late March 2005. From the first time I began working near the wells, I was exposed to fugitive chemicals coming from the two gas wells and open condensate tanks less than 100 feet from the water headgate. Within ten minutes of being at the headgate I experienced a pounding heartrate, weakness, burning sinuses, eyes and skin, coughing, ringing in my ears and blurred vision.

When I returned home, the symptoms gradually abated and I thought perhaps I was allergic to some weed near the headgate even though I had never been an allergy sufferer.

By April 4, 2005, I went to my family doctor because my sinuses were so raw and painful I thought I had an infection. He gave me a round of antibiotics yet I didn't improve.

By April 11, 2005, I was spending more time near the wells. All the above symptoms continued and worsened. I then went to an ENT, for a second round of antibiotics but still no improvement followed.

During May, 2005, I was near the wells on a daily basis. I sometimes worked near them twice a day. Now my symptoms included all the original ones, much intensified, plus shooting pains in the nerves of my legs and bottoms of my feet making walking nearly impossible. But still when I was home, less than one half mile upwind from the wells, given extended time, the symptoms lessened.

June 7 and June 15, 2005, I was back at the ENT's getting more antibiotics and medicines to reduce my respiratory inflammation and breathing difficulty I was having. If only I had made the connection between my symptoms and my increasing time near the wells I would not be writing this…but I didn't.

On June 24, 2005, at 9:00 pm, I stepped out of my truck into a cloud of toxic chemicals from the condensate tanks. Putting one leg out the door and on the ground, I began to turn to reach the charcoal mask I had taken to wearing while I worked at the headgate. Before I could reach it a crushing headache overcame me and I began to collapse. As I was falling, I grabbed the top of my truck door and was clinging there as my consciousness was fading out. I

don't know how long I was there. As I regained my wits, I dove into my truck, grabbed my mask and sat there until I could think.

I then drove home and called the sheriff to report something wrong at the wells. They called the fire department and all the emergency vehicles began arriving to the well site. I saw them passing my house. They called the Williams Production representative to the site and they all were still down there at 1:00 am when I finally fell asleep with extreme nausea, body pain and a crippling headache.

The next morning I awakened to what was to be my "life change" that continues today if I am exposed to natural gas, propane, and other petroleum products: all the original symptoms plus vomiting, explosive diarrhea, bloody mucus from nose and lungs, headaches, tongue ulcers, mental fogginess and neurological problems.

I called in an incident report to The Colorado Oil and Gas Conservation Commission (COGCC) regulator. I never received as much as a phone call in return until I told this story to COGCC in front of a full audience during a meeting in Rifle, CO on 7-11-05. Afterward, I did receive a call from the other COGCC regulator and a copy of the COGCC report stating that one of the condensate tanks created the gas cloud at the well site. The report said Williams Production's solution was to place a top on the tank. No one seemed concerned about the damages I received.

One of the two well regulators for hundreds of wells in Garfield County, came to my house during July or August along with the Williams Production representative. Both promised to help me in any way possible but when I called the Williams representative, at my doctor's request so he could treat me accordingly, I was told no one in that company knew what chemicals were in condensate and that no records were kept of such incidents. The next I heard from Williams was from their Senior Attorney in Oklahoma assuring me Garfield County had everything under control and there were no chemicals involved with oil and gas production that were harmful to people. Since I no longer could expose myself to the air inside or outside my house without triggering all the symptoms, I put little faith in her words.

I returned to my family doctor who said I was chemically sensitized by the event, that I would never be able to tolerate my environment that had once been so healthy for me for nearly ten years and that I needed to avoid the air

until I could sell my house and find somewhere that had an environment I could tolerate. I purchased three powerful air cleaners, closed my house up tight, and wore a full face respirator with multiple gas neutralizing cartridges each time I went outside to do minimal chores. As winter approached I learned my natural gas heating source that I had used for nine previous winters now triggered all my symptoms plus hives. I used four electric space heaters that winter and was able to maintain a 58 degree temperature inside. I was a prisoner inside my house.

Through intense research online and in conversations with scientists, doctors, and an EPA toxicologist in Denver it became apparent that one of the chemicals that had damaged me was hydrogen sulfide. Each scientist I shared this event with told me I was lucky to be alive because I had certainly been exposed to deadly levels of hydrogen sulfide that caused my collapse and loss of consciousness. I was saved by the fact I was able to cling to the truck door avoiding the much higher levels of gas at ground level due to its heavier weight.

It took nine months to find a place where I could mostly tolerate the air without triggering symptoms. I've spent thousands of dollars being evaluated and treated by environmental doctors. I continue to need intensive treatment on a daily basis and still don't know the full extent of the physical damage. I am hopeful the resultant neurological problems will stabilize.

So has the oil and gas industry changed my life? Yes, exactly, right down to my cellular level. It caused me to lose my home, my friends, my way of life, my health and my belief in my government. I once believed governmental agencies like the EPA protected its citizens. I now know the EPA has been stripped of its power to do its defined job. All activities related to exploration for and recovery of oil and gas are exempt from the laws made to protect our environment and citizens. The oil and gas industry in Colorado is regulated by those who benefit from non-regulation and irresponsible actions where oil and gas are concerned. In a situation where the fox guards the hen house, it's deadly being a hen.

Chairman WAXMAN. Thank you very much for your testimony. That was very moving to hear what you have gone through, and I want to extend my sympathies to you.

Dr. Bolin.

STATEMENT OF DAVID E. BOLIN

Mr. BOLIN. Good morning, Chairman Waxman, Ranking Member Davis, and members of the committee. My name is David Bolin, and I am the deputy director of the State Oil and Gas Board of Alabama. I am representing the Board, the State of Alabama, and other member States of the Interstate Oil and Gas Compact Commission [IOGCC].

I am here today to address the proposition that two provisions of the Energy Policy Act of 2005—that being section 327 concerning hydraulic fracturing, and section 328 regarding stormwater—have resulted in harm to drinking water resources in the United States.

The evidence would strongly suggest otherwise. These two provisions simply removed unnecessary administrative burdens on the production of oil and natural gas in the United States.

Let me first begin by addressing the hydraulic fracturing issue. I am a groundwater hydrologist and a petroleum engineer by training and I have served in technical and supervisor roles with the Board since 1982. My first responsibility with the Board was to develop and implement the State's class two UIC program, which was approved by EPA in August 1982. Prior to that time, the Board had actively implemented groundwater protection programs to include the regulation of hydraulic fracturing operations. Protecting drinking water resources is part and parcel of every State's conservation statute, which preceeded the establishment of the Safe Drinking Water Act.

In the *LEAF* v. *EPA* legal proceedings, the 11th Circuit Court of Appeals ruled in favor of *LEAF,* holding that hydraulic fracturing constitutes underground injection, and therefore must be regulated as such under the Safe Drinking Water Act. The court did not reach any finding of actual harm to drinking water, deciding the matter strictly on the definitional issue.

The State of Alabama was then required to revise its class two UIC program. The end result has been higher operating costs for the producers and significantly higher administrative costs for the State.

In June 2004 EPA published a final report summarizing a study to evaluate the impacts on underground sources of drinking water by hydraulic fracturing of coal-bed methane reservoirs. In that report, EPA found no confirmed drinking water well contamination cases linked to hydraulic fracturing. National surveys conducted by the Groundwater Protection Council and IOGCC support the conclusions reached by EPA.

State regulatory agencies have a proven track record with regulations that are in place now. These regulations have proven sufficient to adequately protect public health and the environment from hydraulic fracturing operations.

Stormwater discharge management became an issue when it was determined that EPA's proposed rule could have a significant cost impact on the oil and gas industry, even though the industry was

not the focus of the rulemaking, and even though there was no indication of inadequate regulation during construction related to oil and natural gas activities.

In response, the States, through IOGCC, and the industry engaged working groups to examine the matter. The State's working group found that it was not feasible to develop a single standard to fit the diverse requirements for appropriate stormwater discharge management throughout the United States. It concluded that States had been managing discharges at large sites and that there was no indication of a significant threat to the environment from stormwater discharges by small exploration and productionsite activities.

The industry effort resulted in the creation of a document entitled, Reasonable and Prudent Practices for Stabilization [RAPPS], as an effective voluntary tool for reducing pollutants in stormwater discharges.

Based on the conclusions of the IOGCC study, the States are already adequately regulating this activity, supplemented by improved industry practices based on RAPPS, the conclusion can be drawn that there has been no adverse environmental impact as a result of the passage of section 328 of the Energy Policy Act.

Elimination of sections 327 and 328 would not make production of oil and natural gas in the United States any safer, but could substantially increase domestic oil and natural gas production costs, thereby decreasing domestic supply.

In conclusion, I would say that the sections 327 and 328 have not resulted in harm to drinking water resources in the United States and do not need to be eliminated. Instead, the regulations at the Federal and State level should focus on that which will, in fact, further protect public health and the environment.

Thank you for the opportunity to appear here today. If we can provide any additional information, please do not hesitate to ask.

[The prepared statement of Mr. Bolin follows:]

TESTIMONY SUBMITTED TO
THE HOUSE COMMITTEE ON OVERSIGHT AND GOVERNMENT REFORM

BY DAVID E. BOLIN, DEPUTY DIRECTOR OF THE STATE OIL AND GAS BOARD OF ALABAMA

OCTOBER 31, 2007

Good morning Chairman Waxman, Ranking Member Davis, and members of the Committee. My name is David E. Bolin. I am the Deputy Director of the State of Alabama Oil and Gas Board (Board). I am here today representing the Board, the State of Alabama, and other member states of the Interstate Oil and Gas Compact Commission (IOGCC) to express my views as a state regulator regarding the applicability of federal requirements that protect public health and the environment to oil and gas development.

The member states of the IOGCC harvest more than 99% of the oil and natural gas produced onshore in the United States. Formed by Governors in 1935, the IOGCC is a congressionally ratified interstate compact. The organization, the nation's leading advocate for conservation and wise development of domestic petroleum resources, includes 30 member and 8 associate states. The mission of the IOGCC is two-fold: to conserve our nation's oil and gas resources and to protect human health and the environment. Our current chairman is Governor Sarah Palin of Alaska.

I am here today to address two issues arising from the proposition that two provisions of the Energy Policy Act of 2005 (EPACT), Section 327 concerning hydraulic fracturing and Section 328 regarding "storm water", have resulted in harm to drinking water resources in the United States. The evidence would strongly suggest otherwise. What

these two provisions accomplished was the removal of unnecessary administrative burdens on the production of oil and natural gas in the United States – nothing more.

Hydraulic Fracturing

Let me begin by addressing the hydraulic fracturing issue as it is one with which I am intimately familiar. I have been employed by the State of Alabama since July 1979 and have served in technical and supervisory roles with the Board since 1982. I am a Ground Water Hydrologist as well as a Petroleum Engineer by training. My first responsibility with the Board was to develop the State's Class II Underground Injection Control (UIC) Program, pursuant to Section 1425 of the Safe Drinking Water Act (SDWA), in order to obtain primary enforcement responsibility for that program from the U.S. Environmental Protection Agency (EPA). The EPA made a determination that our Program accomplished the objectives of the SDWA, that being to protect underground sources of drinking water from endangerment that could result from improper injection of fluids, and was therefore approved by EPA in August 1982. Since that time, I have had supervisory responsibility for the Class II UIC Program and all other ground water protection programs under the Board's jurisdiction.

Obtaining primacy for the Class II UIC Program, however, was not the beginning of the Board's ground-water protection programs. Such programs, to include the regulation and approval of hydraulic fracturing operations, have been actively implemented continually since the Board was established in 1945. The Board has a staff of geologists and

petroleum engineers to provide technical expertise and to otherwise assist in its duties. In the original act establishing the Board, one of the Board's duties was to "prevent the pollution of fresh water." Protecting drinking water resources is part and parcel of every states' conservation statute: the prevention of waste and the loss of critical natural resources without economic or beneficial use. These mandates to protect drinking water and other natural resources preceded the establishment of the SDWA.

Although the Board in Alabama had been adequately protecting ground water for many years, it elected to apply for primary regulatory authority for this federal program in order to prevent dual regulatory requirements and to eliminate extended time delays associated with federal permitting and decision-making so that oil and gas development could proceed in an orderly manner and to prevent any waste that would otherwise be incurred.

Perhaps the recent history of litigation involving the issue of hydraulic fracturing would be beneficial. In 1994, a Florida-based environmental group, the Legal Environmental Assistance Foundation (LEAF), filed a petition with EPA requesting that EPA take over primacy under the State of Alabama's UIC program. LEAF contended that hydraulic fracturing associated with methane gas production was an injection under the SDWA and therefore should be subject to regulation under the State of Alabama's UIC program.

Following EPA's rejection of its petition in 1995, LEAF filed an appeal with the 11th U.S. Circuit Court of Appeals. In 1997 the 11th Circuit ruled in favor of LEAF holding that hydraulic fracturing constitutes underground injection and therefore must be

regulated as such under the SWDA. The court did not address the issue of risk of harm associated with fracturing or reach any finding of actual harm to drinking water, deciding the issue strictly on the definitional issue. As a result of the court's decision and subsequent rulings, the State of Alabama in 1999 submitted a revised Class II UIC Program package consistent with the Court's rulings and subsequent orders. The EPA approved the Alabama program. A subsequent LEAF effort before the 11th U.S. Circuit arguing that EPA erred in approving the Alabama program failed as did an application for writ of certiorari before the U.S. Supreme Court.

Although EPA had never regarded hydraulic fracturing as an "underground injection" under the SDWA, and so argued before the 11th Circuit Court of Appeals, the EPA decided to let the decision stand and not appeal the court's decision. The result has been higher operating costs for producers of coalbed methane in Alabama and significantly higher administrative costs by the State of Alabama in administering its Class II UIC Program.

Thus the LEAF case launched an effort, based solely on a definitional issue and never any finding of harm, to tighten up the regulation of hydraulic fracturing nationally.

In 1999, the Ground Water Protection Council conducted a survey of state regulatory agencies regarding the inventory and extent of hydraulic fracturing in coalbed methane wells in oil and gas producing states. The principal conclusion of that survey was that

"[t]here are no indications from this survey to suggest that public health is at risk as a result of the hydraulic fracturing of coalbeds used for the production of methane gas."

Additionally, in 2002, the IOGCC completed a survey of oil and natural gas producing states that provides an understanding of hydraulic fracturing and its role in the completion of oil and natural gas wells in the United States. With the committee's permission I would like to submit a copy of this survey for the record. Principal findings of this survey reveal that the technique has been in widespread, common use for nearly 60 years – the technique gained its current widespread popularity as a production technique in the 1940s. Approximately 35,000 wells are hydraulically fractured annually in this country with close to one million wells having been hydraulically fractured in the United States since the technique's inception with no documented harm to groundwater. Hydraulic fracturing has been regulated by the states since its inception. A principal focus of state oil and gas regulatory programs is on protecting ground and surface water resources. The survey reveals hydraulic fracturing of natural gas and oil wells is a process that is well understood and well regulated by the petroleum producing states.

In June 2004, EPA published a final report summarizing a study to evaluate the potential threat to underground sources of drinking water (USDWs) from the injection of hydraulic fracturing fluids into coalbed methane (CBM) production wells. In that report, EPA concluded that "additional or further study is not warranted at this time . . ." and "that the injection of hydraulic fracturing fluids into CBM wells poses minimal threat to USDWs."

EPA further stated in its summary of the study that "[i]n its review of incidents of drinking water well contamination believed to be associated with hydraulic fracturing, EPA found no confirmed cases that are linked to fracturing fluid injection into CBM wells or subsequent underground movement of fracturing fluids. Further, although thousands of CBM wells are fractured annually, EPA did not find confirmed evidence that drinking water wells have been contaminated by hydraulic fracturing fluid injection into CBM wells. Where fluids are injected, EPA believes that groundwater production, combined with mitigating effects of dilution and dispersion, adsorption, and biodegradation, minimize the possibility that chemicals included in fracturing fluids would adversely affect USDWs."

The results of these national surveys and the conclusions reached by EPA, the federal agency responsible for protecting the environment, in its study are quite significant and can not be dismissed. The states, for more than 60 years, even before the SDWA, have done an outstanding job of protecting USDWs. The regulations promulgated and enforced by our Board and our counterparts in other states have been very effective; as evidenced by the surveys and EPA's study, there have been no verified reports of contamination of USDWs by coalbed methane operations.

Alabama is a major oil and gas producing state, presently ranking tenth among the states in gas production and fifteenth in oil production. It has a broad and diverse oil and gas industry that includes onshore and offshore operations, as well as conventional and

unconventional hydrocarbon resources. As such, Alabama serves as an excellent representative for all of the oil and gas producing states.

Coalbed methane has become a major contributor to Alabama's oil and gas industry in last 20 years. Since the establishment of the Board, half of the 15,600 oil and gas wells drilled in Alabama have been coalbed methane wells. Alabama has been a national leader in coalbed methane operations and was the first state to promulgate regulations addressing coalbed methane operations. In fiscal year 2007, 115.2 billion cubic feet of coalbed methane gas was produced in Alabama, representing approximately 40 percent of the state's total gas production. Similar developments in coalbed methane activity are occurring in a number of other states.

Coalbed methane production in Alabama is only economical if the coal seams can be hydraulically fractured. State regulatory agencies have a proven track record with the regulations that are in place now. These regulations have proven sufficient to adequately protect public health and the environment from hydraulic fracturing operations associated with the oil and gas development. Alabama's experience with federal requirements that were generated by the LEAF matter and ultimately required the Board to revise its Class II UIC Program have resulted in substantially increased administrative and production costs with no public health or environmental benefit.

Storm Water Discharge Management

Concerning the "storm water" issue, the issue first arose when EPA proposed a rule regarding storm water discharges when it was discovered that it could have a significant cost impact on the oil and gas industry even though the industry was not the focus of the rulemaking and even though there was no indication of inadequate regulation during construction relating to oil and natural gas production. In response, both the states, through the IOGCC, and industry engaged working groups to examine the matter.

The states, through the IOGCC, created a Storm Water Workgroup whose task was to determine how best meet EPA's needs regarding NPDES storm water management practices and to develop appropriate guidance based on existing state programs. Among other things, the workgroup did not find justification for requiring a storm water discharge permit for small exploration site activities. It found that the Federal NPDES permitting requirements were onerous and inappropriate given the level of risk to the environment. It also found that it was not feasible to develop a single standard to fit the diverse requirements for appropriate storm water discharge management throughout the United States. It concluded that states have been managing discharges at large sites and that there was no indication of a significant threat to the environment from storm water discharges by small exploration and production site activities.

The industry effort resulted in the creation of "Reasonable and Prudent Practices for Stabilization" (RAPPS) as an effective voluntary tool for reducing pollutants in storm

water discharges. The industry group which created RAPPS consisted of environmental representatives from several oil and gas companies and representatives of oil and natural gas industry associations. RAPPS consisted of a compilation of the various operating practices utilized by reasonable and prudent operators in the oil and gas industry to effectively control erosion and sedimentation associated with storm water runoff from areas disturbed by clearing, grading and excavating activities related to site preparation associated oil and gas exploration, production, processing, treatment, and transmission activities.

The bottom line with respect to the storm water issue is that there is no issue. Based on the conclusions of the IOGCC study, the states were already adequately regulating this activity. Supplemented by improved industry practices based on RAPPS, the conclusion can be drawn that there was no adverse environmental impact as a result of the passage of EPACT Section 328.

A study commissioned by the U.S. Department of Energy also showed that there would likely be severe economic impacts on the oil and gas industry had the original EPA rule covered the oil and natural gas industry. It is one thing to have economic impact where an environmental harm is being mitigated; it is another when it is unnecessary.

Conclusion

The point is that America needs its domestic production of oil and natural gas, and regulations at both the federal and state level should focus on that necessary to protect the environment and public health and safety. Superfluous regulation only decreases domestic production and increases foreign imports from countries where there often exist few environmental regulations. Make no mistake, we in the U.S. are the best regulated oil and natural gas regime in the world – no other country operates under stricter environmental, health and safety regulatory oversight than do we.

Elimination of Sections 327 and 328 of EPACT would not make production of oil and natural gas in the United States an iota safer but could substantially increase domestic oil and natural gas production costs and thereby decrease domestic supply.

Thank you for the opportunity to appear here today. If we can provide any additional information, please do not hesitate to ask.

STATES EXPERIENCE WITH HYDRAULIC FRACTURING

A Survey of the Interstate Oil and Gas Compact Commission

July 2002

The Interstate Oil and Gas Compact Commission (IOGCC) has completed a survey of oil and natural gas producing states that provides an understanding of hydraulic fracturing and its role in the completion of oil and natural gas wells in the United States. The survey results are presented in the attached table. A copy of the survey questionnaire is also attached.

Principal findings of this survey reveal that the technique has been in widespread, common use for nearly 60 years – the technique gained its current widespread popularity as a production technique in the 1940s. Approximately 35,000 wells are hydraulically fractured annually in this country with close to one million wells having been hydraulically fractured in the United States since the technique's inception with no documented harm to groundwater. Hydraulic fracturing has been regulated by the states since its inception. A principal focus of state oil and gas regulatory programs is on protecting ground and surface water resources. The survey reveals hydraulic fracturing of natural gas and oil wells is a process that is well understood and well regulated by the petroleum producing states.

Hydraulic fracturing is used in many geological formations in order to make oil and gas flow freely to the well bore. Williams and Meyers' Manual of Oil and Gas Terms defines hydraulic fracturing as "a mechanical method of increasing the permeability of rock, and thus increasing the amount of oil or [natural] gas produced from it. The method employs hydraulic pressure to fracture the rock." Under modern production techniques, hydraulic fracturing fluid (primarily water and sand) is injected under pressure into the rock through perforations in the well bore. The well is then allowed to flow back the injected fluid, leaving the sand to prop open the fractures in the rock. In a typical well, approximately eighty percent of the injected fluid is returned to the surface within a short period after fracturing, with an additional fifteen to twenty percent recovered through production. The injected sand material is left in the rock to create the pathway for the oil and/or natural gas to flow.

The IOGCC represents the governors of 37 states – 30 member and seven associate states – that produce virtually all the domestic oil and natural gas in the United States. The IOGCC's mission is to promote the conservation and efficient recovery of domestic oil and natural gas resources, while protecting health, safety and the environment.

SURVEY OF STATES RE: FRACTURING

STATE	YR STATE BEGAN REG.	FRACTURING DONE IN STATE?	HOW LONG FRACTURING ?	TYPE OF WELLS	APP. WELLS FRACKED ANNUALLY	APP. WELLS FRACTURED IN STATE TOTAL	% OF WELLS FRACKED	HARM ?
ALABAMA	1945	YES	1945	G,O,CSNG	285	5300	85%	NO
ALASKA	1958	YES	1981	G,O	55	1400	40%	NO
ARKANSAS	1939	YES	1980s	G,CSNG	150	N/A	75%	NO
CALIFORNIA	1915	YES	1970s	O,G	500	15,000	15%	NO
COLORADO	1951	YES	1980s	G,O,CSNG	1500	20,000	99%	NO
ILLINOIS	1939	YES	1950s	O	1,000	30 to 50,000	30%	NO
INDIANA	1947	YES	1950s	O,G	1,000	20,562	95%	NO
KANSAS	1933	YES	1960s	O,G,CSNG	900	50,000	40%	NO
KENTUCKY	1960	YES	1960s	G	1,000	30,000	50%	NO
LOUISIANA	1920s	YES	1960s	O,G	258	36,000	30%	NO
MICHIGAN	1927	YES	1970s	O,G	400	9,000	90%	NO
MISSISSIPPI	1939	YES	1960s	G	70	2 to 3,000	35%	NO
MONTANA	1954	YES	1950s	O,G	10	4,000	66%	NO
NEBRASKA	1959	YES	1950s	O,G	200	3,500	80%	NO
NEVADA	1954	YES	1980s	O	10	50	5%	NO
NEW MEXICO	1935	YES	1950s	O,G,CSNG	1,000	30,000	90%	NO
NEW YORK	1879	YES	1962	O,G	100	8,000	85%	NO
NORTH DAKOTA	1945	YES	1950s	O,G	15	290	10%	NO
OHIO	1965	YES	1950s	O,G	550	67,000	81%	NO
OKLAHOMA	1915	YES	1950s	O,G	1,150	58,000	60%	NO
PENNSYLVANIA	Pre-1900	YES	1950s	O,G,CSNG	2,000	118,000	99.9%	NO
SOUTH DAKOTA	1943	YES	1960s	O,G	10	195	90%	NO
TENNESSEE	1969	YES	1969	O,G	N/A	N/A	N/A	NO
TEXAS	1919	YES	1950s	O,G	20,220	361,000	50%	NO
UTAH	1955	YES	1970s	G,O	480	7,000	80%	NO
VIRGINIA	1950	YES	1970s	G,CSNG	300	3,000	100%	NO
WEST VIRGINIA	1929	YES	1960s	O,G,CSNG	1,000	25,000	95%	NO
WYOMING	1951	YES	1950s	O,G	500	25 to 30,000	66%	NO
				TOTALS:	34,663	948,597	56.3%	

Types of wells: G=Natural Gas, O=Oil, CSNG=Natural gas from coal seams N/A = Specific numbers not available

Chairman WAXMAN. Thank you very much, Dr. Bolin.

We are now going to proceed to 5 minutes for each Member to ask questions or make comments. I am going to recognize myself first.

It is easy to get lost in the jargon of the oil and gas industry, so I would like to briefly clarify one of the issues we are discussing today, that is hydraulic fracturing.

Ms. Mall, hydraulic fracturing is the practice of injecting hundreds of thousands of gallons of a chemical solution into the ground at high pressure in order to fracture underground formations and enhance natural gas production; is that correct?

Ms. MALL. Yes, sir.

Chairman WAXMAN. And EPA has found that hydraulic fracturing is routinely conducted on formations within underground sources of drinking water; is that correct?

Ms. MALL. Yes.

Chairman WAXMAN. And, Dr. Colborn, how easy is it to learn what the chemicals are that are being injected into these sources of drinking water?

Ms. COLBORN. It has been very difficult. Thank goodness for the Oil and Gas Accountability Project, who has lawyers who are able to get us some of this information. We have never been able to get the full disclosure of what is being shipped into and used in western Colorado, and then when we do get a product, if you look at the name of the product and then try to find out anything about it, you will find that you may get 1 to 2 percent of the content, 50 percent of the content, but you never know what the full amount of chemicals are in this particular product.

Even if you look at an MSDS sheet, they may list one or two chemicals——

Chairman WAXMAN. What is MSDS?

Ms. COLBORN. Material Safety Data Sheet, which must accompany anything that might be harmful on immediate use, and it is there for the use of the handlers who are using it directly or in case of accidents or spills, so it is there for the emergency cleanup people, as well.

Very, very seldom do you get the full content of what is in the product.

Actually, I should have brought one with me. We just found one yesterday that came in where the name of the product and then everything in it was proprietary. So we keep running into the word proprietary.

Chairman WAXMAN. Why wouldn't the companies just disclose information as to what chemicals are in the fracturing fluid?

Ms. COLBORN. Well, I have asked the companies about that, and basically when they make a product that they think is going to facilitate releasing gas or making drilling easier, there are companies now in competition doing this. Haliburton makes products, Encada makes products under the name of CalFrac.

Chairman WAXMAN. So it is proprietary?

Ms. COLBORN. So they claim it is proprietary and they don't want others to know.

Chairman WAXMAN. OK. Is there evidence to suggest that we should have concern about these chemicals being in our drinking water?

Ms. COLBORN. Yes.

Chairman WAXMAN. Your research shows that they commonly contain toxic substances that are known to cause adverse health effects.

Ms. COLBORN. Yes.

Chairman WAXMAN. Is that the concern?

Ms. COLBORN. Yes. As I said, 91 percent of the products had one or more effect. That was in Colorado. We are breaking them out by State and trying to keep the States separate.

Chairman WAXMAN. Mr. Mobaldi, I want to thank you again for testifying today. I know it must be hard to discuss the situation you and your wife have endured.

Did you have any symptoms before the drilling activities began near your home?

Mr. MOBALDI. None at all.

Chairman WAXMAN. And did any of the symptoms go away after you moved away from the drilling activities?

Mr. MOBALDI. Some of them, but it seems that detoxing takes quite a while.

Chairman WAXMAN. Dr. Teitelbaum, I know you can't make a diagnosis. I am not asking you to do that. But these kinds of situations are awfully hard to deal with in hindsight when we don't have adequate information. In this case, we have oil and gas activities near the Mobaldi's residence, oily films appeared in their drinking water, they got sick, and all of this is occurring in the context of an unregulated activity in which undisclosed chemicals are being widely used in sources of drinking water.

As a medical toxicologist, what insights can you give us into this situation?

Dr. TEITELBAUM. Mr. Chairman, the problem we have is that none of us have adequate information. I helped to work on the hazard communication standard, the OSHA hazard communication standard, which requires that material safety data sheets give this type of information and, in fact, that those data sheets be made available to a treating physician who, with that in his hand or her hand, might be able to put together the symptom complex described, the physical findings, and the materials to which the individual is exposed.

However, because of the proprietary exemption in those, most of the active chemicals don't appear on the material safety data sheet.

Chairman WAXMAN. Yes.

Dr. TEITELBAUM. And it is extremely difficult, although theoretically possible, to get that information by a physician, but it is terribly difficult at any given time.

Chairman WAXMAN. Would it be prudent for the companies to at least disclose the chemicals that they are injecting into the drinking water?

Dr. TEITELBAUM. Absolutely. I think the reality is there should be a community right to know provision so that the community, itself, is provided with that information. The physicians then have it available and it is an open process.

Chairman WAXMAN. Thank you very much for your testimony.

Dr. TEITELBAUM. Thank you, Mr. Chairman.

Chairman WAXMAN. Mr. Davis.

Mr. DAVIS OF VIRGINIA. Let me just pick up on that. Dr. Bolin, let me just ask you, from the regulatory side, would there be any problem with disclosing what they are putting in the wells?

Mr. BOLIN. I don't think so. I think it is more of a competitive type situation that they claim proprietary information. I will say that in the years since we have revised our UIC program to implement our program to do hydraulic fracturing, we have required the operators to comply, basically to provide affidavits as to what those components are, and they have done that for us.

Mr. DAVIS OF VIRGINIA. That seems pretty common sense.

It is a fact that when diesel is utilized in this, that does have some very dangerous components; isn't that a fact?

Mr. BOLIN. Yes, sir. That is true.

Mr. DAVIS OF VIRGINIA. And is diesel utilized much today?

Mr. BOLIN. It is not used at all in Alabama in regard to hydraulic fracturing.

Mr. DAVIS OF VIRGINIA. But it is not illegal anywhere?

Mr. BOLIN. I do know that the EPA executed a memorandum of agreement with the major service companies that handle about 95 percent of fracking operations in which they agreed not to use diesel in fracking operations.

Mr. DAVIS OF VIRGINIA. That is good for the 95.

Mr. Chairman, I have just a couple of letters that were submitted to us in the record. One is from the American Petroleum Council and the other from the Groundwater Protection Council, if we could put these in the record.

Chairman WAXMAN. Without objection, that will be the order.

[The information referred to follows:]

API strongly supports the preservation of current state regulation for proven and environmentally safe hydraulic fracturing technology. Additionally, API supports the current federal stormwater regulation definitions for oil and gas exploration and production.

The Energy Policy Act of 2005 (EPACT) recognized that a successful U.S. economy and continued national security do not afford our nation the luxury of picking winners and losers in terms of resources used to fuel our energy needs—we need them all. As a result, this legislation included a comprehensive policy to promote all domestic energy resources, as well as supporting energy efficiency. EPACT encouraged renewable and alternative fuels along with the energy resources that are projected by EIA to provide roughly 86% of the total U.S. primary energy supply in 2030—coal, nuclear, oil and natural gas.

Unfortunately, instead of picking up where EPACT left off, we have seen several legislative initiatives in the 110th Congress that not only ignore the need for increased production of our primary energy resources, but also actually delay and prevent further domestic production of oil and natural gas by repealing pro-production provisions included in current law. As the House Committee on Oversight and Government Reform considers the issues at hand today, we request that you avoid heading down a similar path and instead use the Committee's authority to promote responsible domestic oil and gas production as a key component of a realistic policy for long term domestic energy supplies.

Regarding the treatment of hydraulic fracturing and stormwater in environmental law—one apparent focus of today's hearing—EPACT provided much needed clarification of Congressional intent in order to allow for responsible energy production. Section 322 of this legislation clarified the definition of "underground injection" within the Safe Drinking Water Act (SDWA). Rather than allow federal courts to define whether certain activities pursuant to oil and gas production via hydraulic fracturing should be regulated under SDWA, Congress made clear that it was not and still is not its intent to include hydraulic fracturing under this law. Similarly, Section 323 of EPACT clarified Congressional intent that uncontaminated stormwater from exploration and production construction activities —should be excluded from certain Federal Water Pollution Control Act requirements.

Arguments have been made that EPACT exempts hydraulic fracturing from federal law. These arguments are misleading. Congress has never included hydraulic fracturing as a regulated activity under the SDWA. Additionally, Congress explicitly excluded uncontaminated stormwater from oil and gas exploration and production through its 1987 Clean Water Act amendments (with additional clarification provided through EPACT).

When promulgating regulations to implement the statute, the US Environmental Protection Agency made all oil and gas construction activity (regardless of size) eligible for the exemption from NPDES permitting requirements. With the exemption, EPA specifically encouraged API to develop and implement Best Management Practices (BMPs) to minimize the discharges of pollutants, including sediment, in stormwater both during and after construction activities. In response, the API initiated the development of an oil and gas industry stormwater BMP program, to incorporate successful voluntary stormwater management practices into our day-to-

day operations. Relying on a broad participation from member companies, sister trade associations, and other oil and natural gas operating groups (referred to as the Stormwater Coalition), the initiative builds upon the guidance document entitled Reasonable and Prudent Practices for Stabilization (RAPPS) of Oil and Natural gas Construction Sites (RAPPS). Through field validation of the RAPPS, the Coalition expects a new voluntary program to emerge that can be readily applicable in the field literally across the industry.

Listed below is further background on hydraulic fracturing as well as its regulatory history:

What Is Hydraulic fracturing?
About one million wells nationwide have been completed using hydraulic fracturing technology with no documented contamination of groundwater. The ability to complete wells and produce large quantities of natural gas with this decades-old and well understood process would be adversely impacted if additional regulations and requirements are added to the already extensive regulation that now exists.

The oil and natural gas industry relies heavily on hydraulic fracturing to produce more than four percent of the nation's natural gas supply. Every state in which oil and natural gas drilling and production occurs has adequate regulations currently in place to protect groundwater from drilling and production operations. These include well construction standards to isolate and protect freshwater aquifers and regulatory oversight of well completion and stimulation techniques.

Developed in the late 1940s, hydraulic fracturing is a technique used to allow natural gas and oil to move more freely from the rock pores where they are trapped to a producing well that can bring them to the surface. This technology allows improved recovery of valuable energy resources while protecting groundwater zones and resources. Hydraulic fracturing is key to gas production from low porosity and low permeability formations known as tight gas sands. Its use allows production of greater volumes of hydrocarbons from each well. The use of hydraulic fracturing is estimated to account for 30% of US recoverable oil and gas reserves and has been responsible for the addition of 7 billion barrels of oil and 600 trillion cubic feet of natural gas. The National Petroleum Council (NPC) estimates that 60%-80% of the wells drilled in the next decade to meet our natural gas demand will require fracturing.

What Are Some of the Components of Hydraulic fracturing Fluids
In most cases, fracturing fluids consist primarily of water, sand and nitrogen gas. Water typically makes up 99 percent of the liquid phase of fracturing fluids. Fracturing fluids may also contain very limited amounts of other materials depending on the nature of the formation being fractured. For example, fracturing fluids typically contain a "gelling agent" to make the fluid more viscous and better able to carry the sand that will hold the fractures open and allow the gas to make its way to the well. The most commonly used gelling agent is guar, which is found in pudding and ice cream. Buffers are another example of common fracturing fluid components. They are used to maintain the pH of the fracturing fluid. Commonly used buffers include fumaric acid (which is found in fruit drinks) and baking soda. It is important to note that the substantial majority of the fracturing fluids are pumped back out of a well and do not remain in the ground.

The reference to the use of diesel in the exclusion results from a red herring argument about diesel creating a risk to drinking water. Part of the rhetoric of the opposition to the Energy Policy Act provision is allegations that hydraulic fracturing injects diesel into drinking water. In reality, drinking water zones are specifically protected in the permitting process from injection.

How Are Oil and Gas Wells Designed to Prevent Contamination of Groundwater Resources?
Existing well construction practices that are standard in the industry and that are required by virtually all states effectively protect underground sources of drinking water from impacts related to oil and gas exploration and production activities, including hydraulic fracturing.

Well construction standards and requirements include components intended to protect groundwater resources. Typically, steel pipe known as surface casing is cemented into place at the uppermost portion of a well for the explicit purpose of protecting groundwater. The depth of the surface casing is generally governed by regulation and is determined based on groundwater protection, among other factors. As the well is drilled deeper, additional casing is installed through the formation(s) from which oil or gas is to be produced which further ensures that any aquifers that the borehole passes through are isolated from the producing formations in the well.

This casing and cementing is a critical part of the well construction that protects not only any water zones but also the integrity of the production zone(s). Current industry well design practices ensure multiple levels of protection between any sources of drinking water and the production zone of an oil and gas well.

How Has EPA Viewed Hydraulic Fracturing?
In its June 2004 report, EPA confirmed that the great majority of hydraulic fracturing activities take place at depths far below existing groundwater sources that could reasonably be considered underground sources of drinking water. EPA considered a number of factors that influence the fate and transportation of fracturing fluids in the subsurface in determining that fracturing fluids would be unlikely to adversely affect USDWs, including the following:

- Fracturing fluid recovery – EPA found that the substantial majority of fracturing fluids that are pumped into a well as part of the hydraulic fracturing process are subsequently recovered during the process of producing gas from the well. Only a fraction of the fluids remain in the subsurface.
- Hydraulic gradients – During the production process, water and gas are pumped out of a well to the surface, causing groundwater within the well's "capture zone" to flow toward the well. Any fracturing fluids within that "capture zone" will move toward the production well, rather than away from it, during this production period, which may last 10-20 years. Therefore, during this period any fluids within the "capture zone" would not migrate in the direction of any drinking water wells.
- Dilution and dispersion – The fracturing fluids that are pumped into a well as part of the hydraulic fracturing process will be substantially diluted by the groundwater in the formation being fractured, lowering the concentrations of the fracturing fluid constituents by orders of magnitude.
- Adsorption – Some of the constituents of fracturing fluids would be adsorbed by the coalbeds being fractured and would not migrate away from the production well.
- Biodegradation – Some of the constituents of the fracturing fluids will certainly degrade naturally over time, eliminating any threat to drinking water wells that might be posed by such constituents.

In light of all of these factors, EPA concluded that the risk to drinking water sources from the injection of fracturing fluids is very low. This conclusion was further supported by the absence of any confirmed instances of contamination of drinking water wells by fracturing fluids, despite the fact that about one million wells have been hydraulically fractured since the process was first commercialized in 1947. As EPA has stated, if the injection of fracturing fluids posed a significant threat to drinking water sources, some evidence of such impacts would have

appeared in the record somehow. However, despite careful investigations by EPA and various state agencies, EPA did not find confirmed evidence that drinking water wells have been contaminated by fluids pumped into wells during hydraulic fracturing operations.

State Regulation of Hydraulic fracturing
EPA is not the only entity that has reached such a conclusion. The Ground Water Protection Council (GWPC), representing state regulators, previously concluded that there is no evidence that hydraulic fracturing has resulted in the contamination of drinking water wells. http://gwpc.org/advocacy/advocacy_documents/res00-7.htm The Interstate Oil and Gas Compact Commission (IOGCC) reached a similar conclusion.

State regulation of hydraulic fracturing began over fifty years ago. These regulations created a control system that has effectively prevented contamination of drinking water, in the more than one million times that hydraulic fracturing has been used. The states, for many years, have regulated oil and gas well drilling and related well stimulation techniques (including hydraulic fracturing) through the imposition of requirements such as the use of zonal isolation techniques (e.g., well casing and cementing) to protect drinking water aquifers. The GWPC survey of state regulators found no evidence of any contamination of underground sources of drinking water or increased risk to human health due to hydraulic fracturing even though the responding agencies indicated that over 10,000 wells had been hydraulic fractured in their states. In fact, when the Ground Water Protection Council (GWPC) studied the environmental risk of hydraulic fracturing, it found one complaint in the 10,000 coalbed methane wells it reviewed – an Alabama well that the Environmental Protection Agency (EPA) had already concluded was not a fracturing problem.

The IOGCC survey reported almost one million wells having been hydraulic fractured with no evidence of harm. EPA carefully reviewed a number of reported incidents of impacts to drinking water wells but was unable to conclude that any of the impacts were due to hydraulic fracturing. Given that tens of thousands of hydraulic fracturing operations have been conducted nationwide over the past several decades, at least some concrete evidence of impacts would be expected if contamination of drinking water wells due to hydraulic fracturing was in fact a significant issue.

Prior Congressional Review of Hydraulic Fracturing
Years after state regulation of hydraulic fracturing was implemented, Congress enacted the Safe Drinking Water Act (SDWA) in 1974. By then, hydraulic fracturing had been used for 25 years with no environmental problems. Under the SDWA, states developed extensive Underground Injection Control (UIC) programs to manage liquid wastes and the reinjection of produced waters. These programs addressed liquids intended to be injected and – to remain – in underground geologic formations. By 1980 Congress – recognizing the need for further state flexibility – modified the SDWA to give states federal "primacy" based on comparable state oil and gas UIC programs.

At no time during these debates was there any suggestion of including hydraulic fracturing in the UIC waste management requirements. In the mid-1990s the Legal Environmental Assistance Foundation (LEAF), after years of failing to make an environmental case against coalbed methane development, petitioned the Environmental Protection Agency (EPA) to require Alabama to regulate hydraulic fracturing under the UIC program. EPA rejected LEAF, arguing that Congress never intended UIC to cover hydraulic fracturing. LEAF appealed to the 11th Circuit Court of Appeals.

In 1997, the 11th Circuit Court decided the *LEAF v EPA* case. The Court never addressed the environmental risks of hydraulic fracturing; it merely decided that the plain language of the statute included hydraulic fracturing as underground injection. Years of additional litigation left the federal statutory and regulatory situation unsettled, creating the potential that a rash of cases raising the hydraulic fracturing issue in Federal Circuit Courts across the country would be filed. Given the "plain language" nature of the original case, many attorneys believed that such cases would produce similar results – a forced federal regulation in each state. So, uncertainty remained for the oil and natural gas industry and the states at a time when it was crucial to maintain an adequate supply of domestic oil and natural gas.

Recognizing the need to provide legislative clarity and that the existing state regulatory system provide effective environmental protection, Congress addressed the issue of hydraulic fracturing under the SDWA in the Energy Policy Act of 2005.

Dedicated to protecting our nation's ground water.

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The Honorable Henry Waxman
Chairman
Committee on Oversight and Government Reform
U.S. House of Representatives
2157 Rayburn HOB
Washington, DC 20151

October 30, 2007

Dear Chairman Waxman:

The Ground Water Protection Council was actively engaged several years ago when the Congress was discussing the safety and appropriate regulatory framework for hydraulic fracturing of oil and gas formations. At that time, we conducted a survey of state oil and gas agencies and participated in a study done by the USEPA, both of which concluded that there was no threat to underground sources of drinking water (USDW) from these operations.

We further concluded that there was no need for additional federal regulation to be imposed on the state regulatory programs – and that to do so would place a time and expense burden upon them that would take away from more immediate and environmentally protective activities.

No evidence has come to our attention in the ensuing years that causes us to change our view that this process does not present any ongoing threat to USDW's and that the states are providing more than adequate oversight of hydraulic fracturing operations. We would oppose any changes to the current state/federal regulatory partnership that oversees this program.

We would like the opportunity to visit with Committee Staff before changes are made to the federal energy policy regarding hydraulic fracturing of oil and gas formations.

Sincerely,

Michel Paque
Executive Director
Ground Water Protection Council

Mr. DAVIS OF VIRGINIA. Let me ask Mr. Mobaldi. What a terrible story, and I appreciate your being here to share this today. I was just looking over the records from the State of Colorado and their Oil and Gas Conservation Commission. I know they tried to come and looked at the wells and the property and inspected. According to their letter, you wouldn't let them on. That was your attorney's advice?

Mr. MOBALDI. Yes.

Mr. DAVIS OF VIRGINIA. So they never really had a chance to come on and do the comparison so that they could take a look at what the components were; is that right? Or did anybody?

Mr. MOBALDI. They eventually did come on the property and do some testing, but we were unable to get the results because Encana had to approve it.

Mr. DAVIS OF VIRGINIA. OK. So there are some results somewhere, is what you are telling me?

Mr. MOBALDI. I think so.

Mr. DAVIS OF VIRGINIA. OK. I think really having that linkage would be very, very important for the record. That may be something, Mr. Chairman, we could have the committee look at, if there are some results from that. That could help tie this down a little bit more.

Let me ask Dr. Colborn, Our Stolen Future, your book, was mentioned at a hearing we did last year on the fish in the Potomac River, where we found endocrine disruption, that common contaminants can interfere with the natural signals controlling development of the fetus, and we are finding males with eggs and premature with eggs and that kind of thing.

Ms. COLBORN. Yes.

Mr. DAVIS OF VIRGINIA. What is your read on it? Can you elaborate on that a little bit more in terms of what ecological problems you can have interfering with the endocrine system? Does this create dangers for human consumption and the like, or are we just not sure where this all goes?

Ms. COLBORN. Right now we are at the stage where we are beginning to look at maybe 10 to 15 years of new studies not done using toxicological approaches but using different kinds of assays to test chemicals at very low doses. The old testing protocols used high dose looking for obvious changes and cancer. The new testing protocols that are not being done by the Government but are in academic laboratories around the world now, we have a vast number of studies that support that many chemicals can interfere from the moment of fertilization until an individual is born that alters how that individual is structured and how they behave later.

Mr. DAVIS OF VIRGINIA. Yes.

Ms. COLBORN. The obvious one, which we discovered way back in the 1970's, were the bisexual fish in the Great Lakes. There are still fish there. I mean, we stock the Great Lakes to get the fish that they want there for the commercial recreational purposes, but we now know that some of these chemicals actually that are endocrine disruptors, some of the surfactants are being used and injected underground. So they are on the list.

Mr. DAVIS OF VIRGINIA. Are we not doing enough research in this area? I mean, we are seeing it everywhere. This is not a phenome-

non just on the Potomac River. As you noted, it is in the Great Lakes and everywhere else. If it is underground, who knows what else. Are we not doing enough basic research into this area?

Ms. COLBORN. We are not. I would like to talk to you about that. Look at the front page of USA Today. There are three pages devoted to just two chemicals that have been overlooked, and there has been a tremendous amount of suppression on using.

I have sat on EPA study groups, you know, the committees trying to design these studies to develop these assays, and EPA would not give up using the old toxicological approach. Until we switch over and start using this new approach, the young people and the new people who are coming along doing endocrine research, starting with low doses, looking at embryonic development, we are not going to get these chemicals out of our environment. They are slipping through our safety net, truly.

Mr. DAVIS OF VIRGINIA. Thank you very much.

Ms. COLBORN. Thank you.

Mr. HIGGINS [presiding]. Thank you, Mr. Davis.

On the issue of injecting diesel fuel, in 2002 it was publicly revealed that gas and oil companies were using diesel fuel as a hydraulic fracturing fluid. That meant that oil and gas companies were injecting diesel fuel directly into underground sources of drinking water in order to enhance oil and gas production.

In 2003, the Environmental Protection Agency entered into a voluntary agreement with Haliburton and two other companies to discontinue the practice of injecting diesel fuel directly into sources of drinking water. Unfortunately, the agreement was in no way mandatory or binding. The EPA was concerned that using diesel fuel for hydraulic fracturing could introduce BTX chemicals into drinking water.

Dr. Teitelbaum, could you tell us what BTX chemicals are and why exposure to them would be of concern?

Dr. TEITELBAUM. The BTX chemicals are benzene, toluene, and xylene. Benzene is a class one human carcinogen, probably one of the best-studied chemicals in industrial use. Its presence is extremely threatening, not only as a carcinogen, but also as a liver toxin, developmental toxin, and so on.

Toluene and xylene are at the moment not considered to be carcinogenic as class one as benzene is listed; however, they are both highly toxic. They are neurotoxins. They are developmental toxins. When they are present in potable water—let's not say drinking water just for the moment, but potable water used for all sources of domestic water supply—it is common that people shower with that water. The dose delivered of these volatile organic chemicals through showering is far greater than the dose delivered through drinking water.

Mr. HIGGINS. Right.

Dr. TEITELBAUM. And in many situations people have substitute drinking water supplies but continue to use their well water as the source of general domestic water, and the dose simply stays very high, even though they believe, because they are drinking a different source, their dose of BTX chemicals has gone down.

Mr. HIGGINS. Another question. By eliminating diesel fuel from hydraulic fracturing fluids, do we completely eliminate any chance

of introducing BTX chemicals to underground sources of drinking water? Or can BTX chemicals be found in other substances, as well?

Dr. TEITELBAUM. Well, they are naturally present in crude oil, Mr. Higgins. They are also present in the condensate, and so there is every reason to believe that, as the gas is extracted from the ground, there is contamination by the BTXes carried in the fugitive gas and the crude oil being extracted, and so on.

What has happened with the industry is the fractionation fluids are using different molecular weight oils, higher molecular weight, where you never really eliminate the low molecular weight chemicals, even if you go to a different compound or a different mix, something not called diesel fuel. You still have BTX from that, as well.

Mr. HIGGINS. I see.

So if diesel fuel is actually eliminated from use, can we be confident that BTX chemicals will be completely eliminated from hydraulic fracturing fluids?

Dr. TEITELBAUM. On the contrary. I think we would be certain that they were still present, although perhaps in lower concentration.

Mr. HIGGINS. Well, the EPA tells us that they were worried about BTX chemicals being injected into the underground sources of drinking water, so they seek a voluntary commitment from oil and gas companies to not use diesel fuel in fracturing fluids; however, BTX chemicals are found in other petroleum products in addition to diesel fuel, and there is no limitation on their use of these petroleum products.

My question is: wouldn't it make more sense to simply prohibit BTX chemicals from being used in hydraulic fracturing fluids?

Dr. TEITELBAUM. That would certainly be reasonable to do that. We would still not eliminate the problem. We would have to monitor the drinking water because of the other sources.

Mr. HIGGINS. OK.

Mr. Shays.

Mr. SHAYS. I appreciate the majority having a hearing on this issue, and I am sorry I wasn't here for all of our witnesses' testimony. This is a hugely difficult issue because we want energy independence, we want a quality of life that improves, doesn't put us in jeopardy, we want a clean environment, and we want to deal with global warming. I will tell you, as a Member of Congress, sometimes you feel like you are punched in the stomach because everything is moving so quickly and you begin to wonder if we have the capability to deal with it. We do if we are going to be honest with each other.

One of the challenges becomes that we all seem to be asked to be politically correct, so when I ask questions, then people evaluate my questions as if somehow I have my mind made up or I am insensitive. I don't mean to be insensitive on these issues. I tend not to like trial lawyers, and lawyers can keep you out of jail, but they make you look guilty as hell.

Mr. Mobaldi, I want to first say to you I am very moved by your testimony. I believe it is very sincere, and I happen to believe that we totally underestimate chemical exposure. This committee that I

was chairman of was really working on the issue of chemical exposure to our soldiers and our military personnel in the Gulf war, but for me it is difficult to understand why the lawyers should have anything to do with whether or not your well is tested. If your well is not healthy, test the well and know. The only implication I can concur is that your lawyers didn't want the well to be tested because there may not be anything wrong with your well. Why would they not want your well tested?

Mr. MOBALDI. They wanted to be present when it was tested.

Mr. SHAYS. That is fair. And why wouldn't you have it tested?

Mr. MOBALDI. I don't know what coincided with the testing people and the lawyers.

Mr. SHAYS. I mean no disrespect at all, because I really believe that you have a very serious problem and I believe there was chemical exposure. That is intuitively what I believe. There would be more credibility if you eagerly wanted the well tested, all parties there. You tested it yourself with the other parties there, and let's find out.

Mr. MOBALDI. I tried to get it tested on my own and I couldn't get anyone to do it.

Mr. SHAYS. OK. Well, bottom line is: let them test it, but let your people be there, and let's get it done.

Mr. MOBALDI. Right. Well, we no longer own the property.

Mr. SHAYS. OK. That is a significant factor.

What I think has to be at the very top of all our concerns is the water table, more than anything else. I am stunned that people keep moving to parts of the southwest oblivious to a huge challenge that we are going to have in the future, and we in Government don't seem to want to deal with that issue because there are so many issues on our plate. But I would like someone to tell me if they think there is anything more important than the water quality and the water table. What would be more important than that issue? Dr. Colborn.

Ms. COLBORN. May I just add something here? I was amazed how that came across. It is the stuff that is coming off right immediately. It is the air pollution that is contributing to the problem.

Mr. SHAYS. OK.

Ms. COLBORN. It is the air that the people are breathing, apparently. This is what I didn't understand. What we are looking at is the immediate exposure during the activity of the development of the well, the action of the well, the equipment that is running. They are producing volatile compounds, and it is the volatile compounds that seem to be affecting these people early on.

Mr. SHAYS. So you mean more than the quality of the water it is the air?

Ms. COLBORN. It is the air, as well. And believe me——

Mr. SHAYS. Let me ask you, once the water is contaminated, it becomes a much more difficult long-term problem to resolve, doesn't it?

Ms. COLBORN. That is right. One of the products that got me involved in this is a problem called 2BE, tubutoxyethanol. It is odorless, it is colorless, and tasteless, and it mixes with water. It evaporates at room temperature. I began thinking about that being in-

jected underground, if it came up into someone's home in the water it would evaporate.

Mr. SHAYS. Let me ask——

Ms. COLBORN. And they would be breathing it, just as Dr. Teitelbaum mentioned.

Mr. SHAYS. Ms. Mall, how do you come down on this issue between water quality and the quality of the air? They are both important, but which becomes the more difficult issue to deal with?

Ms. MALL. Well, ultimately I would really hate to have to make a choice. One of the issues that we are dealing with——

Mr. SHAYS. They are both bad.

Ms. MALL. Right.

Mr. SHAYS. Which is the more difficult issue to deal with in the long run? Isn't it true that it is easier to clean up our air than it would be to clean up the water table if the water table becomes contaminated?

Ms. MALL. Once the water is contaminated, actually, there is a GAO report from 1989 that says it can take up to 250 years for a natural underground aquifer to start cleaning itself, because the water migrates so slowly.

Mr. SHAYS. And my argument, if I can just make this last point, my argument would be people are going to see the air, they are going to feel it, they are going to demand it be cleaned up, and the long-term damage, there is clear damage, but the long-term damage is not as great as it will be. Once the water table is contaminated, it seems to me we have an unbelievable problem.

Now, would the argument be that the water table would only be contained in a small area, or would it continue to expand if nothing is done to clean it up? That is my last question.

Ms. MALL. Well, the water can migrate, and part of the problem when you are dealing with underground is we don't really know where it goes or where it is going to come up.

One of the things the GAO report looked at were abandoned wells that were never plugged properly. Lots of the new wells are near abandoned wells, for example, and the water can migrate not only underground but through the wells that were never plugged properly.

There are examples in Colorado and in Wyoming of places where chemicals originally from wells have migrated.

One of the issues we are dealing with, these laws where there is a range of loopholes for air or water or ground contamination, and some of these chemicals can be found in all of these places. For example, hydraulic fracturing, there might be chemicals left underground. Research shows that up to 30 percent of the chemicals may be left underground in a hydraulic fracturing operation. They may contaminate groundwater. Those chemicals, when they come up to the air, may evaporate and contaminate our air. And they may be left in a disposal pit that could be breached, for example, and contaminate the ground.

One of the things we are talking about today, I know you talk about a tradeoff. NRDC does have a very detailed proposal for energy security; it relies on efficiency and renewables. I don't have the details of that today, but we don't think that cleaning up oil

and gas exploration production is inconsistent with energy security. I think that is a really important point.

Mr. Davis talked about solutions, and really we are talking about solutions today. The fact is that there is information from State and Federal agencies and other researchers about solutions for all of these types of pollution. They are available. They are affordable. In many cases they are profitable for industry.

I quoted in my spoken testimony an industry official in a newspaper article who said it was a win/win situation, and it really can be.

Mr. SHAYS. Thank you.

Chairman WAXMAN [presiding]. Mr. Cannon.

Mr. CANNON. Thank you, Mr. Chairman.

I am a little confused. I thought, Dr. Bolin, you might be able to answer my question. I apologize for not being here, but I have been up in my office watching. What I picked up, I think, from your testimony is you have been a regulator for about 25 years?

Mr. BOLIN. Yes, sir, that is correct.

Mr. CANNON. So you are not bought by industry?

Mr. BOLIN. No, sir, not at all.

Mr. CANNON. Great. That is so good to hear, because I have heard from several people asking questions here the characterization that we are injecting these chemicals into drinking water, into potable water. Is that happening? That was done in connection with coal-bed methane, which I think you are particularly the expert in, but as a practical matter, when we are doing fracking with gas, that is at a much, much deeper level, and so I am quite confident that is not the issue here.

Are we, in the relatively more shallow environment of coal-bed fracking, injecting these chemicals into drinking water?

Mr. BOLIN. Well, I can tell you what our situation is and our experience has been in Alabama. We have coal beds that do exist at shallower depths than most conventional oil and gas resources, and they are within what is defined by EPA as underground sources of drinking water, which is defined as anything less than 10,000 milligrams per liter of chlorides. It does not mean that is being used as drinking water.

In our program, we evaluate each fracturing operation and we find and we review all of the groundwater wells that are in the area, and typically we obtain our drinking water from wells, they are in the depths of typically 50 to 200 feet.

In our circumstances, most coal beds that are being produced are greater than 1,000 feet in depth, and we will review each frack to ascertain and to ensure that these fracking operations would not reach the shallower depths and have a possibility of compromising anyone's water supply wells.

I would also say that we receive affidavits, sworn statements from the operators and from the service companies after reviewing their information that they provide on the components of the hydraulic fracking fluids where they aver that the applicable parts of the Safe Drinking Water Act, as it relates to drinking water standards, are complied with, and State staff people, technical people, review those and verify that is, in fact, the case.

Mr. CANNON. Could we focus just for a moment on the verification?

Mr. BOLIN. Yes.

Mr. CANNON. There are ways to verify things that these companies, these for-profit—I think somebody actually made a big point out of the for-profit nature of these companies. There is a great deal about this process that can be verified?

Mr. BOLIN. Yes, sir. Yes, sir, our current revised UIC program that includes hydraulic fracking, we do that in Alabama, and we do receive that information.

Mr. CANNON. Let me just ask another question, because my time is up. Dr. Teitelbaum talked about these compounds as being naturally occurring. There is a current commercial—I think it is Geico maybe—where Jeb of the Beverly Hillbillies shoots into the ground and oil comes out, and then it says buy insurance or something. But, of course, that was a great show when it was a current show. We do have these compounds occurring close enough to the surface in some cases where maybe a shotgun could create an oil well? I don't know. But they are at various levels.

We have a problem with these kinds of compounds. Is there, Dr. Bolin, a clear connection anywhere that you are aware of between fracking and the pollution of people's groundwater wells or the potable aquifer that we tap?

Mr. BOLIN. No, sir. And, as I alluded to in my testimony, there has been surveys and studies done where we have obtained information from the various State regulatory agencies. As I indicated, there have been no confirmed groundwater well contaminations that have resulted from hydraulic fracturing in studies that were done by EPA and national organizations such as the Groundwater Protection Council and the Interstate Oil and Gas Compact Commission.

Mr. CANNON. Mr. Chairman, I recognize my time has expired. Let me just add that we have cases of individuals who are hurt here, and I appreciate those cases. The problems are complex, and I hope that, as we develop policy, we will do it in the context of science.

Thank you. I yield back.

Chairman WAXMAN. Thank you very much.

Mr. Sali.

Mr. SALI. Thank you, Mr. Chairman.

Dr. Bolin, I guess I am kind of confused, because I hear you saying on the one hand that there has been a study that there has been no contamination of water resources from fracturing, from the study that you referred to; is that correct?

Mr. BOLIN. That is correct.

Mr. SALI. Well, I am not sure who to direct this question to. Maybe Ms. Mall. Are you suggesting that there is something that is not measured, or that somehow the report is faulty? I mean, Dr. Bolin is saying there is no indication that there has been any pollution. Are you saying there is pollution? And if so, what is it and how is it we missed it?

Ms. MALL. Certainly the testing is an issue. If the public doesn't understand what chemicals might be involved, doesn't have that information, and doesn't know what to test for, it can be easy not to

find something if you are not actually looking for it. That is a really important issue.

The EPA study from 2004 found that, in some cases, hydraulic fraction fluids are injected directly into underground sources of drinking water.

Mr. SALI. Let me ask you this. Are you saying there are things that are in the water from fracturing that we are not measuring?

Ms. MALL. I think in some cases that has definitely been the case. Yes.

Mr. SALI. So you are saying there is some kind of pollution going on that we don't know about and that we are not measuring?

Ms. MALL. That is my understanding. That is one of the issues in Alabama in the LEAF case that not all chemicals that could have been involved in the hydraulic fracturing were tested for.

Mr. SALI. But we could find those if we did additional testing?

Ms. MALL. It may be. Dr. Colborn's research—and she can speak more to this than I can—has shown that there is a universe of chemicals that may be used in hydraulic fracturing.

Mr. SALI. OK. Dr. Colborn, let me I guess direct this to you then. Is this just a matter of additional testing?

Ms. COLBORN. This is a matter of additional testing, and if we had access to what is being used we would know what to look for.

There was an incident in Garfield County right near——

Mr. SALI. Let me stop you right there.

Ms. COLBORN. OK.

Mr. SALI. Are you saying that there is no way to do sufficient testing of water today without somebody telling you what to look for?

Ms. COLBORN. That is right. Yes, because there is such a broad expanse of chemicals of different classes, and so it is very expensive to do this analysis to begin with, to know even what to look for, just to start looking for the BTX and the methane and——

Mr. SALI. OK. Thank you.

Dr. Bolin, do you agree with that, that there is no way to know what to look for unless somebody tells you what to look for? There is no way to find what is in the water unless somebody tells you what to look for?

Mr. BOLIN. From our standpoint as State regulators, we do everything and base all of our decisions on sound, technical data, and we try to obtain sufficient technical data to——

Mr. SALI. Let me ask the question a different way.

Mr. BOLIN. OK.

Mr. SALI. Do you ever find things that you haven't been told look for this but you find it anyway in testing?

Mr. BOLIN. No, sir.

Mr. SALI. So it is just a matter of knowing what to look for? That is the whole issue here?

Ms. COLBORN. That is why I am here to ask for full disclosure. Yes.

Mr. SALI. OK. And is your point, Dr. Colborn, that somehow the Federal Government has to be involved and that this isn't something that the States can do?

Ms. COLBORN. Definitely, because this chemical testing is expensive. States don't have the money. Colorado hasn't had the money

to do the testing. People like Steve Mobaldi and Susan had no place to send their water. I was lucky. I was working with a lab in Texas. I was able to send something away, but they did it for me out of kindness of their heart.

Mr. SALI. Dr. Bolin, do you agree with that, that somehow the Federal Government can do something efficiently that the States can't do?

Ms. COLBORN. Yes.

Mr. SALI. I am asking Dr. Bolin.

Mr. BOLIN. Well, I would say that our experience has been that the States can do things more efficiently, and have the expertise to do it if they have the resources to do that. Quite often, resources may be at issue in terms of the extent of the testing and that type of thing. But LEAF and Alabama have been able to conduct the tests that we need to determine the constituents in hydraulic fracturing operations.

Mr. SALI. Mr. Mobaldi, you don't own your place any more? When did you sell that?

Mr. MOBALDI. We abandoned it.

Mr. SALI. I thought you said earlier it belongs to someone else.

Mr. MOBALDI. It does now. Somebody has moved into it.

Mr. SALI. And as a part of that sale did you disclose the issues that you had been having?

Mr. MOBALDI. I had nothing to do with the sale.

Mr. SALI. You weren't the owner?

Mr. MOBALDI. Well, my wife and I, we just walked away from the property. It was foreclosed on. The disclosure went to the mortgage company, I believe. It went to the real estate company when we tried to sell it.

Mr. SALI. Do you know if the current occupants are having the same kind of problems that you had?

Mr. MOBALDI. I don't know. I have no idea.

Mr. SALI. Thank you, Mr. Chairman.

Chairman WAXMAN. Thank you, Mr. Sali.

Mr. Kucinich.

Mr. KUCINICH. Thank you, Mr. Chairman.

Mr. Neubecker, your organization is committed to protecting trout habitat across the country. What do you see as the biggest threat to maintaining healthy watersheds for trout population? It is my understanding that there are some pretty standard mitigation practices to help deal with the stormwater runoff problem associated with constructionsites. It is also my understanding that these mitigation measures are fairly universally applied to constructionsites and other industries besides oil and gas, so I would like your comment on that.

Mr. NEUBECKER. Well, I would think that at the national level development and encroachment on habitat, both of aquatic species and for wildlife, is the biggest single threat right now. Especially in the stream ecosystems, sedimentation is probably by far and away universally the biggest single threat. It is in the west. It is the biggest problem we have.

All other development activity does have to comply with stormwater discharge regulations in construction, and not just dur-

ing the construction phase but also during the entire time that ground is exposed to the elements.

Mr. KUCINICH. What about the mitigation practices? Are there some that are pretty standard?

Mr. NEUBECKER. There are some pretty standard mitigation practices.

Mr. KUCINICH. Can you describe them?

Mr. NEUBECKER. Things like silt fencing, contouring, revegetation.

Mr. KUCINICH. Sediment fence, hay bales? Are those standard?

Mr. NEUBECKER. Things like that, yes, and also detention ponds that can catch larger events where the water can clear up.

Mr. KUCINICH. Now, is it true that even a person building a home, for example, has to take steps to protect against stormwater runoff?

Mr. NEUBECKER. In many places, yes. I had to do that when I built my house in Needle.

Mr. KUCINICH. In 2005 the Energy Policy Act exempted construction of oil and gas production facilities from the Clean Water Act stormwater rules, didn't it, Mr. Neubecker?

Mr. NEUBECKER. Yes, it did.

Mr. KUCINICH. And it doesn't make sense to me that everyone is required to take common sense efforts to prevent sediment runoff except the oil and gas industry. Does that make sense to you?

Mr. NEUBECKER. It doesn't make sense that they should be exempted from it.

Mr. KUCINICH. Right.

Mr. NEUBECKER. It doesn't make sense to me at all.

Mr. KUCINICH. Now, Colorado has State regulations that go beyond the Federal stormwater runoff regulations. According to your testimony, you were very engaged in putting these regulations in place; is that right?

Mr. NEUBECKER. Yes, sir.

Mr. KUCINICH. And, Mr. Neubecker, would you say that the oil and gas industry is suffering a great deal because they have to comply with the stormwater runoff regulations in Colorado?

Mr. NEUBECKER. Not in Colorado, no, they are not suffering at all.

Mr. KUCINICH. So why is it important that the Federal Government regulate stormwater runoff when your State has already done so?

Mr. NEUBECKER. I would say because it is an exemption at the Federal level, Federal law that requires this. Plus the fact that we need to have a uniform standard across the country for this type of activity.

Mr. KUCINICH. Do all States have the ability to regulate stormwater?

Mr. NEUBECKER. Not all of them, to my knowledge. I know New Mexico is one State that does not have that ability to go beyond what the Federal Government has done. Colorado does. I am not sure. I am not a lawyer, so I am not sure how many States do.

Mr. KUCINICH. Thank you very much, Mr. Neubecker.

Thank you, Mr. Chairman. I yield back.

Chairman WAXMAN. Thank you, Mr. Kucinich.

Mr. Cummings.

Mr. CUMMINGS. Yes. Thank you, Mr. Chairman.

One claim that we have heard today is that there is no confirmed cases of hydraulic fracturing fluid contaminating drinking water wells, which is very interesting.

Dr. Colborn, your testimony included a description of a woman you met in Garfield County with a rare adrenal tumor. You stated that hydraulic fracturing fluid used near her home contained a chemical that has been shown to cause adrenal tumors; is that correct?

Ms. COLBORN. Yes.

Mr. CUMMINGS. Was there sufficient testing to be able to determine if the hydraulic fracturing fluids occurred in her drinking water?

Ms. COLBORN. No.

Mr. CUMMINGS. How long did it take for the company to actually test for the chemical of concern in her drinking water?

Ms. COLBORN. Three to 3½ years after the eruption.

Mr. CUMMINGS. Would you think it would be hard to find these chemicals if you waited for years to sample them?

Ms. COLBORN. Definitely. Yes.

Mr. CUMMINGS. Do you know why it takes so long to do the testing?

Ms. COLBORN. Because this isn't what you traditionally test for. I know they came in and did test her water, told her her water was safe, as I said earlier, and delivered some water to her home for her to use, but she was breast feeding a baby during this period after this happened for another 18 months. She breast fed her baby until she was 2 years old, and they were using the water that was being hauled, but also the water in their home and the water that was coming into their house, they used it for tubs, toilets, dish washing, and that sort of thing.

But they didn't look for 2BE and they don't look for 2BE today, or any of a number of the chemicals that are on our list that we find that they are using.

Mr. CUMMINGS. Are you aware, going back to the case that we just mentioned, whether there was a settlement in that case?

Ms. COLBORN. Yes.

Mr. CUMMINGS. So this lady was paid some money in the settlement, to your knowledge?

Ms. COLBORN. Yes. She was able to pack up with her family and purchase another place and move away.

Mr. CUMMINGS. Dr. Colborn, the committee actually contacted the woman you are referring to, and we had hoped to have her testify today. Unfortunately, we learned that as a part of her settlement the oil and gas company required her to agree to never, never publicly discuss her experience. I can't blame her for accepting the settlement for what she went through, but it does make it harder for policymakers to understand the scope of the problem.

I would like to introduce into the record a letter from Lance Astrella, Mr. Chairman, an attorney in Denver, CO. Mr. Astrella represents individuals who are adversely impacted by oil and gas production. He confirms that these settlements are, indeed, a problem.

According to Mr. Astrella, "Claims that are asserted are often settled under confidentiality agreements, thereby limiting access to information which would be helpful in assessing risks associated with oil and gas operations."

Mr. Astrella also notes that there has been very little effort on the part of Federal or State governments to study the potential adverse health impacts associated with oil and gas production. This lack of scientific study acts to shield the industry from change.

One of the interesting things, too, you know, I often sit in these hearings and I think about whether Members of Congress would allow their families to drink this water, whether we would allow our families to go through this. Sometimes I do believe that there is a disconnect, because the Bible says do unto others as you would have them do unto you. I just wonder about that sometimes. I guess the answer is clear. They wouldn't.

With that, I will yield back, Mr. Chairman.

Chairman WAXMAN. Thank you very much. The letter you talked about will be put in the record without objection.

[The information referred to follows:]

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ATTORNEYS AT LAW

October 30, 2007

Committee on Oversight
and Government Reform
U.S. House of Representatives
B372 Rayburn House Office Building
Washington, D.C. 20515

Attn: Mr. Gilad Wilkenfeld

Re: Oil and Gas Development:
Exemptions in Health and Environmental Protections

Dear Mr. Wilkenfeld:

Please consider this letter in connection with the above-referenced hearing.

For over 30 years, I have engaged in the private practice of energy law in the context of transactions, regulatory proceedings and litigation. A major component of my practice has involved oil and gas exploration, production and transportation. For the first two decades of my law practice, I represented members of the oil and gas industry in their dealings and disputes with one another. In more recent years, my representation of clients has been limited to those who oppose or are opposed by the energy industry, including local governments, consumers, rural and urban landowners and water rights' owners. Increasingly, matters requiring our attention include environmental issues involving air and water quality as well as water depletion.

The damage to air and water quality and the diminution of water supplies have always been unwanted byproducts of oil and gas development. With increasing exploration and production, greater well density and the encroachment of oil and gas development in populated areas, the problem is becoming more acute. Regulatory action and enforcement to address these matters are critically needed now because of the impacts on human health, water resources and the environment.

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http://www.astrellalaw.com

The following observations and comments are made with the belief that with appropriate regulation and enforcement designed to protect human health and the environment, we as a nation will see more, not less, oil and gas production. It is my belief, based on my experience, that increased domestic oil and gas production can be achieved by reducing unnecessary and unproductive polarization between the industry and impacted populations and by encouraging the industry to aggressively adopt environmental technologies.

In my experience in dealing with populations in various parts of the country where concentrated oil and gas development exists, there are a number of common health complaints. Unfortunately, there has been very little effort on the part of federal or state government to study the potential adverse health impacts of long term exposure to air and water pollution at concentrations found in the vicinity of oil and gas production. The lack of scientific study acts to shield industry from the types of private claims that force changes in industry practices. Claims that are asserted are often settled under confidentiality agreements, thereby limiting access to information which would be helpful in assessing risks associated with oil and gas operations.

I would encourage this Committee on Oversight and Government Reform to consider implementing federal programs to undertake studies or to encourage oil and gas producing states to jointly undertake studies designed to objectively determine if long term exposure to oilfield pollutants adversely affects nearby populations. Such studies should be free of industry sponsorship, but should certainly solicit industry input. The studies should be designed to objectively determine if there is a significant causal connection between oil and gas industry pollution and the common illnesses complained about by impacted populations.

Such comprehensive studies would benefit all concerned, including the oil and gas industry. If it is determined that long term exposure to air and water pollution from oil and gas operations does cause significant adverse health impacts, early intervention to correct the industry practices will avoid adverse health impacts to many citizens and will reduce the public burden of health care. It will also benefit the industry by avoiding future contingent liabilities and reducing the intensity of resistance to oil and gas development. Concurrent with the above referenced studies, it would be advisable for the committee to

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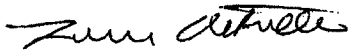
investigate whether industry practices encourage or discourage the adoption of cost-effective technologies designed to protect human health and the environment.

Very truly yours,



Lance Astrella

Chairman WAXMAN. I want to thank each of your for your testimony today. There may be additional questions that Members will want to have you respond to in writing for the record, and we would very much welcome that.

Dr. Teitelbaum, there is a Washington lobbyist by the name of Michael Berman who wants me to ask you questions for the record that you may or may not want to respond to.

Dr. TEITELBAUM. I would be very happy to respond to Mr. Berman's questions.

Chairman WAXMAN. I told him he should talk to you directly.

Thank you all very much. We are going to break now.

Mr. Issa, do you want the panel to come back to answer your questions, because we have a vote and I was just dismissing the first panel.

We do have authorization to submit questions in writing and have them respond for the record, if that would be acceptable to you. If you want to ask questions for the record we can do that; otherwise, we are going to have to make them stay here while we vote.

Mr. ISSA. I would be glad to come back and ask questions. I apologize. I thought I was coming back just in time to ask questions.

Chairman WAXMAN. I thanked you all too prematurely. If you don't mind, we have to respond to some votes. We should be back. Let's reconvene at 12:15.

[Recess.]

Chairman WAXMAN. The committee will come back to order.

We are pleased now for our second panel to have Mr. Robert Anderson, Deputy Assistant Director for Minerals, Realty, and Resource Protection in the Bureau of Land Management, and the Honorable Benjamin H. Grumbles, who was confirmed as the Assistant Administrator for Water for the Environmental Protection Agency in November 2004. Prior to this appointment, Mr. Grumbles was a Deputy Assistant Administrator for Water and Acting Associate Administrator for Congressional Affairs and Intergovernmental Relations.

We are pleased to have both of you here today.

It is the practice of this committee to ask all witnesses to take an oath.

[Witnesses sworn.]

Chairman WAXMAN. The record will indicate that the witnesses responded in the affirmative.

Mr. Grumbles, why don't we start with you. Your whole statement will be part of the record. We would like to ask you to try to keep it in 5 minutes.

STATEMENTS OF BENJAMIN H. GRUMBLES, ASSISTANT ADMINISTRATOR FOR WATER, U.S. ENVIRONMENTAL PROTECTION AGENCY; AND ROBERT ANDERSON, DEPUTY ASSISTANT DIRECTOR FOR MINERALS, REALTY AND RESOURCE PROTECTION, BUREAU OF LAND MANAGEMENT, U.S. DEPARTMENT OF THE INTERIOR

STATEMENT OF BENJAMIN H. GRUMBLES

Mr. GRUMBLES. Thank you very much, Mr. Chairman. Thank you Congressman Shays and other members of the committee.

I am Benjamin Grumbles, Assistant Administrator for Water at EPA. It is a pleasure to be here before the committee to testify on the public health and environmental protection activities of the Agency, particularly as they relate to oil and gas sector.

The President charged the Administrator with accelerating the pace of environmental protection while maintaining the country's economic competitiveness and, Mr. Chairman, a key part of that is to foster innovative technologies and to improve the coordination of permitting to advance and promote the clean development of energy resources.

When it comes to ensuring environmental protection and the protection of public health, there are a variety of tools and statutory authorities, as you are very familiar with. Many of those that the Agency uses relate to the review of possible projects and project activities such as through our NEPA authorities.

Mr. Chairman, we are experiencing a marked increase in the review of proposed oil and gas projects, in part because of America's push for energy security. The Agency is fully committed to carrying out those authorities, reviewing potential projects for the many different types of environmental impacts and associated transportation-related infrastructure impacts of potential projects.

We use every tool available to do our job. I am going to focus in particular on some of the tools and authorities we have under the Clean Water Act and the Safe Drinking Water Act, which has been the key part of this discussion.

Mr. Chairman, I listened to the testimony of the first panel. I would say there are a couple of lessons. One is compassion toward all who have public health problems. Another is the importance of pollution prevention and using the tools that we have and working with Congress to implement those statutory programs, and also work with Congress to revise or establish new provisions or programs or approaches.

When it comes to the Clean Water Act, we are in the midst, Mr. Chairman, of conducting a national detailed study of the coal-bed methane industry. In December 2006 we released a plan for effluent guidelines under the Clean Water Act. Environmental Protection Agency experts have just completed a national tour of seven States, looking specifically at the coal-bed methane industry to help inform us, to then carry out an information collection request. And so in the next couple of years we will be in a position to determine whether to issue a new subcategory of effluent guidelines specifically for the coal-bed methane industry.

Under the Clean Water Act, as you know, and the Energy Policy Act of 2005 there was a provision included that clarified and speci-

fied that stormwater runoff from field-related work, specifically construction-related aspects of oil and gas facilities, was exempt from Clean Water Act stormwater permitting. We are faithfully implementing the provisions in that statute. We also issued a rule. We are in the midst of litigation over that rule, but what the rule did, Mr. Chairman, was state that, as it relates to sediment from construction activities, that our interpretation of the provision is that still does not trigger a Clean Water Act permitting requirement.

However, we made clear that States should be carrying out best management practices, and States are free to use additional authorities should they decide to require permitting under the Clean Water Act.

The other aspect which has received considerable attention and understandably is the practice of hydraulic fracturing and the Safe Drinking Water Act provisions and programs that may relate to hydraulic fracturing. In 2004 we issued a report, Mr. Chairman. I know you are aware of it. We spent many years working on it. We did have a technical expert peer review of that report, and the report concluded essentially that hydraulic fracturing did not present a significant risk to underground sources of drinking water. However, we did note and were concerned about the potential for problems with diesel fluids as the fluid for hydraulic fracturing.

In December 2003 we entered into a memorandum of agreement with the major providers for a voluntary commitment to cease the use of diesel fluids, and we have been monitoring that over the last several years and are pleased that they seem to be living up to that commitment not to use diesel fluids.

As you know, the Congress enacted in the 2005 Energy Policy Act a provision that prohibits EPA from regulating the practice of hydraulic fracturing, except if it is diesel fluids that are being used.

Mr. Chairman, we are committed to using the tools we have under the various authorities, including not just the Clean Water Act and the Safe Drinking Water Act, but NEPA and the various programs to meet the Administrator's challenge to all of us in the Agency, and that is to promote the clean development of energy resources through innovative technologies and using our current authorities to protect public health.

I would be happy to answer questions at the appropriate time, Mr. Chairman.

[The prepared statement of Mr. Grumbles follows:]

TESTIMONY OF
BENJAMIN H. GRUMBLES
ASSISTANT ADMINISTRATOR FOR WATER
U.S. ENVIRONMENTAL PROTECTION AGENCY
BEFORE THE
COMMITTEE ON OVERSIGHT AND GOVERNMENT REFORM
UNITED STATES HOUSE OF REPRESENTATIVES

October 31, 2007

Thank you, Mr. Chairman and Members of the Committee. I am Benjamin H. Grumbles, EPA's Assistant Administrator for Water, and I appreciate the opportunity to testify before you today on EPA's programs and activities to protect public health and the environment, particularly as they relate to the oil and gas sector.

President Bush has charged EPA with accelerating the pace of environmental protection while maintaining our nation's economic competitiveness. EPA Administrator Johnson has focused his priorities on meeting this challenge. One priority is to ensure we make timely and informed permitting decisions and foster technological innovations to support the clean development of domestic energy resources, including oil, natural gas, nuclear, coal, wind, hydro, and solar.

Overview

Under several environmental statutes, the Agency reviews proposed oil and natural gas projects. We are experiencing a marked increase in those reviews. Changing technologies, coupled with the rising resource value, have increased exploration, extraction, production and processing of oil and gas, and include expansion into frontier areas.

As potential and realized projects move through the development phases, there are a myriad of associated environmental issues, transportation and infrastructure requirements, tribal responsibilities and regulatory requirements that are managed under EPA authorities.

We use every tool available to do our job. In partnership with States, Tribes, and other federal agencies, we implement the Clean Water Act; the Clean Air Act; the Marine Protection, Research and Sanctuaries Act; the Safe Drinking Water Act; the National Environmental Policy Act; the Emergency Preparedness and Community Right to Know Act; the Energy Policy Act of 2005 and numerous Executive Orders.

EPA actions range from issuing permits for wastewater discharges from oil exploration vessels in the offshore marine environment; to air, water and waste management permits for refineries in populated onshore areas. Permitting

actions may involve a single EPA program or a variety of permits under numerous state and federal statutory authorities. Major projects may involve land disturbance, loss of wildlife habitat, changes in water quality and quantity, potential air quality concerns and a variety of secondary and tertiary impacts including the need for significant new infrastructure to support proposed activities. Equally important, we also are responsible for compliance and enforcement of the laws and regulations that we implement. We work closely with the Department of Justice, States, and Tribes to assure compliance with the laws and to secure penalties from those found guilty of breaking the law.

EPA also recognizes that environmental protection strategies must evolve as the characteristics of U.S. industries and their operations change over time and that one-size-fits-all regulatory approaches do not always achieve superior environmental performance. Accordingly, through compliance assistance, the Sector Strategies Program and other efforts, EPA works with the regulated community to achieve performance improvement by addressing the unique issues and challenges of specific industries in a collaborative setting where the focus is on actual environmental results. Such programs aim to apply insights from listening and learning, foster innovation to identify new environmental solutions, and achieve results for a cleaner environment. The oil and gas sector, which includes the oil and gas extraction industry as well as petroleum refining, is one of our more recent collaborations established in 2007.

Effluent Guidelines for Pollutant Discharges

The Clean Water Act (CWA) directs EPA to establish national, technology-based regulations known as effluent guidelines to reduce pollutant discharges from categories of industry discharging directly to waters of the US. These effluent guidelines promulgated by EPA are implemented through National Pollutant Discharge Elimination System (NPDES) permits. EPA has promulgated effluent guidelines for 56 industrial categories covering approximately 48,000 permitted industrial facilities. For the oil and gas industry, we have promulgated effluent guidelines for oil and gas extraction which apply to facilities engaged in field exploration, drilling and well production in offshore, coastal, and onshore areas; and effluent guidelines for petroleum refining. These guidelines help control discharges of a variety of pollutants, including oil and grease, mercury, cadmium, ammonia, and chromium.

Coal Bed Methane Industry

On an annual basis, EPA reviews all previously promulgated effluent guidelines to determine whether they need to be revised, and every two years publishes a plan, after public notice and comment, that identifies any new or existing industrial categories selected for effluent guidelines rulemaking. In our 2006 Effluent Guidelines Plan published last December, we announced our plan to conduct a detailed study of the coal bed methane (CBM) industry to determine

whether to revise the effluent guidelines for the Oil and Gas Extraction category.

The CBM industry would potentially be a new subcategory of the oil and gas category and rules for this subcategory would constitute a revision to an existing effluent guideline. The coal bed methane industry sector is a relatively new but growing and important part of our Nation's domestic source of natural gas. In 2004, CBM accounted for about 10.4% of the total U.S. natural gas production, and the Department of Energy's Energy Information Administration (EIA) expects CBM production to remain an important source of domestic natural gas over the next few decades. Currently, permits for discharges to surface waters from CBM operations are issued by EPA and states based on best professional judgment and state water quality standards.

CBM extraction requires removing large amounts of water from underground coal seams before the methane in the coal seams can be released. The quantity and quality of water that is produced in association with CBM extraction varies from site to site, from coal seam to coal seam, and over the lifetime of a CBM well. The water produced by CBM extraction can sometimes be beneficially used in agriculture or in livestock operations, particularly in the Western U.S., but may also have certain impacts. One issue is the potential for too high a level of sodium and other dissolved inorganics in some produced waters, which may make the water unusable for agriculture or other purposes. In addition,

dewatering coalbed formations may also decrease water in irrigation wells in connected aquifers, which may render the irrigation wells unusable.

We are conducting a detailed study and review of the CBM industry in cooperation with the Departments of the Interior and Energy, which includes collecting technical, economic, and environmental data from a wide range of coal bed methane operations. Over the last several months, EPA experts have visited Alabama, West Virginia, Pennsylvania, Colorado, New Mexico, Wyoming and Montana to observe CBM operations and meet with a wide range of stakeholders, including industry, states, community groups, farmers, and ranchers. Information gathered from these site visits, along with other data collection, will help us determine next steps, including, ultimately whether to initiate a new national effluent guidelines rulemaking.

Hydraulic Fracturing of Coalbed Methane Reservoirs

In the late 1980s, CBM development was spurred by technological advances and tax incentives for alternative natural gas production. Hydraulic fracturing involves pumping fluid down a well at high pressure to fracture the rock and allow more gas production. Complaints about drinking water contamination near a CBM well in Alabama prompted a state and EPA investigation which found no evidence that CBM activity was connected to the contamination. Despite those findings, EPA was petitioned, and later successfully sued by the Legal Environmental

Assistance Foundation to require Alabama to regulate hydraulic fracturing of coalbeds under the Safe Drinking Water Act's (SDWA) Underground Injection Control Program.

In 2004, with technical assistance from the Department of Energy, U.S. Geological Survey and States, EPA completed a national report on coalbed methane entitled: Final Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs which concluded that, except in the cases where diesel fuel was used as an injection fluid, hydraulic fracturing posed little or no threat to underground sources of drinking water. Prior to releasing the report EPA signed a Memorandum of Agreement (MOA) with three major well-service companies to eliminate diesel fuel from their fracturing fluids on a voluntary basis. The three companies, which perform approximately 95 percent of the hydraulic fracturing projects in the US, have certified in written reports that they have converted to non-diesel fluids and are in full compliance with the MOA. The Energy Policy Act of 2005 specifically exempted hydraulic fracturing of coalbed methane reservoirs from regulation under the SDWA so long as diesel fuel was not injected into the wells. More broadly, in our 2004 review of incidents of drinking water contamination alleged to be associated with hydraulic fracturing, EPA found no confirmed cases that were linked to fracturing fluids injection into CBM wells or subsequent underground movement of fracturing fluids.

Stormwater Permitting

Section 323 of the Energy Policy Act of 2005 modified Section 502 of the CWA to clarify that the exclusion from the NPDES permit program for stormwater discharges includes "all field activities or operations associated with exploration, production, processing, or treatment operations, or transmission facilities, including activities necessary to prepare a site for drilling and for the movement and placement of drilling equipment, whether or not such field activities or operations may be considered to be construction activities." Consistent with this statutory change, EPA published a final rule on June 12, 2006 that exempts storm water discharges from construction activities at oil and gas sites from the requirement to obtain an NPDES permit where they meet the statutory conditions of the exemption. Because we understand the benefit of erosion and sediment control at construction sites, EPA encouraged operators of oil and gas field activities or operations to implement and maintain best management practices (BMPs) to minimize erosion and control sediment to protect surface water quality during storm events even though permit coverage is not required. EPA also emphasized that States could choose to regulate these activities through a non-NPDES permit program and that nothing in our regulations preempted such efforts. Environmental groups challenged this rule, with oral arguments heard in the Ninth Circuit this month.

Summary

Mr Chairman, EPA will continue to use its authorities in a timely and coordinated manner to meet the highest standards of environmental protection in the oil and gas sector. By working collaboratively with state, federal and tribal government partners and other stakeholders we can ensure the effects, direct and cumulative, will be identified, minimized and mitigated, wherever possible.

I would be happy to answer any questions you or your colleagues may have.

Chairman WAXMAN. Thank you very much, Mr. Grumbles.

Mr. Anderson.

STATEMENT OF ROBERT ANDERSON

Mr. ANDERSON. Mr. Chairman and members of the committee, thank you for the opportunity to appear here today to discuss the applicability of Federal requirements that protect public health and the environment in the context of oil and gas development.

My testimony will focus on the on-shore Federal mineral estate entrusted to the BLM.

Thank you for including my entire submitted statement in the record.

The BLM manages 258 million acres of public land, as well as 700 million acres of mineral estate. Under the Mineral Leasing Act, the BLM is responsible for managing oil and gas leasing on BLM, National Forest, and other Federal lands, as well as private lands where the mineral rights have been retained by the Federal Government.

Resource protection is considered throughout the land use planning process and when applications for permit to drill are processed.

The BLM is required to review proposals to develop and produce oil and gas wells on Federal land. We also ensure adherence to numerous laws, including the National Environmental Policy Act, the Federal Land Policy and Management Act, the Endangered Species Act, the Clean Water Act, and other statutes and regulations. Compliance with NEPA can range from developing an environmental impact statement to application of a categorical exclusion.

Categorical exclusions are categories of actions which do not have a significant effect on human environment.

In addition, the BLM has policy guidance to ensure protection of the environment and public health. Onshore Order No. 1 addresses water quality by restricting operations in riparian areas and lake shores unless otherwise approved.

Regarding groundwater, Order No. 1 requires operators to identify zones potentially containing usable water and their plans for protecting such water resources. This plan typically requires isolating usable water zones to avoid potential cross-contamination with other geologic formations.

The BLM also inspects oil and gas operations to ensure compliance with statutes, regulations, and permit stipulations that serve to protect the environment, human health, and safety.

In conclusion, Mr. Chairman, thank you for the opportunity to discuss the application of Federal statutes, regulations, and policy guidance that work to protect public health and the environment during oil and gas development and operations on Federal lands. The BLM is committed to ensuring that energy production on public land is achieved in an environmentally sound manner.

Thank you. I will be happy to address questions.

[The prepared statement of Mr. Anderson follows:]

Statement of
Robert Anderson
Deputy Assistant Director for Minerals, Realty and Resource Protection
Bureau of Land Management
U.S. Department of the Interior

Committee on Oversight and Government Reform
U.S. House of Representatives

Oversight Hearing on the Applicability of Federal Requirements that Protect Public Health and the Environment to Oil and Gas Development

October 31, 2007

Mr. Chairman and Members of the Committee, thank you for the opportunity to appear here today to discuss the applicability of Federal requirements that protect public health and the environment in the context of onshore oil and gas development. My testimony today will focus solely on the onshore Federal mineral estate entrusted to the Bureau of Land Management (BLM).

The BLM manages 258 million acres of public land as well as 700 million acres of subsurface mineral estate. Under the Mineral Leasing Act of 1920, as amended, and the Mineral Leasing Act for Acquired Lands of 1947, as amended, the BLM is responsible for managing oil and gas leasing on BLM, National Forest System and other Federal lands, as well as on private lands where the mineral rights have been retained by the Federal government. The BLM administers over 48,000 onshore oil and gas leases, of which nearly 23,000 are currently producing. Also, the 77,000 Federal onshore oil and gas wells account for eleven percent of the Nation's natural gas production and five percent of domestic oil production, with royalty values exceeding nearly $12 billion total for Fiscal Years 2001 through 2006.

Multiple Stages of Environmental Protection

The BLM carries out its responsibility to protect the environment throughout the process of oil and gas resource exploration and development on public lands. Resource protection is considered throughout the land use planning process when Resource Management Plans are prepared and when an Application for Permit to Drill (APD) is processed. The BLM's inspection and enforcement and monitoring program is designed to ensure that operators comply with relevant laws and regulations as well as specific stipulations set forth during the permitting process.

Land-Use Planning
The Resource Management Plan (RMP) for an area sets the landscape-level guidance for the management of resources under a variety of considerations (ecological, cultural, historic, social, or aesthetic). A team of interdisciplinary specialists conduct a National Environmental Policy Act (NEPA) analysis as part of the planning process. This analysis includes evaluating potential environmental impacts from surface uses the BLM would allow in the planning area and

allocating where the public lands may be open or closed to a variety of uses, among them oil and gas leasing. The RMP may provide lease stipulations limiting surface use or broad descriptions of mitigating measures including Best Management Practices (BMP) that should be imposed to protect resources.

The BLM engages the public, gateway (adjacent) communities, and interested parties in land use planning decisions that comply with the Federal Land Policy and Management Act of 1976 (FLPMA), NEPA, and the BLM's internal policy requirements for public involvement.

Site-Specific Implementation and Applications for Permit to Drill
Site-specific environmental review documents, such as APDs, typically tier to more general land use plans, and when read together, outline the overall management and protection criteria for the project area. Before an APD is approved, the BLM must ensure the operation will comply with the land use plan and relevant statutes, regulations, and guidelines. This process involves identifying and enforcing stipulations identified in the land use plan together with more site-specific conditions of the approval that may be placed on the APD before a well can be drilled. Typical stipulations include major or moderate restrictions on surface use in areas identified as having water resources, such as rivers, lakes, wetlands, riparian areas and natural springs, and the imposition of buffer zones around these resources. In addition, the BLM may attach conditions of approval, which are site-specific mitigation measures developed as a result of the on-site visit and an environmental review conducted by an interdisciplinary team.

Environmental and Public Health Considerations

Relevant Statutes and Regulations
The BLM is required to review proposals to develop and produce oil and gas wells on Federal land and ensure adherence to NEPA, FLPMA, the Mineral Leasing Act, the Endangered Species Act, the Clean Water Act, the Clean Air Act, the National Historic Preservation Act, other applicable statutes, and related regulations.

The BLM's oil and gas leasing and development process must comply with NEPA. Compliance with NEPA can range from developing an environmental impact statement to application of a categorical exclusion (CX). The Council on Environmental Quality (CEQ) Regulations implementing NEPA define "categorical exclusion" as "a category of actions which do not individually or cumulatively have a significant effect on the human environment." Thus, a CX is not intended to avoid NEPA but to ensure its efficient application. The CEQ regulations allow Federal agencies to propose categories of actions that meet this requirement. Application of a CX can help avoid the inefficiency of unnecessary analyses by recognizing that past analyses of similar projects have not revealed any significant impacts over time. The CEQ regulations also require agencies to provide for extraordinary circumstances when administratively establishing their CXs. Extraordinary circumstances identify those situations where a normally excluded action may have a significant environmental effect. If one of these extraordinary circumstances apply, then a CX may not be used and an environmental assessment must be prepared. The Department of the Interior's extraordinary circumstances include those related to public health and safety as well as specific environmental, cultural, and social impacts.

The BLM-established CXs related to oil and gas operations are found in the Departmental Manual at 516 Chapter 11 and include:

- Issuance of future interest leases under the Mineral Leasing Act for Acquired Lands, where the subject lands are already in production;
- Approval of mineral lease adjustments and transfers, including assignments and subleases;
- Approval of unitization agreements, communitization agreements, drainage agreements, underground storage agreements, development contracts, or geothermal unit or participating area agreements;
- Approval of suspensions of operations, force majeure suspensions, and suspensions of operations and production;
- Approval of royalty determinations, such as royalty rate reductions; and
- Approval of Notices of Intent to conduct geophysical exploration of oil, gas, or geothermal, pursuant to 43 CFR 3150 or 3250, when no temporary or new road construction is proposed.

In addition to these CXs, Congress provided for five statutory CXs in Section 390 of the Energy Policy Act of 2005. These categorical exclusions include:

- Individual APDs with proposed surface disturbances of less than five acres so long as the total surface disturbance on the lease is not greater than 150 acres and site-specific analysis in a document prepared pursuant to NEPA has been previously completed;
- Drilling an oil or gas well at a location or well pad site at which drilling has occurred previously within five years;
- Drilling an oil or gas well within a developed field for which a land use plan or any environmental document pursuant to NEPA analyzed drilling as a reasonably foreseeable activity and was approved within five years of drilling the proposed APD;
- Placement of a pipeline in a right-of-way corridor approved within the last five years; and
- Maintenance of a minor activity, other than any construction or major renovation of a building or facility.

The Administration has interpreted that these CXs provided for under EPAct do not require the extraordinary circumstances review.

BLM Policy Guidance

The BLM's policy guidance sets forth additional requirements to ensure protection of the environment and public health. Onshore Oil and Gas Order No. 1 (Order No. 1) establishes the requirements that companies must meet to obtain approval for oil and gas exploration and to drill, produce, plug, and properly abandon a well on Federal and Indian lands. For example, water quality is addressed through Order No. 1, which states that the operator must not conduct operations in areas subject to mass soil movement, riparian areas, floodplains, lakeshores, and/or wetlands unless otherwise approved. Order No. 1 also specifies that the operator must identify the source, access route, and transportation method for all water anticipated for use in drilling the proposed oil and/or gas well. Regarding groundwater, Order No. 1 requires operators to identify zones potentially containing usable water and their plans for protecting such resources. This plan typically requires isolating usable water zones to avoid potential cross contamination with other geologic formations.

Order No. 1 encourages operators to use environmental Best Management Practices (BMPs), which are state-of-the-art mitigation measures designed to provide for safe and efficient operations while minimizing undesirable impacts to the environment. A July 21, 2005, Government Accountability Office report on oil and gas development found these strategies to be effective, stating that "bundling of permit applications can encourage companies to plan their drilling operations more carefully and help the BLM better assess the cumulative environmental impacts of drilling activities."

In addition, operators are required to make good faith efforts to reach surface access agreements with private surface owners, provide opportunities for private surface owners to participate in on-site inspection meetings, and comply with cultural and endangered species regulations on private surface as well as Federally–owned interests.

Inspection and Enforcement

The BLM also inspects oil and gas operations to ensure compliance with statutes, regulations, and permit stipulations that serve to protect the environment and human health and safety. The BLM continues to conduct field exams, inspections, and enforcement for every APD filed by the oil and gas industry. The BLM finds that most oil and gas operators diligently comply with lease stipulations and conditions of approval, and operate effective, environmentally-sound exploration and development facilities. The Administration continues to devote additional resources to inspection and enforcement activities, including a portion of the funds allocated to the Federal Permit Streamlining Pilot Project under EPAct. Since 2005, the number of inspections in the EPAct pilot offices has increased 78 percent (from 6,526 in 2005 to 11,605 in 2007). The Administration has requested an additional $3.1 million in FY 2008 for inspection, enforcement, and monitoring activities, which will allow BLM to complete an additional 510 inspections in 2008.

Conclusion

In conclusion, Mr. Chairman, thank you for the opportunity to discuss the application of Federal statutes, regulations, and policy guidance that work to protect public health and the environment during oil and gas development and operations on Federal lands. The BLM plays a vital role in this nation's energy security, and we are committed to ensuring that development of our energy resources is done in an environmentally sound and responsible manner.

This concludes my testimony. I would be happy to answer any questions you may have.

Chairman WAXMAN. Thank you very much, Mr. Anderson.

I will start off the questions.

I want to start off with Mr. Grumbles. In EPA's June 2004 report on hydraulic fracturing, EPA expressed concern about the use of diesel fuels in hydraulic fracturing fluids. EPA determined that the use of diesel fuel could introduce BTX compounds into underground sources of drinking water. Those BTX chemicals, which include benzene and toluene, are toxic chemicals that people should not be drinking.

EPA has entered into a voluntary agreement with Haliburton and two other companies to not use diesel fuel in fracturing fluids, and you mentioned that in your testimony.

Mr. GRUMBLES. Yes.

Chairman WAXMAN. But this agreement is completely voluntary, with no enforcement mechanism.

Mr. Grumbles, during the last panel we learned that BTX chemicals can be constituents of other petroleum products in addition to diesel fuel. Does EPA maintain a list of fracturing fluids that are injected into underground sources of drinking water?

Mr. GRUMBLES. Mr. Chairman, I am going to need to provide two answers. One of them is I need to get back to you on the specifics of what the national water program staff have with respect to the different types of constituents or hazardous constituents of hydraulic fluids.

[The information referred to follows:]

01/11/2008 15:11 FAX 202 564 1828 OCIR CORRES UNIT 002

Dotson
Wilkinson
Hydraulic
Fracturing

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JAN 11 2008

OFFICE OF
WATER

The Honorable Henry A. Waxman
Chairman
Committee on Oversight and Government Reform
United States House of Representatives
Washington, DC 20515

Dear Chairman Waxman:

Thank you for your letters of November 26, 2007 including questions on my October 31, 2007 testimony regarding the Environmental Protection Agency's (EPA) programs and activities to protect public health and the environment, as they relate to the oil and gas sector. Specifically, you were interested in EPA actions to ensure that hydraulic fracturing activities do not endanger underground sources of drinking water (USDWs). EPA shares your goal of ensuring protection of ground water that could be used as a source of drinking water, and works closely with our state partners to implement the Underground Injection Control (UIC) program to protect such waters.

Your first letter expressed concerns about the Memorandum of Agreement (MOA) that EPA entered into with major hydraulic fracturing service companies. The MOA, "*Elimination of Diesel Fuel in Hydraulic Fracturing Fluids Injected into Underground Sources of Drinking Water During Hydraulic Fracturing of Coalbed Methane Wells*," which was signed on December 12, 2003, represented a significant step in EPA's efforts to ensure protection of USDWs. In conducting a study of the practice of hydraulic fracturing of coalbed methane wells, EPA observed that companies sometimes used diesel fuel, which contains benzene, toluene, ethylbenzene and xylene, each of which is regulated as a drinking water contaminant under the Safe Drinking Water Act (SDWA). At the urging of EPA, the companies of BJ Services Company, Halliburton Energy Services, Inc., and Schlumberger Technology Corp., which accounted for most of the work in this area, voluntarily agreed to eliminate the use of diesel fuel in hydraulic fracturing fluids injected into coalbed methane production wells in USDWs.

EPA believes that the MOA will ensure that the companies do not use diesel fuel for hydraulic fracturing in coalbed methane production wells in USDWs and that, pursuant to the MOA, where necessary, they are substituting other fluids that will not endanger USDWs. The MOA included a provision for the companies to notify EPA within 30 days after a decision to resume use of diesel fuel in their operations. EPA has received no such notice from the companies since the MOA was signed. Further, although there is no requirement in the MOA for regular notification, the service companies have communicated to EPA that they are continuing to meet the terms of the MOA (see attached letters). The Agency will continue to contact the companies periodically to monitor their implementation of the MOA.

An enclosure to this letter includes detailed responses to the questions you raised in your second letter of November 26, 2007, which focused on EPA's knowledge of hydraulic fracturing fluids. EPA did evaluate information about hydraulic fracturing fluids in completing the June 2004 report *"Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs"*. However, EPA does not maintain an inventory of hydraulic fracturing fluids used in coalbed methane development. Additionally, because Congress has exempted hydraulic fracturing and its associated fluids (other than diesel fuel), from the definition of "underground injection," the Agency has no plans for initiating collection of such an inventory.

In administering the UIC Program, EPA believes that it is sound policy to focus attention on those wells that may pose the greatest risk to USDWs. EPA initiated the study investigating hydraulic fracturing for coalbed methane gas because those wells are generally shallow and closer to USDWs than are wells used for conventional oil and gas production. The 2004 report concluded that the potential threat to USDWs posed by hydraulic fracturing of coalbed methane wells is low.

Our focus for the past several years has been on reducing risks from shallow Class V wells that have been identified as a high risk to USDWs, such as motor vehicle disposal wells and large-capacity cesspools. At this time, the Agency is also focusing significant attention on ensuring that the long term storage of carbon dioxide through underground injection does not endanger underground sources of drinking water. The program is currently developing national regulations for such injection that will be proposed in the summer of 2008. These two efforts are currently EPA's highest priorities in the UIC program.

EPA remains committed to protecting USDWs and, by extension, public health. Again, thank you for your letter. If you have further questions, please contact me or your staff may call Christina Moody, in EPA's Office of Congressional and Intergovernmental Relations, at 202-564-0260.

Sincerely,

Benjamin H. Grumbles
Assistant Administrator

Enclosure

Enclosure
EPA Response to Specific Questions Regarding Hydraulic Fracturing

1. **During your testimony, you stated that you were unaware of whether the EPA maintains an inventory of hydraulic fracturing fluids, and the chemicals used therein that are injected into underground sources of drinking water. Does EPA maintain such an inventory? If so, please provide this inventory to the Committee.**

   EPA does not maintain an inventory of hydraulic fracturing fluids. In Chapter 4 of EPA's June 2004 study "*Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs*," (at http://www.epa.gov/safewater/uic/wells_coalbedmethanestudy.html) we described the range of fluids and fluid additives commonly used in hydraulic fracturing for coalbed methane reservoirs. As noted on page 4-3 of the report, material safety data sheets (MSDSs) supplied by the companies conducting such hydraulic fracturing were the source of information for a summary provided in Table 4-1 (attached). The fluids and additives listed in the table represent the pure products, not the diluted mixtures injected at specific sites which may differ to respond to local conditions (e.g., geology, stratigraphy, depth). EPA reviewed a number of data sheets and noted that many of them are different, thus containing many different lists of fluids and additives. Thus, in the final report, the Agency concluded that it could not say whether one specific chemical, or chemicals, is/are present at every hydraulic fracturing operation.

   The best sources of information on hydraulic fracturing fluid components and mixtures are the companies conducting hydraulic fracturing of coalbed methane wells. We understand that you have asked the major companies for these sheets in a separate communication. We are not aware of additional information in any database or other inventory.

2. **Does EPA have a basis for assuring Congress and the public that underground sources of drinking water are not contaminated by hydraulic fracturing fluids, and the chemicals contained therein? If so, what is that basis?**

   The Agency stands by the 2004 study which concluded that the potential threat to USDWs posed by hydraulic fracturing of coalbed methane wells is low. EPA worked to ensure that the study was carried out in a comprehensive and transparent fashion. During the course of the study, EPA could not identify any confirmed cases where drinking water was contaminated by hydraulic fracturing fluids associated with coalbed methane production. EPA did identify a potential risk to USDWs through the use of diesel fuel as a constituent of fracturing fluids where coalbeds are co-located with a USDW. As noted in our response letter, we addressed that potential risk by developing the December 2003 MOA in which the three companies whose activities represent the bulk of the market for coalbed methane wells agreed to eliminate diesel fuel in hydraulic fracturing fluids injected into coalbed methane production wells in USDWs.

It should be noted that, irrespective of the statutory exclusion enacted by the 2005 Energy Policy Act, the Administrator retains the authority under the SDWA section 1431 to take appropriate action to protect public health from any imminent and substantial endangerment caused by hydraulic fracturing.

3. **What is the total volume on an annual basis of hydraulic fracturing fluids that are injected into underground sources of drinking water?**

EPA does not have precise, current information about the total volume of hydraulic fracturing fluids that are injected into underground sources of drinking water, but based on our 2004 study of hydraulic fracturing into shallow coalbed methane wells, EPA does not believe that such fracturing is likely to endanger underground sources of drinking water.

Our 2004 study described several estimates of volumes used in the practice (see pp. 3-10 and 3-11). For example, the study notes that some literature indicates that coalbed fracture treatments use from 50,000 to 350,000 gallons of various stimulation and fracturing fluids, and from 75,000 to 320,000 pounds of sand as proppant (Holditch et al., 1988, 1989; Jeu et al., 1988; Hinkel et al., 1991; Holditch, 1993; Palmer et al., 1991b, 1993a, 1993b). More typical injection volumes, based on average injection volume data provided by Halliburton for six coalbed methane locations indicated a maximum average injection volume of 150,000 gallons per well and a median average injection volume of 57,500 gallons per well (Halliburton Inc., 2003).

4. **Does EPA have a basis for assuring Congress and the public that hydraulic fracturing fluids that are injected into underground sources of drinking water do not contain BTEX chemicals? If so, what is that basis?**

EPA believes that the signatories to the 2003 MOA are meeting the terms of the agreement and are not using diesel fuel in hydraulic fracturing fluids injected into coalbed methane wells in USDWs. One of the conditions of the MOA is that the companies will notify the Assistant Administrator for the Office of Water within 30 days after any decision to re-institute the use of diesel fuel additives in hydraulic fracturing fluids injected into USDWs for coalbed methane production. To date, none of the signatories has contacted EPA to inform the Agency of such a fact. Although not a requirement of the MOA, the Agency has periodically sought, and received, confirmation from the companies that they are still abiding by the terms of the MOA. Copies of this correspondence are attached to this response.

5. **In 2003, the EPA entered into a voluntary Memorandum of Agreement (MOA) with BJ Services Co., Halliburton Energy Services, Inc., and Schlumberger Technology Corp., to "eliminate diesel fuel in hydraulic fracturing fluids injected into coalbed methane (CBM) production wells in underground sources of drinking water." At the time EPA stated that these companies conducted 95% of hydraulic fracturing activities that occur in the United States. What is the**

current percentage of activities that they conduct? What assurances can EPA provide that no other companies are injecting diesel fuel into underground sources of drinking water?

At the time EPA entered in the MOA with the companies, our understanding from them was that they represented 95% of the hydraulic fracturing market for coalbed methane wells. We understand that other companies have entered the market. However, we do not have any new estimates from the major companies of changes in their share of the hydraulic fracturing market for coalbed methane wells, nor do we have any other specific methodology for estimating market share independently. The Ground Water Protection Council (GWPC) has developed a report identifying companies with hydraulic fracturing services. The September 2004 report, entitled "*Oilfield Service Companies Providing Acidizing, Fracturing & Stimulation Services in the United States*" provides some of the names of the companies, by State, that do hydraulic fracturing for all oil field operations, which is a much larger market than those doing such hydraulic fracturing solely for coalbed methane production While the three major companies who signed the MOA have not been using diesel since signing the MOA, we do not know if the other companies are similarly not using diesel fuel. We understand that the Ground Water Protection Council is following up with state oil and gas agencies to determine if they are aware of any companies that are using diesel fuel in coalbed methane operations.

Mr. GRUMBLES. The other immediate answer is when we entered into that memorandum of agreement we knew full well that it was a voluntary agreement. We felt it was important to be proactive, to also work and provide technical assistance to Congress. Congressional committees were looking at the subject. And we were also committed to, on an annual basis, monitoring to see if the three signatories were living up to that agreement.

I know, Mr. Chairman, that if——

Chairman WAXMAN. If they weren't living up to the agreement, what would you do?

Mr. GRUMBLES. What I would do is I would talk to two offices in the Agency. One would be the General Counsel's office to see what other mechanisms we might have under our existing authorities and tools to continue to take steps to ensure that diesel fluids were not used. The other office I would work with would be the Research and Development Office to see what research, what information we have, along with the Environmental Information Office.

Chairman WAXMAN. Let me ask and see if I can get a response to my question, because you say you are going to get back to me, but do you know whether you maintain a list of fracturing fluids that are injected into underground water sources?

Mr. GRUMBLES. I know that we have information on what constituents may be included. I don't know if it is a complete list or not, Mr. Chairman. During the hearing I have been asking staff, as well, to get a good sense.

Chairman WAXMAN. We will look forward to getting your response.

Mr. GRUMBLES. Yes, sir.

Chairman WAXMAN. But my understanding is that the Agency does not maintain such a list. Can you assure us that there are no other hydraulic fracturing fluids that are used that contain BTX chemicals?

Mr. GRUMBLES. I can assure you that, based on the information from this hearing, we are going to be looking to see. We are going to coordinate with the Groundwater Protection Council, with the Interstate Oil and Gas Compact Commission, and with State drinking water agencies to ask exactly that question: what other constituents are out there besides BTX that we view——

Chairman WAXMAN. You are going to ask the questions, and I think it is appropriate, although I wish you had been able to answer this question now, but how can EPA guarantee that no fluids containing the BTX compounds are injected into sources of drinking water? How can you assure us that you are going to be on top of that?

Mr. GRUMBLES. Well, I don't think we can absolutely guarantee it, but what it tells me is that we need to do additional information gathering, not just on the BTX but to see what other constituents might be in the hydraulic fluids, recognizing though——

Chairman WAXMAN. I don't think you can give us that assurance. That is what I think is the response to my question. You may want to do more in this area. Today you discovered that you want to learn more about this area.

Mr. GRUMBLES. Right.

Chairman WAXMAN. But I don't think you can give us any assurances. Given this situation and EPA's concerns about protecting drinking water, would the administration support removing the hydraulic fracturing exemption from the Safe Drinking Water Act?

Mr. GRUMBLES. I can't answer that question right there, Mr. Chairman, because I would need to coordinate with others in the Agency and in the administration. I can tell you that as the language was being developed, while the Agency did not have an official position on that legislation in 2005, I can tell you that we were providing technical input and we were very concerned about not having a broader savings clause.

Chairman WAXMAN. Let me ask, Mr. Anderson, the other part of what we did in the Energy Policy Act, we took away EPA's authority to regulate, but we also said that the Secretary of Interior would enter into an agreement with the National Academy of Sciences to conduct a comprehensive study on the effects of coal-bed natural gas production on surface and groundwater resources in the western United States. The law requests recommendations from the National Academy on necessary changes to Federal law.

This report was to have been completed by NAS in August 2006. It is now November 2007. No such study has been initiated.

I wrote, Mr. Anderson, to the Department of Interior on September 5, 2007, to find out why the Department had not completed the study as required by Congress. The response I received from the Department of Interior revealed that the administration had not complied with the law and is not intending to. Instead of conducting a full NAS study with recommendations as required by law, the administration is planning to convene a single policy public meeting with the National Academy, which wouldn't even produce a written document.

Mr. Anderson, the National Academy doesn't only think this falls short of what the law requires; they tell us that it will be inappropriate to even refer to this effort as a study.

Can you explain how the administration's plan for a single meeting will comply with the statutory language of the Energy Policy Act?

Mr. ANDERSON. Yes, Mr. Chairman. Well, let me first say coming up this morning I thought that there may be great expectations, and I know that we had great expectations in reading and following up with this section of the act, and I know certainly you do, too.

Let me just say that there are 11 sections in EPAC, the Energy Policy Act.

Chairman WAXMAN. Before you get into other sections, how can the administration plan a single meeting and then say that fits the expectations, as great as they may be, that some might have, the expectations of the statute which called for you all to do the study, to get the NAS to do a study with recommendations? They don't think that this is a real study, and I don't think that it is a real study.

Mr. ANDERSON. The single meeting that you are talking about to be held this spring is to have the EPA, the National Academy of Science, and BLM get together, along with other experts, authors of previous papers on coal-bed methane water production and im-

pacts. From that meeting, we hope to determine as a group where we need to go from there.

What I wanted to say just a few minutes ago, there are 11 other sections in EPAC that direct us to do something, reports to Congress or studies. One is 833, and that is the renewable resources study by the National Renewable Energy Lab. And none of these sections, by the way, were funded by Congress. We funded that one to the tune of $50,000. However, in looking at the one in 1811, you know, I have been around for a long time, and the last study that the Academy did was 1999 on——

Chairman WAXMAN. I have limited time, which I have already exceeded. I don't understand your answer. You do not have enough funds for it? Have you asked for funds from Congress to do the study? Congress passed a law asking you to do a study. If you don't have funds, why don't you tell us?

Mr. ANDERSON. Well, when the——

Chairman WAXMAN. I mean, to convene a meeting and say where do we go from here is not complying with the law.

Given everything we heard this morning, why wouldn't the BLM want the benefit of an analysis of the National Academy of Sciences? It seems to me——

Mr. ANDERSON. Absolutely, and we plan to go there, Mr. Chairman, but first I think it is fiscally responsible on our part to determine what studies have been done so that the National Academy can accurately portray what kind of cost it is going to be for us to complete further studies if further studies need to be done.

Chairman WAXMAN. If you asked them to do the study and you entered into an agreement, as Congress directed you to do, wouldn't they be able to figure that out?

Mr. ANDERSON. Yes. They will be. But first I think we need to determine, along with the Academy and EPA, what studies have been done and do they answer the questions that the Congress wanted us to answer. And if not, then we know that the magnitude of the study will be much more than we think it is right now.

Chairman WAXMAN. Well, I do think that the study being delayed is resulting in ignorance, which is doing a great deal of harm. I wrote to Secretary Kempthorne this morning asking him to abandon this ridiculous approach of calling a meeting to then decide whether you are going to do a study that Congress didn't ask you if you wanted to do but told you to do. When we tell you to do something, it is not just a request that is at your leisure or if you approve of the request, it is a law.

Mr. ANDERSON. I totally agree.

Chairman WAXMAN. Mr. Issa.

Mr. ISSA. Thank you, Mr. Chairman.

Mr. Grumbles, I will give Mr. Anderson a break here for a minute. Wes Wilson, he is characterized by the first panel and by the committee as a whistleblower. Does he fit your definition of a whistleblower?

Mr. GRUMBLES. Mr. Chairman, I guess the definition—I don't know if there is a textbook definition.

Mr. ISSA. Let's assume for a moment that a whistleblower is somebody who has previously undisclosed information and then brings it to our attention around the chain of command, around

those who would want to keep it as a secret. That is at least this Member's understanding of what a whistleblower is.

Isn't it true that Wes Wilson essentially wasn't part of it, looked at the information, and disagreed with it, and that is how we ended up with a "whistleblower" in this case?

Mr. GRUMBLES. That is correct, Congressman. He was not involved. He was not viewed as a technical expert and was not involved in the issue in the underground injection control program, but was more involved in the NEPA process. The headquarters, as we were working on the report, the first time we learned of his concerns was when he released his report.

We respect the right of employees to express their personal views and opinions, but I think it would be difficult to view him as a whistleblower, and I think the Inspector General's office of EPA, when asked to look into this matter, had a similar conclusion.

Mr. ISSA. I appreciate that. I think when Jim Hanson came here and said that global warming was settled science, I wanted to respect the fact that he thought global warming was truly happening, and happening at the speeds he calculated. I also hope he will respect those who think it is happening faster or slower. And I certainly would hope that EPA has a similar attitude that nothing is ever settled science, because settled science had the earth flat, the human body not to ever be cut into for an autopsy because you couldn't do it, and people were excommunicated for doing things that today save lives every day. So hopefully there is no such thing as settled science in our Government.

Let me ask you a question though. The question of clean water relative to areas which have entrapped methane, entrapped oil, including all of its various byproducts, benzene, all the things that were mentioned by the earlier panel as poisons and toxins. They are all in there. Isn't it true that, whether you inject in the fracturing process or not, that seepage and water activities and so on, this goes on naturally anyway.

I am from California, Santa Barbara. The Indians used to harvest—and this is a well-known story in Los Angeles, where the chairman is from, and up the coast—they used to harvest the tar-like oil that came ashore and they burned it. So to a certain extent, not belittling the effects of putting in compressed water to hydraulically fracture, isn't it, in fact, a naturally occurring event?

Mr. GRUMBLES. I believe it is. There are naturally occurring substances. I would also say, Congressman, that some of the naturally occurring substances get a considerable amount of attention from us and with our regulatory tools. Arsenic is a naturally occurring substance.

Mr. ISSA. I am glad you brought that up.

Mr. GRUMBLES. And we are committed to implementing the 10 parts per billion standard in the arsenic drinking water rule and working with States and communities on compliance assistance and using cost-effective technologies to meet that standard.

Mr. ISSA. And let me followup on that. Because we mandated that during my relatively short tenure—the chairman has been here for the Clean Water Act and beyond for many years.

Chairman WAXMAN. Yes, sir.

Mr. ISSA. But I watched the arsenic debate, the high cost, the predictions that, in fact, it was going to take years and cost a very large fortune, that it was going to shut down small municipalities or at least cost them huge amounts of money. As you compare arsenic, a poison that is in the water, to the possibility that in some cases some amount will be in a local area from this type of mining, which has gone on for many years, how do you weigh those if you only had one basket of dollars and only enough to do, let's say, half of one of them? Where would you put the money and why?

Mr. GRUMBLES. Well, the first thing we need to do as an Agency that reports to Congress and implements the laws that Congress writes is to look to see what are our authorities and what flexibilities we have. A preference is always to pursue a risk-based approach, and therefore that requires sound science and looking at what are the greatest risks and helping State drinking water administrators and local health officials make the best decisions on how to reduce the most significant risks.

Mr. ISSA. But let me characterize it, because the time is short. Realistically, if you only had a limited amount of money, dramatically reducing, as Congress told you, the amount of arsenic to what would be considered to be a safe level from what Congress felt was an unsafe level is clearly a mandate on which the science has been settled under Christine Todd Whitman's time that we have said, for better or worse, that we want you to do this regardless of any other. We have settled the science by saying you shall do that. Is that correct? And thus that is where you know your dollars will lead to something which we have mandated, rather than a study of something which somebody says on a panel affected their life and they didn't report it for 9 years?

Mr. GRUMBLES. Congressman, we have a mandate under the Safe Drinking Water Act to use the best available science. With arsenic, we were convinced that the best available science and the risks led us to affirm the 10 part per billion standard, and so now we have focused on implementation tools and compliance assistance.

However, Congressman, the science always evolves, and in the spirit of always looking for what is the best available science, we have looked to the Science Advisory Board and others to continue to look at the science of arsenic and the risks associated with it. But the agency is committed to going with the best science, the 10 part per billion, particularly given the effective dates under the regulation.

Mr. ISSA. I appreciate that. A final question for Mr. Anderson.

In your written testimony you said there were 48,000 off-shore oil and gas leases, of which 23,000 are producing. I just want to clarify. You also said that there were nearly $12 billion in royalties between 2001 and 2006, and that is over and above the taxes paid. Are you also aware of the status of the $9 billion plus that was not paid based on the Clinton administration era failure and the Bush administration's continued failure to make sure the contracts were consistent with the law? Are you familiar with that? And how much has been agreed to by the oil companies?

Mr. ANDERSON. You mentioned off-shore. It is actually on-shore wells.

Mr. ISSA. I am terribly sorry. On-shore. I apologize.

Mr. ANDERSON. I was thinking ahead to the second part.

Mr. ISSA. On-shore, but are you familiar also with the off-shore?

Mr. ANDERSON. Yes, I am familiar, mostly newspaper articles and the like. That is a Minerals Management Service issue.

Mr. ISSA. Well, I am thrilled with the $12 billion you got, but as long as I have anyone here on a committee that did considerable oversight in the last Congress on this, I wondered whether either you have knowledge or could have your organization respond for the record on what has been done, item-by-item, company-by-company, because that was a major part of this committee's work in the last Congress.

I never forget about accounts receivable, no matter how small, even if it is just a few billion.

Mr. ANDERSON. Absolutely. I can tell you that the Secretary has appointed a special subcommittee for the Faka-chartered royalty policy committee that is held a couple of times a year through the Minerals Management Service hosting of it, and that subcommittee is doing some work on that issue.

I also know that the GAO is also investigating production accountability and verification as we speak.

Mr. ISSA. Thank you.

Thank you for your indulgence, Mr. Chairman.

Chairman WAXMAN. You are welcome, Mr. Issa.

Mr. Shays.

Mr. SHAYS. Thank you, Mr. Chairman. Again, thank you for having this hearing.

I believe that there are a few issues that obviously are intertwined, and I think others, do, as well. One is energy security, or what I would call energy independence, which I don't think is pie in the sky over the long term, intertwined with the environmental concerns and health care concerns.

I believe that one of the ways that we are going to deal with these concerns is conservation, I mean, just getting better use, conservation and greater efficiencies.

We obviously have coal and we are going to use it. We have oil and we are going to use it. We have gas, which is a cleaner, more efficient fossil fuel, but it is still a fossil fuel dealing with global warming. We are going to get back into nuclear power. And we are obviously going to deal with the whole issue of renewables.

What interests me, I want to not overstate where the problems are, or understate them, so when we talk about our effort to get gas in Colorado and elsewhere, methane, and so on, and fracturing, I want to be clear. When we are going after gas, does that impact the water table and the quality of the water?

Mr. GRUMBLES. I would be happy to respond first.

Mr. SHAYS. I want to ask both of you to. We will start with you.

Mr. GRUMBLES. It does have the potential to impact the water table, and, as we have learned over the last decade, it has the potential to impact surface water. One of our priority actions in the national water program right now, in promoting the clean development of energy resources, including natural gas and, in particular, coal-bed methane, we will use our tools and authorities under the Clean Water Act——

Mr. SHAYS. OK. You answered my question. So it does.

Mr. Anderson.

Mr. ANDERSON. Yes. If I could, before the hearing when I found out that I was coming today I had somebody ask one of our field officers, in fact in Buffalo, WY——

Mr. SHAYS. Give me the answer and then give me the details. I mean, the answer is yes, it does, or no, it doesn't.

Mr. ANDERSON. It has potential, but I am not the expert in that area.

Mr. SHAYS. OK. So the answer is it has the potential, and now you want to tell me what?

Mr. ANDERSON. Well, I want to tell you that the BLM, in addition to what is required under the Clean Water Act, we have our own requirements when we issue approval for a drilling permit. I just wanted perhaps to read a couple of stipulations to give you an idea of what kind of protection we do.

Mr. SHAYS. No. I will just accept that you have protections, OK?

Mr. ANDERSON. OK.

Mr. SHAYS. So the next question I wanted to know, when we go after methane coal—correct?

Mr. ANDERSON. Yes.

Mr. GRUMBLES. Yes.

Mr. SHAYS. And we use this for also oil and gas, which tends to be the greater concern? Is the gas further down, and therefore not as big a concern? In other words, can we get under the water table and not impact? So tell me which of the fossil fuels represents the bigger concern, or maybe they don't. Maybe they are all equal. We will start with you.

Mr. ANDERSON. Well, sometimes you get oil and gas in the same formation, and sometimes you just get gas. Sometimes you get a little bit of condensate, which is the light end of the oil.

Mr. SHAYS. So is the depth, the further down we go the less likely the water table becomes an issue, or——

Mr. ANDERSON. Yes. Absolutely.

Mr. SHAYS. OK. And which of these do we tend to find is further down? Oil? Gas?

Mr. ANDERSON. Both. It just depends where it is.

Mr. SHAYS. Do you agree? Does EPA agree?

Mr. GRUMBLES. I would defer. I don't disagree. I would just defer to expertise on that. We don't typically—in fact, we are prohibited under the Safe Drinking Water Act from regulating the practice of mining. Where we get involved is on the injection of fluids through the UIC program, and also our NEPA authorities looking at potential impacts, depletion of aquifers, the comments we make to other agencies when we are a commenting agency.

And the Clean Water Act, which is another critical part of this whole discussion, ensuring that when mining practices occur, such as coal-bed methane mining, that State water quality standards are complied with, and that the best technologies are used.

Mr. SHAYS. See, the problem I have, though, some States can be concerned, but if the spill-over is into another State, I mean, this administration sincerely has taken the position that the market ultimately will deal with these issues, but my view is it only does it if the market represents a market that considers all cost. But if

there is a spill-over cost, then the market fails to operate. We knew that when Mr. Waxman and others were dealing with this issue before I was even here.

When I went to Gary, IN, and I saw the whole community looked red, or I went through Pittsburgh in the 1950's and they spilled over to other communities, the fact is the market wasn't working because they didn't have to deal with all the costs.

Mr. GRUMBLES. Congressman, I can tell you the U.S. EPA very much agrees with you that there are needs, there are important situations where interstate, in particular, where we should be involved, and on this precise issue we were asked and we are participating heavily in facilitating discussions between an upstream State and a downstream State over coal-bed methane and the management of produced waters which may be very salty and have an adverse impact in some situations on the plants and the wildlife.

Mr. SHAYS. Right. Thank you.

Thank you, sir.

Mr. ISSA [presiding]. The gentleman from Utah, Mr. Cannon, for 5 minutes.

Mr. CANNON. Thank you, Mr. Issa. I approve of your positioning on the panel today. Short-term, unfortunately, but maybe not different long-term.

I want to thank the chairman in his absence for holding the hearing. I think it has been informative. Certainly we have had some victims here today that have had some very serious problems, and we are concerned about those things, but never in the history of the world have so many people lived so well and avoided the brutal effects of nature as we have in America today. The really nice thing about where we are and why this hearing is so important is that if we do it right here, everybody else gets the benefit. If we solve a disease in America, we can solve that disease for people worldwide at a very, very low cost. So nothing pollutes like poverty, and what we are doing here I think is remarkably important.

In fact, I would like to associate myself with Mr. Shays' comments. We talked about balancing and being self-sufficient in energy, and his views about new technology and efficiency and alternative resources, these are all very important things that we have to decide as a group. We can't do that on the basis of victims. That is very important that we identify the problem based on victims. How we solve those problems I think are exceedingly important.

In that context, I have a few questions I would like to ask Mr. Grumbles.

You mentioned that environmental groups have challenged EPA's rule regarding stormwater. Is there any group who has testified at the hearing today that is involved in litigation?

Mr. GRUMBLES. I believe so.

Mr. CANNON. Do you know which groups?

Mr. GRUMBLES. I believe NRDC has challenged the July 2006 rule that we issued interpreting the Energy Policy Act of 2005.

Mr. CANNON. So is this hearing a way to advance their discovery process?

Mr. GRUMBLES. It certainly advances the issue, and the issue is whether some are supportive or opposed to the language in the statute and how EPA has interpreted it.

Mr. CANNON. Thank you. We actually have used this. In fact, we had a hearing of this committee that was directed they plaintiffs' attorneys in another matter, and I suspect that actually distorts our processes here.

Your testimony on page 8 regarding stormwater permits, you refer to EPA's concern for sediment and erosion control, and that you encourage oil and gas operators, in the absence of requiring permits, to use best management practices to minimize these impacts; is that accurate?

Mr. GRUMBLES. That is accurate.

Mr. CANNON. Could you describe why for us?

Mr. GRUMBLES. Well, we think that it is very important to recognize that there can be adverse environmental impacts. We know that there can be adverse environmental impacts when sediment and erosion are not controlled at constructionsites, and so we have been working with our State partners and with oil and gas industry to advance their RAPPS, their reasonable and prudent measures. And after Congress acted and took away the regulatory tool under the Clean Water Act for construction runoff at oil and gas facilities, we felt it important to faithfully implement that provision, but also to encourage the continued development of best management practices, even if it is not under a Federal Clean Water Act permitting program.

And we also made clear, Congressman—I hope we made clear—that if States choose to use authorities—for instance, Colorado, which was very interested in regulating and requiring permits for constructionsite runoff—that our July 2006 rule would not preempt them from doing that; that they could do that.

But the key is best management practices and taking steps to reduce the sediment and erosion.

Mr. CANNON. And underlying all of this I think is the recognition of a distinction between what happens on a large constructionsite like a sub-development or subdivision being put in, and what happens on a relatively small site when a company drills.

Mr. GRUMBLES. Yes, sir.

Mr. CANNON. That yes, sir means there is a huge difference, a vast, huge difference?

Mr. GRUMBLES. It is an excellent question to point out that a one-size-fits-all approach is not the most sustainable and effective way to get environmental results.

Mr. CANNON. Thank you.

Mr. Anderson, has it been your experience that groups who oppose the expansion of oil and gas recovery have used NEPA review processes to hold up or stall BLM decisionmaking?

Mr. ANDERSON. Repeat that again, please?

Mr. CANNON. Sometimes I speak too fast. I apologize.

Have people who oppose oil and gas recovery used NEPA to stall the BLM processes, slow it down?

Mr. ANDERSON. We have quarterly sales where we issue leases, and quite frequently, especially in Utah, we have protests.

Mr. CANNON. I feel that pain in Utah particularly.

Mr. ANDERSON. We do have protests appealing our decisions to lease, and even protests about issuing our applications to drill once they come in. So yes, we do. We do have quite a few protests.

Mr. CANNON. Time, of course, is money. These delay tactics, are they significant or influential in decisions by drillers as they decide where to invest their drilling capital?

Mr. ANDERSON. I would say yes. They are significant.

Mr. CANNON. I'm sorry. That was like an obvious question, but the point I think ought to be well taken that a lot of what is going on here is about dissuading people from developing oil and gas. Of course, that would mean that we like people living in poverty and without the basic energy needs that make our lives so good, but that is my comment and not yours. Thank you very much for that.

How long does it take for your Agency to perform a traditional NEPA analysis before moving forward on an application for permit to drill [APD]?

Mr. ANDERSON. It is varied. The Energy Policy Act thought we could do the job in 30 days. That is assuming that NEPA has already been taken care of. However, that is not the case. We do NEPA on our applications to drill. I think our average is up somewhere around 150 days.

Mr. CANNON. Has the categorical exemption under the 2005 EPAC regarding redundant NEPA analysis saved your organization time and resources?

Mr. ANDERSON. Yes.

Mr. CANNON. Has it meant more drilling?

Mr. ANDERSON. Yes.

Mr. CANNON. Good. I don't want my predispositions to be disguised here.

Just one final question. What kinds of activities are BLM employees able to undertake now, since being freed up from conducting these redundant NEPA analyses?

Mr. ANDERSON. We are able to do more inspections out on the land. We have responsibility to inspect our applications or our drilling permits that have been approved, so we have natural resource specialists out on the ground more frequently. We can address more of the demand placed on us for more APDs, or applications for permit to drill.

Mr. CANNON. So you get to do your job better? People often call these America's lands. I actually think of them as Utah's or Colorado's lands, and I think that is the obligation that the law puts on us.

Mr. SHAYS. Objection.

Mr. CANNON. Good friends can disagree. But we do agree on the fact that currently they are public and that we have responsibility for their good stewardship and management.

My mother-in-law lives on the edge of the fires in southern California. My wife went down to help out after the fires. These are terrible problems that we need to minimize through appropriate management of our public lands. I appreciate the fact that you are able to do that better.

I think my time expired some time ago, Mr. Chairman. Thank you for your indulgence. I yield back.

Mr. ISSA. Thank you. I thought it was only fair that I give you the benefit of the doubt.

The Chair seeing no more questions, I would ask unanimous consent that those who are not here be allowed to submit questions for the record.

Would you both agree to answer those questions for the record? They would come within 5 legislative days.

Mr. ANDERSON. Yes.

Mr. GRUMBLES. Yes.

Mr. ISSA. OK. Seeing no one else, we stand adjourned. I thank you.

[Whereupon, at 1 p.m., the committee was adjourned.]

[The prepared statement of Hon. Diane E. Watson and additional information submitted for the hearing record follow:]

Opening Statement
Congresswoman Diane E. Watson
Oversight & Government Reform
Hearing: "Oil & Gas Development: Exemptions in Health and Environmental Protections"
October 31, 2007

Thank you Mr. Chairman for holding today's important hearing concerning preserving public health and environmental protection in relation to exemptions in federal requirements to onshore oil and gas development.

I am an advocate of promoting renewable sources of energy. Renewable energy is good for public health and good for the environment. However, in my opinion more can be done with improving existing environmental standards of our offshore and onshore energy sources.

As the United States continues to demand large quantities of energy, existing supplies are becoming smaller and new energy sources are harder and more costly to find. As we attempt to search for new sources of energy we cannot sacrifice public health at the expense of greater demand.

Since the Bush Administration's 2001 National Energy Policy called for wider use of federal lands for development of onshore oil and gas resources, we have seen a decline in federal regulatory standards that protect the environment.

For example, the Energy Policy Act of 2005 has exempted a practice called "hydraulic fracturing," which is being widely used in the enhancement and

cultivation of gas wells. This mixture of water, chemicals and sand are known to cause adverse health effects, but they are forced into wells to jar loose rocks to make it easier to dig, but the chemicals are left in the ground instead of extracting them.

The problem is this, according to the Environmental Protection Agency, this type of digging occurs within the area of underground sources of drinking water, and there is concern that fluid from the fracturing process is being injected directly into those sources.

Another example of declining standards in environmental protection is the permanent exemption from the Clean Water Act storm water runoff rules for

oil and gas companies. The Energy Policy Act of 2005 expanded the exemption to include all facets of the oil and gas industry. This exemption poses a serious public health and environmental risk because storm water has the possibility of transporting hazardous material to areas that contain clean drinking water.

With the issue of global warming looming over the entire world's head and the possibility of water becoming a scarce resource, we cannot afford to containment our sources of clean drinking water.

Mr. Chairman, thank you for the time and I look forward to the panel's testimony. I yield back.

CHRIS CANNON
3RD DISTRICT, UTAH

www.house.gov/cannon
E-MAIL: cannon.ut03@mail.house.gov

Congress of the United States
House of Representatives
Washington, DC 20515

COMMITTEE ON THE JUDICIARY
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COMMITTEE ON OVERSIGHT AND GOVERNMENT REFORM
SUBCOMMITTEE ON DOMESTIC POLICY
SUBCOMMITTEE ON INFORMATION POLICY

WESTERN CAUCUS
CHAIRMAN

November 6, 2007

Additional Questions to Oversight and Government Reform Hearing on Oil and Gas Development: Exemptions from Health and Environmental Protections submitted by Congressman Chris Cannon

Mr. Mobaldi, it has been brought to our attention the need to clarify an earlier statement made during your testimony regarding the operator of the well in question mentioned in your testimony before the Committee. In your oral testimony, you stated that EnCana Oil and Gas was responsible for the well in question. However, it is my understanding that in 1997 when you first started having problems, that Barrett Resources was the company that operated the producing wells near your property. It is also my understanding that at some point the Williams Companies acquired those wells from Barrett Resources.

In June 2005, you wrote a letter to the Colorado Oil and Gas Commission outlining the details of your wife's illness and in that letter you make references to several conversations you had with the prior operator – Barrett Resources. In July 2005, you and your wife spoke at the COGCC hearing, at which it was clear that Barrett and then Williams Companies operated those wells. Finally, in August 2006, you filed a lawsuit in Denver District Court against Williams, Halliburton and other operators, but not EnCana Oil & Gas. So we can be clear for the record, EnCana Oil & Gas is not the operator in question. Is that your understanding?

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United States Department of the Interior

OFFICE OF THE SECRETARY
Washington, DC 20240

JUN 0 9 2008

TAKE PRIDE IN AMERICA

Green
Bitsu
Wilhelfeld
Hydraulic Fracturing

The Honorable Henry A. Waxman
Chairman
House Committee on Oversight and Government Reform
United States House of Representatives
Washington, D.C. 20515

Dear Mr. Chairman:

Enclosed are responses prepared by the Bureau of Land Management to questions submitted following the Committee's October 31, 2007, oversight hearing on, "Oil and Gas Development: Exemptions in Health and Environmental Protections."

Thank you for the opportunity to provide this material to the House Committee on Oversight and Government Reform.

Sincerely,

Respondi to a 11/26/2007 letter

for Jane M. Lyder
Legislative Counsel
Office of Congressional and
Legislative Affairs

Enclosure

cc: The Honorable Thomas M. Davis III
Ranking Member

Questions for the Record
House Committee on Oversight and Government Reform
October 31, 2007

1. Do oil and gas companies drilling on public lands managed by the Bureau of Land Management (BLM) in Colorado have to comply with state storm water permit requirements?

Yes, the State of Colorado requires oil and gas companies drilling on BLM-managed lands in Colorado to obtain a State storm water permit.

2. Do BLM drilling permits include requirements to publicly disclose the chemical composition of the hydraulic fracturing fluids used?

No. BLM drilling permits, or Applications for Permits to Drill (APDs), are public documents; however, they do not require disclosure of the chemical composition of the hydraulic fracturing fluid used. Hydraulic fracturing and other underground injection activities are regulated by the Environmental Protection Agency (EPA) or state-delegated agency through the Underground Injection Control (UIC) Program.

3. Does BLM currently have the authority to require oil and gas companies who employ hydraulic fracturing to disclose the chemical composition of the hydraulic fracturing fluids used?

Yes. The BLM can and does require operators to disclose the composition of hydraulic fracturing fluids, but this information is considered proprietary, so it is not made available to the public. Operators are required to submit well completion or recompletion reports to BLM within thirty days of completion, in accordance with 43 CFR § 3162.4-1(b). The completion report describes the well completion program executed, including the amounts and types of materials used during fracing operations.

Statement of The Williams Companies
Submitted to the Oversight and Government Reform Committee
of the House of Representatives
in Relation to the Hearing Held October 31, 2007
11/8/07

Introduction

The Williams Companies, Inc. is a natural gas producer, processor and pipeline company located in Tulsa, Oklahoma. Williams appreciates this opportunity to respond to testimony the Committee received at a hearing on Wednesday, October 31st from Ms. Wallace-Babb. Ms. Wallace-Babb alleged that she became ill from being exposed to chemicals in the air at a Williams' production facility near her home. For clarification, I would note that at the time of this incident Ms. Wallace-Babb's last name was "Haire" which is why the correspondence referenced in this statement is so addressed.

Williams is committed to protecting the environment and operating in a safe a manner. The company's work to protect the environment has included developing new technology and industry-leading practices. A number of these programs and activities have been recognized by governmental organizations and others. Attachment 1 summarizes a number of these efforts by the company to live up to our commitment to be good stewards of the environment.

Response to Testimony

There are a few factual errors in the testimony of Ms. Wallace-Babb that we would like to correct for the record. First, the tank in question is not a condensate tank, but is a produced water tank. This is significant in that the liquid in the tank was almost entirely water, not a hydrocarbon mixture as would be the case with a condensate tank. It is common that produced water will be accompanied by a sheen of condensate on the surface of the water and it can produce an odor, particularly if the tank is uncovered, but it is not true that this was a tank full of hydrocarbons.

Second, the testimony states that "I was told no one in that company knew what chemicals were in condensate and that no records were kept of such incidents." Of course the company keeps records concerning any incident involving the safety of employees or the public. Also, the constituents of condensate are well known. They are the light hydrocarbons commonly associated with natural gas, such as natural gasoline, propane and butane. It is worth noting that Williams is open and transparent regarding the substances we use in our production operations. We file with local fire departments and local emergency planning committees' specific information on the chemicals present in reportable quantities at our facilities.

Third, Ms. Wallace-Babb said that doctors told her that one of the chemicals that had damaged her was hydrogen sulfide. The fact is that hydrogen sulfide is not typically present in the natural gas that Williams produces in the Piceance Basin so the chances are very remote that she was exposed to hydrogen sulfide at our facilities.

Finally, Ms. Wallace-Babb states that "All activities related to exploration for and recovery of oil and gas are exempt from the laws made to protect our environment and citizens." This statement is simply not true.

Setting these misstatements aside, Williams is very concerned whenever an employee or member of the public feels that their health and safety have been threatened. The fact is, the produced water tanks Ms. Wallace-Babb describes exist at hundreds of Williams' locations and thousands of locations when considering those of other companies. The most serious complaint we have received from people living near these water tanks is that the odor was objectionable. That problem can be mitigated by placing a top on the tank, as was done here or by using other techniques. In this particular case, we had employees or contractors at the well site on a regular basis and none of them ever complained about feeling sick as a result of being near the tank. The same is true of the adjunct landowner and the people who purchased the property from Ms. Wallace-Babb.

Most importantly, Williams conducted our own investigation by taking air samples from the area. Further we invited both Garfield County and the State of Colorado to undertake sampling. Simply put, the independent tests revealed no indications of adverse health risks based on standards established by local state or federal agencies. Attached are two letters from the County to Ms. Haire (Attachment 2). As the letter from the County dated October 11th indicates:

> "As noted in the results, only 2 compounds were detected in the sample collected on July 21, 2005 – acetone and toluene. There is no established risk level for acetone, largely because it is generally not considered to be a health hazard. Acetone is a very common laboratory contaminant that is frequently detected in analytic samples. Note that the detected concentration of toluene in this sample, 2.1 $\mu g/m^3$, is significantly les than the EPA-established risk level, 400 $\mu g/m^3$."

Finally, Ms. Wallace-Babb says that she received a letter from one of our attorneys and implies that the Company was dismissive of her complaints. We've attached a copy of the letter to which she refers (Attachment 3). The letter referred to the results of the air testing conducted by Garfield County, but it neither threatened her nor accused her of being untruthful. In addition, this letter was sent after Williams employees had visited with her in her home to learn more about what she had experienced. Ms. Wallace-Babb never contacted the company again after receiving this letter so we believed her needs had been met.

Conclusion

Williams takes seriously its obligations to develop natural resources in an environmentally sound manner. In fact, we have been positively recognized by local and Federal agencies on several occasions for our record in this area. Whether it is development of well completion techniques that virtually eliminate the release of greenhouse gases, voluntary cooperation with local communities to monitor groundwater and air quality, or deploying new drilling technology that reduces surface usage by up to 75%, Williams continues to work with local communities and governmental agencies to respect and preserve the environment. If an employee or member of the public is harmed in any way by our activities, we want to understand what happened and correct the situation. We don't know what Ms. Wallace-Babb experienced that caused the health problems she described, though all information available indicates that it is highly unlikely any such health problems are attributable to conditions at our location. We do know that in all of our operations around the country, allegations of health issues being caused as a result of our facilities have been rare.

Inquiries concerning this statement may be made to:

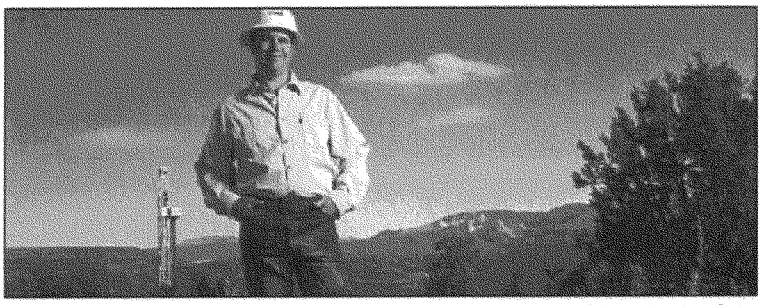
Ty Watson
Regional Vice President – Piceance Basin Asset Team
Williams
303-717-3133
Ty.watson@williams.com

or

Glenn Jackson
Director, Government Affairs
Williams
202-833-8994
glenn.jackson@williams.com

Attachment 1

Best Practices



Ty Chaffin, drilling consultant for Williams. *Williams adopted deepwater offshore technology to drill for natural gas in the Rockies. The resulting new rigs enable the company to drill more wells from a single location – producing more natural gas using less land.*

Responsible natural gas development

Clustered planning and development, directional drilling, green completions, wildlife surveys, and recycling produced water are just a few of the best management practices Williams implements while producing enough energy from the Piceance Basin in northwestern Colorado to heat more than 2.2 million homes on a daily basis.

Williams finds, produces, gathers process and transports natural gas throughout the United States. As one of the largest natural gas producers operating in the western U.S., the company and its employees are dedicated to working cooperatively with stakeholders and government agencies to develop our nation's natural gas supplies in a way that protects the environment and the health of the people who live in the communities where the company operates.

Williams' approach to environment, health and safety includes a management system that is employed throughout the company. Below are a few of the company's best management practices.

Clustered planning and development

In the Piceance Basin, Williams has eliminated as many as 26,000 water-truck trips, reduced surface disturbance by 70 percent and increased its natural gas drilling efficiency by up to 30 percent by using this best practice. It involves centralizing production facilities, recycling water and drilling multiple wells from the same site to reduce the environmental impact, protect wildlife and limit disturbance to neighboring communities.

Green completions

Williams was the first producer in northwestern Colorado to develop and use a new technology that captures lost gas without flaring – a process that burns off vapors and reduces emissions. A 'flowback' unit allows gas to safely flow during the completion phase of a natural gas well, and sends gas, sand and water through a series of two heavy-duty vertical separators. The practice is recognized by the Environmental Protection Agency's Natural Gas Star Program because it helps protect air quality and conserves energy.

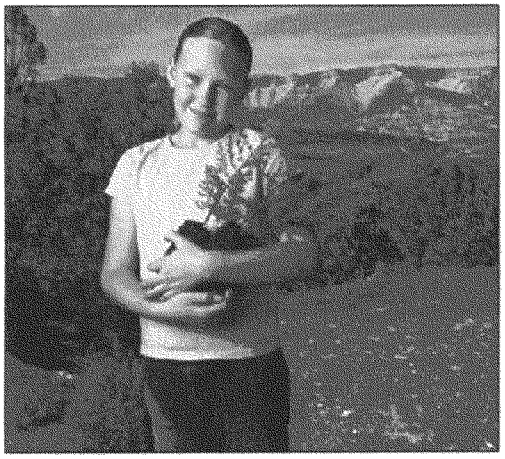
Remote telemetry

Monitoring wells remotely by installing instrumentation at well sites reduces truck traffic, reduces vehicle emissions and conserves energy.

Storm water management planning

Williams' storm water management planning, with associated field manuals and practices, are recognized as model in the industry.

Attachment 1 (cont)



Sara Cesark, community volunteer. *After the Red Apple fire scorched 800 acres of the Colorado countryside, Williams purchased over 3,000 saplings and recruited volunteers – including a high school football team, coaches, parents and students – to help plant them.*

Simultaneous operations

A new procedure made possible by technologically advanced drilling rigs allows Williams to complete and produce wells while drilling is occurring in the same location. A cellar is constructed approximately seventy feet long and twenty feet wide over which a rig is assembled. The rig drill is wells on one end of the cellar. Once drilling is concluded on this set of wells, the rig moves down toward the other end to drill more wells. At that point the completion operations begin on the exposed wells.

Other ways we're working to protect the environment and health of the communities where we operate:

- Purchased and planted over 3,000 trees in an 800-acre area impacted by wildfire.
- Contributed funds to Wildlife for the Future and Mesa Land Trust to secure conservation easements for the protection of elk and deer migration corridors, winter range and transition areas in Garfield and Mesa counties.
- Partnered with Colorado State University to study ways to optimize techniques to return the land to is original condition or better following drilling operations.
- Monitoring air and water quality to protect the health and safety of our employees and the people who live in nearby communities.

Recent Recognitions

- The Colorado Oil and Gas Conservation Commission gave Williams an award for our work with the EPA, state agencies and a local group on an air-sampling program around Williams' gas wells.
- A Best Management Practice Award from the BLM for integrating a new technology that can drill and complete up to 22 natural gas wells on a single drilling location.
- Three Outstanding Operations Awards from the Colorado Oil and Gas Conservation Commission for:
  - o Conducting a hydrology survey to study water quality
  - o Constructing a road and tunnel to shorten the driving distance to a new acreage area – reducing traffic, conserving fuel and reducing emissions
  - o Centralizing the hydraulic fracturing process to eliminate water trucking from a field in northwestern Colorado.

Attachment 2

Garfield County

Garfield County Public Health

Rifle Office
195 W. 14th Street
Rifle, Colorado 81650
(970) 625-5200

Glenwood Springs Office
2014 Blake Avenue
Glenwood Springs, Colorado 81601
(970) 945-6614

November 15, 2005

Ms. Susan Haire
166 County Road 340
Parachute, CO 81635

Subject: Results of Air Sample Collected on September 22, 2005

Dear Ms. Haire:

Enclosed are the results of an air sample collected on your property on September 22, 2005. This sample was collected and analyzed in accordance with U.S. Environmental Protection Agency (EPA) method TO-15, *Determination of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters And Analyzed By Gas Chromatography/Mass Spectrometry (GC/MS)*.

The enclosed table of results provides the detected result for each compound as supplied by the analytical laboratory as well as two columns of health risk level information. As noted on this table, the risk levels provided are chronic (long-term) exposure levels utilized by the EPA's Office of Air Quality Planning and Standards in conducting risk assessments of hazardous air pollutants. Where available, both noncancer and cancer risk levels are provided. Please bear in mind that these risk values may change periodically. You should refer to the website footnoted on the bottom of the results table for the most current risk information.

Garfield County will continue to collect and analyze air samples from your property on a monthly basis for the next several months in an attempt to characterize potential air pollutants in the area. You will receive the results of future sampling when they become available. Data analysis and risk characterization will begin in several months when the quantity of data collected is adequate to undertake an appropriate analysis.

If you have any questions, please contact me at 625-5200 ext. 8113.

Sincerely,

James A. Rada, REHS
Environmental Health Manager

Attachment 2 (cont)

Garfield County

Garfield County Public Health

Rifle Office
195 W. 14th Street
Rifle, Colorado 81650
(970) 625 5200

Glenwood Springs Office
2014 Blake Avenue
Glenwood Springs, Colorado 81601
(970) 945-6614

October 11, 2005

Ms. Susan Haire
166 County Road 340
Parachute, CO 81635

Subject: Results of Air Sample Collected on August 23, 2005

Dear Ms. Haire:

Enclosed are the results of an air sample collected on your property on August 23, 2005. This sample was collected and analyzed in accordance with U.S. Environmental Protection Agency (EPA) method TO-15, *Determination of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters And Analyzed By Gas Chromatography/Mass Spectrometry (GC/MS)*.

The enclosed table of results provides the detected result for each compound as supplied by the analytical laboratory as well as two columns of health risk level information. As noted on this table, the risk levels provided are chronic (long-term) exposure levels utilized by the EPA's Office of Air Quality Planning and Standards in conducting risk assessments of hazardous air pollutants. Where available, both noncancer and cancer risk levels are provided.

As noted in the results, only 2 compounds were detected in the sample collected on August 23, 2005 – acetone and 2-Butanone (MEK). There are no established risk levels for acetone and 2-Butanone (MEK), largely because they are generally not considered to create a significant health risk. Acetone is a very common laboratory contaminant that is frequently detected in analytical samples. Note that the detected concentration of 2-Butanone (MEK) in this sample, 2.8 $\mu g/m^3$, is significantly less than the EPA-established noncancer risk level, 5000 $\mu g/m^3$.

Garfield County will continue to collect and analyze air samples from your property on a monthly basis for the next several months in an attempt to characterize potential air pollutants in the area. You will receive the results of future sampling when they become available.

If you have any questions, please contact me at 625-5200 ext. 8113.

Sincerely,

James A. Rada, REHS
Environmental Health Manager

Attachment 3

ELIZABETH A. JOYNER
Senior Attorney
One Williams Center, 47th Floor
Tulsa, OK 74172
(918) 573-1143
(918) 573-6928 (fax)
elizabeth.joyner@williams.com

August 31, 2005

Ms. Susan Haire
166 County Road 340
Parachute, CO 81635

Re: William's Natural Gas Production Facilities

Dear Ms. Haire,

I am writing on behalf of the Williams Production RMT Company ("Williams") with regard to your calls to Williams' employees Dave Cesark and Kevin McDermott. It is my understanding that you have questions regarding Williams' operations in the Parachute, Colorado, area and the potential for air emissions of substances associated with natural gas wells and gathering facilities operated by Williams.

As you may be aware, employees of Garfield County, Colorado have undertaken regional monitoring, and site-specific sampling on a case by case basis, of the ambient air to evaluate existing conditions in the Parachute-Rifle area. In addition, the County took a 24-hour composite air sample from your property in response to your specific complaint in June 2005. The results of this test did not indicate an adverse health risk and subsequent sampling is expected to confirm these results. It is my understanding that the County has provided you with the test results and plans to continue to collect 24-hour composite air samples from your property on a monthly basis for a few months. We will continue to cooperate with Garfield County and the Colorado Oil & Gas Conservation Commission's ongoing investigation, and monitor and reassess as additional information is made available.

Please direct any future communication to me, and I can then make certain that the appropriate Williams representatives are available to assist you.

Sincerely,

Elizabeth A. Joyner
Senior Attorney

cc: Dave Cesark
bcc: Lloyd Landreth
Mike Paules

Statement of David Alberswerth
Senior Policy Advisor
The Wilderness Society
Regarding
Oil and Gas Exemptions in Federal Environmental Protections
House Committee on Oversight and Government Reform
Submitted for the Hearing Record
October 31, 2007

Thank you for the opportunity to submit for the record this statement on behalf of The Wilderness Society.

Since assuming office in 2001, the Bush Administration has drastically revised federal policies pertaining to the management of the publicly-owned oil and gas resources that underlie many areas of the federal lands of the western United States. These policies, flowing from recommendations articulated in Vice-president Cheney's secretive energy task force report (*National Energy Policy – Report of the National Energy Policy Development Group*, May, 2001, pp. 5-1 through 5-10), have in effect transformed the Bureau of Land Management (BLM) from its legitimate and statutory role as steward of our public lands for all Americans into the obedient servant of the oil and gas industry. Numerous policy and management decisions during the past five years have firmly established that the BLM's highest priority is to make as much federal public land available for oil and gas development as possible, while minimizing the environmental safeguards that should accompany oil and gas activities that can and do harm sensitive resources, such as wildlife habitat, water quantity and quality, air quality, public health, and the beauty of our great western landscapes.

Unfortunately, until recently Congress has been complicit in the transformation of the BLM from a multiple-use agency to a land agent for the oil and gas industry. For instance, since 2000 the BLM's oil and gas management program budget has doubled, from $57.8 million in FY 2000 to $115.3 million in FY 2007. Moreover, enactment of the Energy Policy Act of 2005 further solidified the primacy of oil and gas development on our federal public lands in a number of ways, for example: by exempting the oil and gas industry from compliance with the Clean Water Act's stormwater program for construction activities and from the Safe Drinking Water Act for hydraulic fracturing projects; dedicating federal onshore lease rental receipts to seven "pilot projects" intended to expedite the issuance of drilling permits; foreshortening the timeframes for BLM reviews of drilling permit applications; prohibiting the BLM from assessing cost recovery fees on operators to cover the costs of processing drilling permit applications; and providing several mandatory "categorical exclusions" from National Environmental Policy Act (NEPA) review for certain types of oil and gas activities on the public lands, an action that the BLM has interpreted as a license to ignore the rules governing the use of categorical exclusions put in place by both the Council on Environmental Quality (CEQ) and the Department of the Interior. This issue is the subject of the remainder of this statement.

Sec. 390 (42 U.S.C. 15942) of the Energy Policy Act of 2005 provided the following:

> (a) NEPA REVIEW.—Action by the Secretary of the Interior in managing the public lands, or the Secretary of Agriculture in managing National Forest System Lands, with respect to any of the activities described in subsection (b) shall be subject to a rebuttable presumption that the use of a categorical exclusion under the National Environmental Policy Act of 1969 (NEPA) would apply if the activity is conducted pursuant to the Mineral Leasing Act for the purpose of exploration or development of oil or gas.
> (b) ACTIVITIES DESCRIBED.—The activities referred to in subsection (a) are the following:
> (1) Individual surface disturbances of less than 5 acres so long as the total surface disturbance on the lease is not greater than 150 acres and site-specific analysis in a document prepared pursuant to NEPA has been previously completed.
> (2) Drilling an oil or gas well at a location or well pad site at which drilling has occurred previously within 5 years prior to the date of spudding the well.
> (3) Drilling an oil or gas well within a developed field for which an approved land use plan or any environmental document prepared pursuant to NEPA analyzed such drilling as a reasonably foreseeable activity, so long as such plan or document was approved within 5 years prior to the date of spudding the well.
> (4) Placement of a pipeline in an approved right-of-way corridor, so long as the corridor was approved within 5 years prior to the date of placement of the pipeline.
> (5) Maintenance of a minor activity, other than any construction or major renovation or a building or facility.

Though an improvement over the 2005 House bill's original language, which broadly exempted various oil and gas activities on public lands from compliance with the NEPA entirely, Sec. 390 was almost immediately interpreted by the BLM as exempting the agency from having to comply with existing CEQ and Interior Department rules governing the application of categorical exclusions. According to a September 30, 2005 BLM "Instruction Memorandum":

> "...the CXs established by Section 390 are not subject to the requirement in 40 C.F.R. 1507.3 that would preclude their use when there are extraordinary circumstances. This is because the CXx addressed in this guidance are established by statute and not under the CEQ procedures pursuant to 40 CFR 1507.3 and 1508.4." (BLM IM No. 2005-247, Attachment 2, p. 1, September 30, 2005, excerpt attached)

The CEQ regulations implementing NEPA created and defined the concept of "categorical exclusions" – there is no reference in the statute itself to this concept. Significantly, CEQ's regulations defined the term "categorical exclusion" to incorporate the concept of "extraordinary circumstances", which if present, precluded the use of a categorical exclusion:

> "Categorical exclusion means a category of actions which do not individually or cumulatively have a significant effect on the human environment and which have been found to have no such effect in procedures adopted by a Federal agency in implementation of these regulations (sec. 1507.3) and for which, therefore, neither an environmental assessment nor an environmental impact statement is required. An agency

> may decide in its procedures or otherwise, to prepare environmental assessments for the reasons stated in sec. 1508.9 even though it is not required to do so. *Any procedures under this section shall provide for extraordinary circumstances in which a normally excluded action may have a significant environmental affect.* (40 C.F.R. 1508.4, emphasis added)

The Department of the Interior's Departmental Manual, with which the BLM is obligated to comply, paraphrases CEQ's definition of categorical exclusion, and references the concept of extraordinary circumstances that may preclude their use, as follows:

> Categorical exclusions are defined as a group of actions that would have no significant individual or cumulative effect on the quality of the human environment and, *for which in the absence of extraordinary circumstances,* neither an environmental assessment nor an environmental impact statement is required. (Department of the Interior *Departmental Manual* at 516 DM 2.3 A.(1), cited in 69 *Fed. Reg.* 10876, March 8, 2004, emphasis added)

A listing of "extraordinary circumstances" that, if present, would preclude the use of a categorical exclusion is found in the Departmental Manual at Chapter 2; Appendix 2, and includes the following examples: actions which may have significant impacts on health and safety; sole or principal drinking water aquifers; wetlands; migratory birds; cultural resources, Indian sacred sites; threatened and endangered species habitat; and ecologically significant or critical areas. (Department of the Interior *Departmental Manual* Chapter 2; Appendix 2, cited in 69 *Fed. Reg.* 10878, March 8, 2004, excerpt attached)

When The Wilderness Society raised objections to the BLM's interpretation of Section 390 of EPACT in correspondence dated December 1, 2005, we received a response from BLM Director Clarke, dated December 30, 2005, stating that:

> "In the near future, the BLM plans to publish in the Federal Resister a request for public comments on the proposed final regulations for Onshore Oil and Gas Operations, Onshore Order No. 1, Approval of Operations. These proposed regulations will address the categorical exclusions adopted in the Energy Policy Act of 2005." (Letter from Kathleen Clarke, Director, BLM, to Nada Culver, The Wilderness Society, December 30, 2005, attached)

We had hoped that publication of the BLM's interpretation of their Section 390 authority in a formal rulemaking procedure would afford the public an opportunity to express our views on their defective interpretation of the statute. However, when the BLM published its proposed changes to Onshore Order #1 on March 13, 2006, no language was included addressing the implementation of Sec. 390, as Director Clarke had promised in her December 30, 2005 letter.

At a subsequent meeting between officials of the BLM and Department of the Interior Solicitor's Office on May 11, 2006, I reiterated The Wilderness Society's position that the BLM was obligated to issue formal rules implementing their interpretation of Sec. 390 of EPACT, and that the BLM was obligated to comply with both the existing CEQ

and Interior Department rules governing the application of Section 390 categorical exclusions to oil and gas drilling projects on public lands. In correspondence dated May 16, 2006, the BLM reiterated its intention to rely on the interpretation of Sec. 390 first enunciated in IM # 2005-247 (quoted above), and therefore to ignore existing CEQ and Interior Department rules in this regard. (Letter from Mr. Tom Lonnie, Assistant Director, BLM, to David Alberswerth, The Wilderness Society, May 16, 2006, attached)

The BLM's position that Section 390 of EPACT exempted them from existing federal rules governing the application of categorical exclusions also has been challenged by Senator Jeff Bingaman, Chairman of the Senate Energy and Natural Resources Committee in a letter to Interior Secretary Dirk Kempthorne dated March 14, 2007. Senator Bingaman stated in his letter to Secretary Kempthorne that he was, "...disturbed that BLM's interpretation of Section 390 does not provide for further environmental analysis of situations that present extraordinary circumstances. It is, of course, a fundamental rule of statutory construction that where Congress borrows a term of art in which there is an understood legal meaning, it presumably knows and adopts the meaning. Morisette v. United States 342 U.S. 246,263 (1952)." (Letter from Senator Jeff Bingaman to Secretary Dirk Kempthorne, March 14, 2007, attached)

This abuse of its statutory responsibility to implement Section 390 in accordance with this "fundamental rule of statutory construction" has led to an industry shopping spree for categorical exclusions. BLM data apparently indicates that during the course of FY 2006 and some portion of FY 2007 in excess of 2000 new drilling permits were issued on BLM lands on the basis of Sec. 390 categorical exclusions and in the absence of any determination of whether extraordinary circumstances were present (See "Section 390 Categorical Exclusion Tracking," BLM document, 2007, attached). Unknown is whether issuance or these drilling permits will have or have had adverse impacts on health and safety, drinking water supplies, sensitive environmental resources, threatened or endangered species or ecologically significant or critical areas.

Fortunately, the House of Representatives has recognized the obvious problems posed by this "don't ask, don't tell" management philosophy with respect to the granting of categorical exclusions to the oil and gas industry pursuant to Sec. 390 of EPACT, and under the leadership of Chairman Rahall of the House Natural Resources Committee has included Section 7104 into H.R. 3221. Hopefully the Senate will follow the House's lead in clarifying for the BLM that Congress intends for it to follow the law and existing regulations in implementing Sec. 390 of EPACT.

It is unfortunate that in the absence of such direction, the BLM is likely to keep handing out drilling permits to operators on public lands without the appropriate environmental scrutiny that the law requires. I think it is safe to predict that in the future, we will discover that significant damage was done to wildlife habitat, cultural resources, and water supplies, and that other avoidable problems resulted from the Bush Administration's refusal to take seriously its responsibly to protect those values and resources from the damage that can be and is being inflicted by irresponsible oil and development on our public lands.

UNITED STATES DEPARTMENT OF THE INTER
BUREAU OF LAND MANAGEMENT
WASHINGTON, D.C. 20240

September 30, 2005

EMS TRANSMISSION 09/30/2005
Instruction Memorandum No. 2005-247
Expires: 09/30/2006

To: All Field Officials

From: Director

Subject: National Environmental Policy Act (NEPA) Compliance for Oil, Gas, and Geothermal Development

Program Areas: Oil, Gas, and Geothermal Exploration and Operations; Lands and Realty (energy-related rights-of-way); Environmental Coordination.

Purpose: This Instruction Memorandum (IM) provides guidance for improved NEPA compliance in oil, gas, and geothermal exploration and development operations on public lands. It specifically provides instructions for developing a range of reasonable alternatives in environmental impact statements (EIS) for oil, gas, and geothermal development projects; interim guidance on the application and use of statutory NEPA categorical exclusions (CX), as granted in Section 390 of the Energy Policy Act of 2005, for oil and gas exploration and development; expanded use of multiple well environmental assessments (EA) and EISs; expanded use of the Documentation of NEPA Adequacy (DNA); and consideration and application of Best Management Practices (BMP).

Background: Section 390 of the Energy Policy Act of 2005 (the "Act") established five new statutory NEPA CXs. These exclusions are different in several respects from those historically used by the Bureau.

Additionally, the increasing number of approved and anticipated oil, gas, and geothermal projects on public lands, and the increase in the number, complexity, and controversy of EISs and other NEPA analyses associated with exploration and development of oil, gas, and geothermal resources, has prompted the need for additional national guidance.

Policy/Action: Field Offices are directed to incorporate the following NEPA procedures

when analyzing and reviewing oil, gas, geothermal, and energy-related projects. This interim policy is in effect until Departmental Manuals, BLM Manuals, and/or BLM Handbooks are revised or additional guidance is issued.

Range of Alternatives

Departmental Manuals, guidance from the Council on Environmental Quality (CEQ), and BLM Handbooks contain guidance for developing a range of reasonable alternatives in NEPA documents. Additional guidance for developing a range of reasonable alternatives for oil, gas, and geothermal development EISs is contained in Attachment 1. The attached guidance applies to all EISs that have not as yet progressed beyond publication of a draft document, and strong consideration should be given to those documents in the final preparation stages (final EIS), but have not been approved for publication. Environmental Assessments are not addressed by the policy contained within Attachment 1.

Section 390 Categorical Exclusions (CX)

Section 390 of the Energy Policy Act of 2005 established five new statutory CXs that apply only to oil and gas exploration and development (the CXs do not apply to geothermal actions). These CXs are different in application from the CXs previously used by the BLM, and are further described in Attachment 2.

Until further guidance is issued, the guidance in Attachment 2 is to be carefully followed to assure accurate and consistent application of the new CXs.

Field Offices shall maintain a structured, multi- or interdisciplinary permit review and approval process, conduct onsite exams for 100 percent of proposed well and road locations, and shall apply appropriate mitigation and BMPs to all permitted actions, in accordance with existing land use plans, full field development EIS, and other pertinent NEPA documents, even when actions are approved through the use of Section 390 CXs.

Multiple Well EA/EIS

An EA or EIS prepared for development of two or more oil, gas, or geothermal wells provides substantial time savings over writing individual EAs or EISs for each well approval and generally results in improved impact analysis.

Effective immediately, all BLM Offices will address multiple proposed activities (e.g. multiple wells within a field) through a single NEPA action, whenever practical (Attachment 3 provides specific guidance).

Documentation of NEPA Adequacy (DNA)

The appropriate use of DNAs for oil, gas and geothermal operations is to be expanded in all Field Offices (Attachment 4 and WO IM 2001-162 provide detailed guidance).

Tracking

The use of Section 390 CXs is to be tracked and tabulated for Fiscal Year 2006 on the table in Attachment 5. If any Section 390 CXs were approved during Fiscal Year 2005, add them into the Fiscal Year 2006 table. Maintain the table in each Field Office as a reference for addressing future CX data calls.

Timeframe: Implement immediately.

Budget Impact: Full implementation of these policies is expected to provide substantial savings in staff time and budget associated with approval of APDs and related realty actions.

Manual/Handbook Sections Affected: NEPA Handbook H-1790-1.

Coordination: Coordination occurred among the Washington Office Fluid Minerals Group; Planning, Assessment and Community Support Group; Land and Realty Group; and Office of the Solicitor – Department of the Interior.

Contact: Please direct any questions to Tom Hare, Washington Office Fluid Minerals Group (WO-310), at (202) 452-5182 or tom_hare@blm.gov, Jordon Pope, Washington Office Planning, Assessment and Community Support Group (WO-210), at (202) 452-5048 or mailto:jordan_pope@blm.gov, Ron Montagna, Lands and Realty Group (WO-350), at (202) 452-7782 or ron_montagna@blm.gov .

Signed by:
Kathleen Clarke
Director

Authenticated by:
Barbara J. Brown

5 Attachments
1 – Developing a Range of Reasonable Alternatives in Oil, Gas, and Geothermal Exploration and Development Environmental Impact Statements (EIS) (3 pp)
2 – Use of Section 390 Categorical Exclusions for Oil and Gas Development (5 pp)
3 – Use of Multiple Well Environmental Assessments (EA) or Environmental Impact Statements (EIS) for Oil and Gas Development (1 p)
4 – Use of Documentation of Land Use Plan Conformance and National Environmental Policy Act (NEPA) Adequacy (DNA) (1 p)
5 – Section 390 Categorical Exclusion Tracking Log (1 p)

Attachment 2

Use of Section 390 Categorical Exclusions for Oil and Gas Development

Section 390 of the Energy Policy Act of 2005 (the "Act") establishes statutory categorical exclusions (CX) under the National Environmental Policy Act (NEPA) that apply to five categories of oil and gas exploration and development on Federal oil and gas leases. Section 390 does not apply to geothermal leases. This section of the Act took effect on the date of enactment, August 8, 2005.

The use of the new statutory CXs is not dependent on the Council for Environmental Quality (CEQ) process for approving new CXs. Additionally, the CXs established by Section 390 are not subject to the requirement in 40 CFR 1507.3 that would preclude their use when there are extraordinary circumstances. This is because the CXs addressed in this guidance are established by statute and not under the CEQ procedures pursuant to 40 CFR 1507.3 and 1508.4.

This guidance provides direction to the Field and State Offices on the immediate implementation of this new authority. This is interim guidance and may be modified when BLM promulgates a revision to Onshore Oil and Gas Order No. 1.

The law prescribes that for five categories of oil and gas operations, applicability of the Section 390 categorical exclusions is presumed, but subject to rebuttal. The five categories are:

1. *Individual surface disturbances of less than five (5) acres so long as the total surface disturbance on the lease is not greater than 150 acres and site-specific analysis in a document prepared pursuant to NEPA has been previously completed.*
2. *Drilling an oil and gas location or well pad at a site at which drilling has occurred within five (5) years prior to the date of spudding the well.*
3. *Drilling an oil or gas well within a developed field for which an approved land use plan or any environmental document prepared pursuant to NEPA analyzed drilling as a reasonably foreseeable activity, so long as such plan or document was approved within five (5) years prior to the date of spudding the well.*
4. *Placement of a pipeline in an approved right-of-way corridor, so long as the corridor was approved within five (5) years prior to the date of placement of the pipeline.*
5. *Maintenance of a minor activity, other than any construction or major renovation o(f) a building or facility.*

In reviewing an Application for Permit to Drill (APD), Surface Use Plan of Operations, or pipeline application involving a proposed activity that fits into one of the above-described five categories, the appropriate CX is to be applied, and it may be presumed that no further NEPA analysis is required. Specifically, if one or more of five statutorily-created CXs applies to a proposed activity, Field Officials are not to use the existing CX review process or

lands unlikely to recover to a management approved condition from wildland fire damage, or to repair or replace minor facilities damaged by fire. Such activities: Shall be conducted consistent with agency and Departmental procedures and applicable land and resource management plans; Shall not include the use of herbicides or pesticides or the construction of new permanent roads or other new permanent infrastructure; and Shall be completed within three years following a wildland fire.[6]

CHAPTER 2; APPENDIX 2

Categorical Exclusions: Extraordinary Circumstances

Extraordinary circumstances exist for individual actions within CXs which may:

2.1 Have significant impacts on public health or safety.

2.2 Have significant impacts on such natural resources and unique geographic characteristics as historic or cultural resources; park, recreation or refuge lands; wilderness areas; wild or scenic rivers; national natural landmarks; sole or principal drinking water aquifers; prime farmlands; wetlands (Executive Order 11990); floodplains (Executive Order 11988); national monuments; migratory birds; and other ecologically significant or critical areas.

2.3 Have highly controversial environmental effects or involve unresolved conflicts concerning alternative uses of available resources [NEPA section 102(2)(E)].

2.4 Have highly uncertain and potentially significant environmental effects or involve unique or unknown environmental risks.

2.5 Establish a precedent for future action or represent a decision in principle about future actions with potentially significant environmental effects.

2.6 Have a direct relationship to other actions with individually insignificant but cumulatively significant environmental effects.

2.7 Have significant impacts on properties listed, or eligible for listing, on the National Register of Historic Places as determined by either the bureau or office.

2.8 Have significant impacts on species listed, or proposed to be listed, on the List of Endangered or Threatened Species, or have significant impacts on designated Critical Habitat for these species.

2.9 Violate a Federal law, or a State, local, or tribal law or requirement imposed for the protection of the environment.

2.10 Have a disproportionately high and adverse effect on low income or minority populations (Executive Order 12898).

2.11 Limit access to and ceremonial use of Indian sacred sites on Federal lands by Indian religious practitioners or significantly adversely affect the physical integrity of such sacred sites (Executive Order 13007).

2.12 Contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area or actions that may promote the introduction, growth, or expansion of the range of such species (Federal Noxious Weed Control Act and Executive Order 13112).

[6] Ibid.

Department of the Interior—Departmental Manual

Effective Date:
Series: Environmental Quality.
Part 516: National Environmental Policy Act of 1969.
Chapter 3: Environmental Assessments.
Originating Office: Office of Environmental Policy and Compliance.

516 DM 3

3.1 Purpose

This Chapter provides supplementary instructions for implementing those portions of the CEQ Regulations pertaining to EAs.

3.2 When To Prepare (40 CFR 1501.3)

A. An EA will be prepared for all actions, except those covered by a categorical exclusion, those covered sufficiently by an earlier environmental document, or those actions for which a decision has already been made to prepare an EIS. The purpose of an EA is to allow the responsible official to determine whether to prepare an EIS or a FONSI.

B. In addition, an EA may be prepared on any action at any time in order to assist in planning and decision making, to aid an agency's compliance with NEPA when no EIS is necessary, or to facilitate EIS preparation.

3.3 Public Involvement

A. The public must be provided notice of the availability of EAs (40 CFR 1506.6).

B. Where appropriate, bureaus and offices, when conducting the EA process, shall provide the opportunity for public participation and shall consider the public comments on the pending plan or program.

C. The scoping process may be applied to an EA (40 CFR 1501.7).

3.4 Content

A. At a minimum, an EA will include brief discussions of the proposal, the need for the proposal, alternatives [as required by section 102(2)(E) of NEPA], the environmental impacts of the proposed action and such alternatives, and a listing of agencies and persons consulted [1508.9(b)].

B. In addition, an EA may describe a broader range of alternatives and proposed mitigation measures to facilitate planning and decision making.

C. The level of detail and depth of impact analysis should normally be limited to the minimum needed to determine whether there would be significant environmental effects.

D. An EA will contain objective analyses that support its environmental impact conclusions. It will not conclude whether an EIS will be prepared. This conclusion will be made upon review of the EA by the responsible bureau official and documented in either a NOI or a FONSI.

E. Previous NEPA analyses should be used in a tiered analysis or transferred and used in a subsequent analysis to enhance the content of an EA whenever possible.

3.5 Format

A. An EA may be prepared in any format useful to facilitate planning, decision making, and appropriate public participation.

B. An EA may be combined with any other planning or decision making document; however, that portion which analyzes the environmental impacts of the proposal and alternatives will be clearly and separately identified and not spread throughout or interwoven into other sections of the document.

3.6 Adoption

A. An EA prepared for a proposal before the Department by another agency, entity, or person, including an applicant, may be adopted if, upon independent evaluation by the responsible official, it is found to comply with this Chapter and relevant provisions of the CEQ Regulations.

B. When appropriate and efficient, a responsible official may augment such an EA when it is essentially, but not entirely, in compliance, in order to make it so.

C. If such an EA is adopted or augmented, responsible officials must prepare their own NOI or FONSI that acknowledges the origin of the EA and takes full responsibility for its scope and content.

D. Adoption or augmentation of an EA shall receive the same public participation that the EA would have received if it had originated with the adopting or augmenting bureau or office.

Department of the Interior—Departmental Manual

Effective Date:
Series: Environmental Quality.
Part 516: National Environmental Policy Act of 1969.
Chapter 4: Environmental Impact Statements.
Originating Office: Office of Environmental Policy and Compliance.

516 DM 4

4.1 Purpose

This chapter provides supplementary instructions for implementing those

United States Department of the Interior
BUREAU OF LAND MANAGEMENT
Washington, D.C. 20240
http://www.blm.gov

TAKE PRIDE IN AMERICA

DEC 30 2005

Ms. Nada Culver
The Wilderness Society
1660 Wynkoop Street, Suite 850
Denver, Colorado 80202

Dear Ms. Culver:

Thank you for your letters of November 29, 2005, to Bureau of Land Management (BLM) State Directors and your letter of December 1, 2005, to me regarding your concern with BLM Instruction Memorandum 2005-247, specifically Attachment 1, Developing a Range of Reasonable Alternatives, and Attachment 2, Use of Section 390 Categorical Exclusions.

In the near future, the BLM plans to publish in the Federal Register a request for public comments on the proposed final regulations for Onshore Oil and Gas Operations, Onshore Order No. 1, Approval of Operations. These proposed regulations will address the categorical exclusions adopted in the Energy Policy Act of 2005.

We encourage you to submit your comments to our Washington, D.C., office when the proposed rulemaking appears in the Federal Register. Regarding your request to meet with me, please contact Lynn Cook at (202) 208-3801 to schedule an appointment.

Thank you for your interest in the management of our public lands.

Sincerely,

Kathleen Clarke
Director

December 1, 2005

Via Facsimile (202-208-5242) and U.S. Mail

Kathleen Clarke, Director
Bureau of Land Management
U.S. Department of the Interior Mail Stop 5655MIB
1849 C Street NW
Washington, DC 20240

Dear Director Clarke:

I am writing to convey our concerns with Instruction Memorandum (IM) No. 2005-247 recently issued by the BLM, as well as provide some specific recommendations as to how the BLM can address these concerns. The Wilderness Society has also communicated with other BLM State and Field Offices that may be implementing this IM and we hope that your office can both respond to our letter and provide necessary clarification to the agency.

Although this IM was issued with the stated purpose of providing guidance on NEPA compliance in oil, gas and geothermal exploration and operations, we believe that there are significant questions as to the legal validity of some of the guidance contained in the IM. In addition, the manner in which this guidance can or should be applied must be limited based on both legal and practical considerations. Taken as a whole, the IM provides direction to encourage more intensive development while at the same time avoiding site-specific NEPA analysis that is even more important for larger projects. This worrisome direction is presented in guidance on the range of management alternatives to be considered, the application of new categorical exclusions, and the consideration of environmental analysis for multiple-well projects, as discussed below.

1. Range of Alternatives: The IM appears to direct BLM to come up with its own alternatives that analyze the impacts of *higher well density and development levels beyond the proposed action* in order to facilitate the use of the new categorical exclusions (CXs) from the recent Energy Policy Act of 2005 ("Energy Bill"). The Council for Environmental Quality and the courts have found that the purpose of the National Environmental Policy Act's (NEPA) requirement to consider a range of alternatives to the proposed action is to ensure that agencies truly consider other courses of action and that those include *more ecologically sound options – not* to encourage more damaging options or to try to avoid NEPA compliance. *See,* Envnt'l Defense Fund., Inc. v. U.S. Army Corps. of Eng'rs, 492 F.2d 1123, 1135 (5th Cir. 1974) (The purpose of NEPA's alternatives requirement is to ensure agencies do not undertake projects "without intense consideration of other more ecologically sound courses of action, including shelving the entire project, or of accomplishing the same result by entirely different means."); City of New York v. Department of Transp., 715 F.2d 732, 743 (2nd Cir. 1983) (NEPA's requirement for consideration of a range of alternatives is intended to prevent

the EIS from becoming "a foreordained formality."); *see also*, Davis v. Mineta, 302 F.3d 1104 (10th Cir. 2002). The Federal Land Policy and Management Act (FLPMA), which governs BLM, specifically, also obligates that agency to minimize adverse impacts on the many other resources of the public lands and avoid damage that is not necessary. 43 U.S.C. § 1732(d)(2)(a); 43 U.S.C. § 1732(b). As a result, directing BLM to actively develop and impose more environmentally damaging alternatives could violate both of these laws.

2. New CXs:

a. Rebuttable Presumption/Extraordinary Circumstances: The IM states that these CXs are not subject to the standard exemption for "extraordinary circumstances," but we believe that BLM cannot and should not ignore the need not to apply CXs guidance where there is a risk of significant impacts, such as where environmental effects are highly controversial or unknown. The Energy Bill does not specifically exempt these CXs from the operation of other laws which could otherwise limit their application and, instead, imposed a "rebuttable presumption" that certain actions might qualify for a CX, which implies that a process exists for rebutting this presumption – which is the process prescribed by the "extraordinary circumstances" exception. This approach is required by NEPA regulations (at 40 C.F.R. § 1507.3 and 1508.4) and elaborated upon in the Department Manual (Part 516 on NEPA).

The Energy Bill imposed a "rebuttable presumption" that certain actions might qualify for a CX, thereby implying that there must be some way for the presumption to be rebutted. This is exactly the process set out in 40 C.F.R. §§ 1507.3 and 1508.4 and addressed in the Department of Interior's Manual: the agency must prepare an environmental assessment where "extraordinary circumstances" are present, notwithstanding categories of activities for which CXs are typically appropriate. Congress could have done away with this provision, but it did not. The BLM is not free to ignore the "rebuttable presumption" language, because to do so would construe the statute to deny that every word has operative effect. U.S. v. Nordic Village, 503 U.S. 30, 36 (1992). The BLM must interpret the statute to give effect to all provisions. Quarles v. U.S. ex rel. Bureau of Indian Affairs, 372 F.3d. 1169, 1172 (10th Cir. 2004) (citations omitted); *see also*, Biodiversity Legal Foundation v. Badgley, 309 F.3d 1166, 1175 (9th Cir. 2002), *citing* Colautti v. Franklin, 439 U.S. 379, 392 (1979).

b. Mineral Leasing Act Compliance: Section 390 of the Energy Bill, by its terms, specifically applies "if the activity is conducted pursuant to the Mineral Leasing Act for the purpose of exploration or development of oil and gas." Consequently, use of the new CXs is specifically tied to continued compliance with the provisions of the Mineral Leasing Act, which contains important requirements for public involvement and oversight of development. The Mineral Leasing Act specifically requires BLM to "provide notice" at least 30 days before approving APDs, "in addition to any public notice required under other law," which also contemplates the continued applicability of the public notice provisions of NEPA. 30 U.S.C. § 226(f). The Mineral Leasing Act also requires BLM to oversee and manage drilling and ongoing operations, mandating that the agency:

- "*regulate all surface-disturbing activities* conducted pursuant to any lease";
- "*determine reclamation* and other actions as required in the interest of *conservation of surface resources*;"
- *analyze and approve plans of operations* for proposed surface-disturbing activities; and

- ensure there are adequate financial arrangements in place "to ensure the *complete and timely reclamation* of the lease tract, and the *restoration of any lands or surface waters* adversely affected by lease operations after the abandonment or cessation of oil and gas operations on the lease."

30 U.S.C. § 226(g) (emphasis added). These provisions of the Mineral Leasing Act obligate BLM to provide public notice and assess potential impacts of surface-disturbing activities on leases, even if the agency improperly concludes that it is not required to do so by NEPA in light of the new CXs.

Because the IM seeks to disregard the extraordinary circumstances exception (and ignores its implication in the rebuttal presumption language as highlighted above), does not clarify the other actions needed to comply with Mineral Leasing Act, and also fails to mention the possibility that the application of other laws (such as the Endangered Species Act or National Historic Preservation Act) could prevent application of the CXs, we believe that the approach to using the CXs set out in IM 2005-047 is legally questionable, at best. Accordingly, we would caution against proceeding to apply CXs without taking into account whether circumstances or other laws would counsel against their application.

3. Multiple Well EAs/EISs: This section of the IM directs BLM to complete an "umbrella analysis" for an estimated number of wells and geographic area, which would purportedly make additional NEPA documentation for future applications for permits to drill or related rights-of-way unnecessary and facilitate more use of the new CXs. The IM states that this approach will "facilitate improved assessment of cumulative impacts." While we certainly support a clear definition of projects and thorough analysis of their potential impacts prior to approval, this approach will not obviate the need to complete broader analyses on subsequent activities unless the project-level and/or plan of development analysis take into account site-specific impacts.

4. Existing Commitments to Site-specific Analysis: Many existing NEPA documents include definitive commitments to conduct site-specific NEPA analyses when APDs are filed, based on equally specific deferrals of any site-specific analyses until an APD for an individual well in an identified location more specific proposal is submitted. In fact, RMPs and project-level EISs often state that site-specific analysis in not possible until a particular well is proposed. BLM must abide by these commitments.

Neither the provisions of the Energy Bill nor IM 2005-247 have retroactive effect and can relieve BLM of its commitments. FLPMA's requirement for actions to comply with existing land use plans also binds BLM to complete such analysis. 43 U.S.C. § 1732. Furthermore, by explicitly acknowledging the need for additional, site-specific NEPA analysis and previously committing to perform such analysis, BLM has already provided any needed "rebuttal" to the presumption that a categorical exclusion may apply. Having already determined that further NEPA analysis will be required and will be undertaken, it would be arbitrary and capricious for BLM to claim no such analysis is now required. We consider BLM's previous commitments to conduct site-specific analysis at later stages for leasing, project development or individual APDs to be binding and enforceable.

5. Best Management Practices: The range of alternatives and multiple-well analysis portions of the IM both contain guidance that is consistent with the requirements and underlying policy of NEPA and FLPMA, by directing BLM to develop and analyze alternatives that would reduce impacts. The IM specifically requires BLM to consider imposing best management practices (BMPs) and look to the techniques and technologies to reduce impacts and costs used in other field offices. This approach also implements BLM's previous commitments to using BMPs for development projects. *See* IM No. 2004-194; *see also* Surface Operating Standards for Oil and Gas Exploration and Development – the "Gold Book" (Fourth Edition 2005).

We would also note that the guidance recently issued by the BLM's Farmington, New Mexico, Field Office (IM-NM-200-2006-002), underscores the many challenges inherent in applying IM 2005-047. The Farmington Field Office's guidance explicitly recognizes the substantial amount of information needed to meet the standards for applying the new CXs, the continuing application of other legal requirements (Endangered Species Act, National Historic Protection Act, Clean Air Act, Clean Water Act) and that there are situations where the CXs should not even be considered (such as ACECs).

As noted in IM 2005-247, it is "easier to compare the impact reduction from best management practices when applied over a larger area for multiple wells." We support and encourage BLM carrying out a commitment to thoroughly assess the direct, indirect and cumulative impacts of proposed development projects on a landscape level, performing this analysis prior to authorizing development, and requiring the application of BMPs to a broad range of activities. Such an approach would not only permit better protection of the multiple resources managed by BLM, but also could reduce conflicts (including formal opposition). Therefore, we would recommend that BLM focus on the opportunities to fulfill its obligation to develop less damaging alternatives and fully implement the many proven BMPs, such as directional drilling, drilling multiple wells from a pad and interim reclamation.

We would like to meet with you to discuss our concerns with IM 2005-247 and our proposed response, and are available at your convenience.

Sincerely,

Nada Culver
Senior Counsel, Public Lands Campaign
BLM Action Center
(303) 650-5818 Ext. 117

cc: Jim Hughes, Deputy Director (Fax: 202-208-5242)
Larry Benna, Deputy Director (Fax: 202-208-5242)
Tom Lonnie, Assistant Director, Minerals, Realty & Resource Protection
(Fax: 202-208-4800)

United States Department of the Interior
BUREAU OF LAND MANAGEMENT
Washington, DC 20240
http://www.blm.gov

TAKE PRIDE IN AMERICA

In Reply Refer To:
3152/3153 (300)

MAY 16 2006

Mr. David Alberswerth
Senior Policy Advisor
The Wilderness Society
1615 M Street, NW
Washington, D.C. 20036

Dear Mr. Alberswerth:

Thank you for meeting with us on May 11, 2006, to discuss your thoughts on the Bureau of Land Management's implementation of section 390 of the Energy Policy Act, which established several categorical exclusions (CX) for actions associated with the exploration and development of oil and gas. In particular, you expressed concern about our interpretation that the application of the statutory CXs is not subject to review for "extraordinary circumstances," such as the presence of threatened or endangered species.

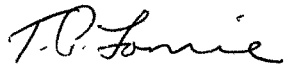
We appreciate your acknowledgment that the absence of legislative history has not simplified our effort to faithfully implement section 390. While we understand that Congress wanted BLM to streamline its process for issuance of drilling permits where prior environmental documentation made it unnecessary to repeat that effort, reducing documentation need not mean a reduction in the protection afforded the environment.

We clarified for you that BLM does not interpret our policy on CXs to modify BLM's obligations under any statute other than NEPA. BLM fully complies with the Endangered Species Act, the National Historic Preservation Act and all other statutes. Further, the last paragraph of Attachment 2 to the September 30, 2005 I.M. makes it clear that "Field offices must apply the same or better mitigating measures considered in the parent NEPA documents to all actions approved under any CX."

We understand your concern that there be an opportunity for rebutting the presumption that a statutory categorical exclusion applies. You may seek to do so when BLM posts an APD for thirty days after receipt. If BLM concurs with you that the CX does not apply, it will prepare an EA. If it does not concur, then the usual procedures for administrative review and judicial appeal are available to pursue rebuttal.

It is not our intention to pursue this subject in the context of the current revision to Onshore Order No. 1, but we will consider your comments on CXs filed in that rulemaking as well as your several letters as we respond to inquiries from our field offices about these CXs.

Sincerely,



Thomas P. Lonnie
Assistant Director
Minerals, Realty and Resource Protection

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United States Senate
COMMITTEE ON
ENERGY AND NATURAL RESOURCES
WASHINGTON, DC 20510-6150
ENERGY.SENATE.GOV

March 14, 2007

The Honorable Dirk Kempthorne
Secretary
U.S. Department of the Interior
1849 C Street, N.W.
Washington, D.C. 20240

Dear Secretary Kempthorne:

I reviewed with interest the resolution adopted by the Western Governors' Association, requesting that Congress repeal the provisions of the Energy Policy Act of 2005 (EPAct) that provide for the use of categorical exclusions with respect to certain oil and gas activities on lands with important wildlife values. I share the concerns of the Western Governors with respect to this provision and its implementation by the Bureau of Land Management (BLM).

Section 390 of EPAct established a "rebuttable presumption that the use of a categorical exclusion under the National Environmental Policy Act of 1969 (NEPA) would apply" to five types of activities relating to the exploration and development of oil and gas on public lands. The BLM has issued an Instruction Memorandum that provides that these categorical exclusions are not subject to the long-standing requirements in the Council of Environmental Quality (CEQ) regulations and the Department of the Interior's own NEPA rules codified in the Departmental Manual that situations presenting "extraordinary circumstances" not be subject to in-depth environmental analysis.

Given that this interpretation of "categorical exclusion" was in effect at the time that section 390 was enacted, I am disturbed that BLM's implementation of section 390 does not provide for further environmental analysis of situations that present extraordinary circumstances. It is, of course, a fundamental rule of statutory construction that where Congress borrows a term of art in which there is an understood legal meaning, it presumably knows and adopts the meaning. Morisette v. United States, 342 U.S. 246, 263 (1952).

The Western Governors' action highlights the adverse impact that section 390 can have on lands with high wildlife values. Please provide me with an explanation of BLM's rationale for its interpretation of section 390, especially with respect to cases that present extraordinary circumstances, together with any legal analysis that has been undertaken by the Department supporting this interpretation. Please also provide information on the number of categorical exclusions provided as a result of this provision by State. Finally, I also request that you review

implementation of the section with respect to all federal lands and provide me with your views as to whether any oil and gas operations are proceeding without adequate environmental analysis as a result of section 390.

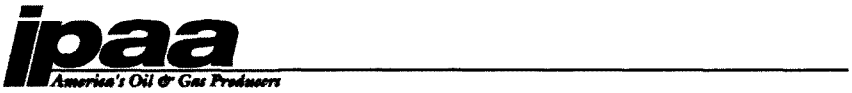
Sincerely,

Jeff Bingaman
Chairman

Section 390 Categorical Exclusion Tracking FY 2006 to Mid Year FY 2007

State	Field Office	< 5 Acres	Same Pad	RFD/ Developed Field	Pipeline Corridor	Maintenance	Total
AK	Anchorage	0	0	0	0	0	0
		0	0	0	0	0	0
CA	Bakersfield	8	0	44	0	0	52
		0	0	0	0	0	0
CO	Canon City	0	0	2	0	0	2
	Craig/Kremm	2	2	0	3	0	7
	Durango	0	0	0	1	0	1
	Grand Junct	2	2	9	2	1	16
	Meeker	2	3	4	5	0	14
	Glenwood S	6	16	12	11	0	45
	Uncompahgr	1	0	0	0	0	1
	Colorado	13	23	27	22	1	86
		0	0	0	0	0	0
ES	Jackson	0	28	1	0	0	29
	Milwaukee	0	0	3	0	0	3
	Eastern Stat	0	1	1	0	0	2
		0	0	0	0	0	0
MT	Dickinson	0	0	30	0	0	30
	Great Falls	1	0	0	1	0	2
	Miles City	0	0	0	0	0	0
	Montana	1	0	30	1	0	32
		0	0	0	0	0	0
NV	Reno	1	3	0	0	0	4
		0	0	0	0	0	0
NM	Carlsbad	0	12	0	7	0	19
	Farmington	10	0	764	0	0	774
	Hobbs	0	0	0	3	0	3
	Rio Puerco	0	0	0	0	0	0
	Roswell	0	0	0	0	0	0
	Tulsa	0	0	0	0	0	0

	New Mexico	10	12	764	10	0	796
		0	0	0	0	0	0
UT	Price	27	8	8	0	0	43
	Salt Lake	0	0	1	0	0	1
	Vernal	24	27	341	11	0	403
	Moab	0	0	0	0	0	0
	Utah	51	35	350	11	0	447
		0	0	0	0	0	0
WY	Buffalo	21	133	17	3	4	178
	Casper	12	0	126	0	2	140
	Rock Spring	0	0	41	0	0	41
	Kemmerer	22	0	0	0	0	22
	Lander	0	2	0	8	2	12
	Newcastle	0	0	0	0	0	0
	Pinedale	11	220	229	0	3	463
	Rawlins	86	7	7	0	0	100
	Worland/Coo	28	0	0	0	0	28
	Wyoming	180	362	420	11	11	984
		0	0	0	0	0	0
	Nationwide	264	463	1639	55	12	2433



Testimony

Of

The

Independent Petroleum Association of America

Before The

Committee on Oversight and Government Reform

U.S. House of Representatives

October 31, 2007

Hearing on

Oil and Gas Exemptions in Federal Environmental Protections

Independent Petroleum Association of America♦1201 15th Street, N.W., Suite 300♦Washington, DC 20005
(202) 857-4722 ♦ Fax (202) 857-4799 ♦ www.ipaa.org

This testimony is submitted on behalf of the Independent Petroleum Association of America (IPAA). IPAA represents petroleum and natural gas producers, the segment of the industry that is affected the most by government policies associated with oil and natural gas exploration and production and national energy policies that fail to recognize the importance of our American resources. IPAA's producer membership is comprised of companies ranging from large publicly traded companies operating in the upstream – exploration and production – segment of the industry to small individually owned companies. Most employ fewer than 20 employees. Independent producers drill 90 percent of American oil and natural gas wells, produce approximately 82 percent of American natural gas and produce about 68 percent of American oil – well above that percentage of the oil in the lower 48 states. Within this production are America's marginal wells. The operation of these wells is dominated by small business members of IPAA. The overwhelming number of wells in the United States falls in this category. Approximately 85 percent of America's oil wells and 70 percent of America's natural gas wells are marginal wells. Equally significant, while each marginal well is a small producer, collectively, they provide about 19 percent of America's oil production and 10 percent of America's natural gas production.

Domestic petroleum and natural gas production has changed over the years, particularly since the mid-1980s. Maturing production areas in the Lower-48 states and the need to respond to shareholder expectations have resulted in major integrated petroleum companies shifting their exploration and production focus toward the offshore in the United States and into foreign countries. More and more, these large companies must rely on large producing fields that are found only in frontier areas. Consequently, the role of independents is increasing in both the Lower-48 states and in the offshore areas. For example, the independents' share of Lower-48 states petroleum production has increased from 45 percent in the mid-1980s to over 60 percent by 1995 – and these states, despite their mature fields, still account for the majority of American oil production. These trends will continue. The nation will need a strong independent exploration and production industry to meet its future needs.

It is essential to understand the role of oil and natural gas in America's energy supply, now and in the future. They are critical. Currently, oil and natural gas account for about 65 percent of America's energy supply. Clearly, people recognize the role that oil plays in fueling most of the nation's transportation. Similarly, the role of natural gas for heating is widely understood. But, it is equally important to understand that natural gas is an essential feedstock for many chemical processes and for fertilizer manufacturing. It is a key source for process heating in both the chemical and manufacturing segments of American industry. Consequently, in addition to their direct role in energy supply, oil and natural gas are linked to the success of other energy supply options. Ethanol requires fertilizer for the crops and natural gas for processing. Windmills and solar cells must be manufactured and transported. Moreover, these are technologies that are intermittently available and when they are not providing power, it is most likely that natural gas will be the fuel used to meet that power need.

Looking forward, energy demand growth will be essential to the growth of the U.S. economy and all forms of energy will be needed. Projections by the Energy Information Administration (EIA) show energy demand increasing by about 30 percent over the next 25 years. As U.S. energy demand grows, the percentage supply of oil and natural gas stays about the

same – meaning that more oil and natural gas will be needed. Even aggressive global climate initiatives have the consequences of creating more natural gas demand.

Testimony submitted to this hearing by the Natural Resources Defense Council (NRDC) proposes a series of changes to federal environmental law that taken together can only serve to cripple American oil and natural gas production without attendant environmental benefits. NRDC seems to base its proposals on what are two fundamentally flawed presumptions. First, no environmental law is worthwhile unless it is federal law; no regulation is meaningful unless it is federal regulation. Second, the existence of provisions in federal environmental law that differ from the NRDC view of the pure law is improper and inappropriate.

In reality, most federal environmental laws are predicated on the existence of state regulatory programs that can be delegated the implementation of the federal law or assume primacy for regulating in a particular arena. This essential structure is based on the reality that these states have effective regulatory programs and that the federal government structure is not designed to manage day-to-day regulation. Many of these state programs – particularly in the oil and natural gas exploration and production arena – predated the federal laws. Similarly, most federal environmental laws were developed on a model based on manufacturing facilities that are large, generally located near urban areas and present concentrated sources of emissions or discharges. This model is wholly inconsistent with the nature of oil and natural gas production which is generally rural, comprised of hundreds of thousands of operations and has diverse and small sources of emissions and discharges.

Responding to NRDC's specific issues demonstrates the flaws in the arguments.

TOPIC I. Ensure the Public's Right-to-Know

- NRDC's Proposal: Require oil and gas exploration and production companies to report to the Toxic Release Inventory to provide information to the public regarding chemicals that may pose a risk to the health of local communities.
- *Response: The Toxic Release Inventory (TRI) was created by Congress to obtain information on chemical releases from the manufacturing sector of the economy where concentrated operations at facilities pose a potential risk if releases occur. Oil and natural gas E&P operations are scattered throughout the country in mostly rural areas and individually do not pose significant risks. While EPA has the authority expand the scope of the TRI reporting requirements, it has not added oil and natural gas E&P operations because there is no compelling reason to create a new reporting burden that provides no real additional information.*

TOPIC II. Protect Underground Sources of Drinking Water

- NRDC's Proposal: Subject all hydraulic fracturing by the oil and gas industry to the Underground Injection Control program of the Safe Drinking Water Act;
- *Response: The Safe Drinking Water Act (SDWA) Underground Injection Control (UIC) program is intended to manage the disposition of wastes into geologic repositories. Hydraulic fracturing is a well stimulation technology that has been used for more than 50 years over a million times. It has been regulated for decades by states and never posed an environmental risk. It is essential to the*

development of American natural gas and oil. There are no environmental benefits to additional federal regulation.

- NRDC's Proposal: Increase daily fines for violations by the oil and gas industry to equal those for other industries; Require that the underground injection of materials associated with the oil and gas industry that meet RCRA's definition of hazardous waste meet the standards of Class I injection.
- *Response: These two items appear to be related to the elements of the UIC program that relate to produced water as a secondary or tertiary recovery technology to enhance production of American oil and natural gas. In 1980, Congress amended the SDWA to provide greater flexibility to states that had operational programs to manage the use of produced water to enhance oil and natural gas recovery. The structure of the SDWA and its subsequent regulations for Class II wells proved so burdensome that states were unwilling to seek primacy under the SDWA to run the federal program. The law was changed to allow states to show that their programs provided comparable levels of protection rather than meet the specific federal program requirements. Without these changes, enhanced oil recovery would have been crippled. Chairman Waxman chaired the subcommittee of jurisdiction at that time and managed the bill in the House of Representatives.*

TOPIC III. Protect American Waters

- NRDC's Proposal: Delete the term "navigable" from the Clean Water Act;
- *Response: This issue goes well beyond oil and natural gas and in the subject of another major environmental initiative (HR. 2421). It would not only affect oil and natural gas operations, but farms, ranches, water supply agencies and flood management agencies among many others. At issue is the scope of the Commerce Clause of the Constitution.*
- NRDC's Proposal: Require stormwater permits for all oil and gas industry activities;
- *Response: Stormwater permits are required for both construction and operations related to oil and gas industry activities when the stormwater is contaminated. The change in the Clean Water Act (CWA) in the Energy Policy Act of 2005 did not exclude the industry from regulation; it assures that regulation would be based on the same standard for both construction and operations.*
- NRDC's Proposal: Apply the Clean Water Act definition of "pollutant" to all materials used in oil and gas operations.
- *Response: This item must refer to the definition of "pollutant" in the CWA which excludes "produced water" (water that is produced with oil and natural gas) that is injected under State programs for secondary and tertiary recovery of oil and natural gas. The definition was written in 1972. In 1974, Congress passed the Safe Drinking Water Act that provided federal authority on Underground*

Injection Control (UIC) and these operations are covered under Class II wells – largely run by states. It seems illogical to include these operations in the CWA. Produced water discharges to the surface are already regulated under the CWA;

TOPIC IV. Protect the Air

- NRDC's Proposal: Require aggregation of the emissions of oil and gas exploration and production activities under the National Emission Standards for Hazardous Air Pollutants;
- *Response: When Congress passed the 1990 Clean Air Act Amendments, it specifically prohibited aggregation of oil and gas E&P sites under the Hazardous Air Pollutants title because these sites operate as separate facilities and are frequently under different ownership. EPA has taken action to regulate the principle source of concern at E&P sites – glycol dehydrators emitting benzene – but there no compelling basis to broaden regulation.*
- NRDC's Proposal: Include oil and gas wells and their associated equipment on the list of small hazardous air pollutant sources wherever they are located;
- *Response: EPA finalized an area source rule for oil and natural gas E&P operations in January 2007 for glycol dehydrators focused on areas near population. The emissions are generally small and requiring controls in remote areas was not cost effective and did not enhance environmental production.*
- NRDC's Proposal: Add hydrogen sulfide to the list of hazardous air pollutants.
- *Response: Hydrogen sulfide is an acutely toxic gas; however, it has not been considered a toxic air pollutant in low concentrations. Congress deleted hydrogen sulfide from the Clean Air Act toxic substance list in 1991. Hydrogen sulfide can be produced with oil and natural gas and states have regulated it to protect against its acute effects. EPA studied hydrogen sulfide in the context of oil and gas operations and concluded in 1993 that it should be regulated with regard to accidental releases but not low level emissions.*

TOPIC V. Protect the Land

- NRDC's Proposal: Include all toxic wastes associated with oil and gas exploration and production under RCRA's cradle to grave hazardous waste provisions;
- *Response: This issue relates to EPA's implementation of the 1976 Resource Conservation and Recovery Act (RCRA) law. In 1978, EPA produced a series of new requirements designed to address the management of concentrated hazardous wastes in landfills and other management options. However, these regulations did not adapt well to a series of high volume, low toxicity wastes. In 1980, Congress suspended regulation of these various wastes – oil and gas drilling fluids and produced water, utility coal ash, mining wastes, cement kiln dust, etc. – and required EPA to study them and their existing regulatory structure. In 1987, EPA determined that RCRA (Subtitle C) hazardous waste regulations were inappropriate for oil and gas drilling fluids and produced waters and that they were adequately regulated by the state management*

programs. Since then, EPA has participated in recurring reviews of the state programs to improve them when necessary. RCRA Subtitle C is not an appropriate regulatory structure for these wastes.

- NRDC's Proposal: Include oil and gas under the Superfund law—CERCLA.
- *Response: When Congress passed CERCLA in 1980 and amended it in 1986, it considered the appropriate scope of the new and extensive liability provisions of these acts. Among its decisions was that federally permitted releases should not be subject to Superfund and that wastes that Congress had specifically excluded from regulation should not be included. Moreover, Congress specifically passed oil spill legislation in 1990. More broadly, with all the real challenges facing Superfund, there is no indication that the hundreds of thousands of oil and natural gas wells sites in the country pose anything close to a risk that necessitates coverage under Superfund.*

The Committee – and more broadly the Congress – should summarily reject NRDC's proposals. They follow the tired path of alleging to the Congress the need to change laws and regulations that do not follow NRDC's world view and where NRDC and its allied professional anti-development organizations have failed to change the regulatory program through the normal processes or by appealing to the court system. This collection of proposals will have one clear effect – less exploration and production of American oil and natural gas and more foreign dependency. This is hardly an energy policy that makes sense of America.

Oil & Gas Accountability Project

A program of EARTHWORKS

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October 31, 2007

Honorable Henry A. Waxman, Chairman
Committee on Oversight and Government Reform
U.S. House of Representatives
2157 Rayburn House Office Building
Washington, D.C. 20515-6143

Re: Written Testimony of the Oil & Gas Accountability Project

Dear Chairman Waxman:

We appreciate the opportunity to provide written testimony regarding the health and water impacts from oil and gas development in the United States. It is our view this is an extremely important issue that deserves the immediate attention of this committee.

The Oil & Gas Accountability Project (OGAP), a program of Earthworks, which is a non-profit organization, works with urban, rural and Native communities to protect their homes, health, and environment from the impacts of oil and gas development. OGAP is a resource for these communities, providing expertise on oil and gas development, and its environmental and public health impacts. OGAP has thousands of members nationwide.

Since OGAP's inception, the organization has worked with communities, government, other organizations and individuals to identify and address the impacts caused by the development of oil and gas. OGAP's long-standing effort to lift the exemptions the industry enjoys from U.S. environmental laws began in 1997 with a campaign to regulate hydraulic fracturing and has continued through the years to include many victories such as the New Mexico and Colorado Surface Owner Protection Acts.

OGAP has been working since 1997 to regulate hydraulic fracturing within the Environmental Protection Agency's (EPA) Underground Injection Control program and to prevent the oil and gas industry's relentless push to exempt the practice from the Safe Drinking Water Act. In 2004, EPA released its Phase I report regarding the potential for contamination of USDWs from the hydraulic fracturing of CBM wells. In OGAP's 2005 review of that report, we documented that hydraulic fracturing fluids contain toxic chemicals; these chemicals are injected directly into

drinking water aquifers; and the hydraulic fracturing companies recommend that unused fluids be disposed of as hazardous waste.[1]

There are a number of cases in the U.S. where hydraulic fracturing is the prime suspect in incidences of impaired or polluted drinking water. In Alabama, Colorado, New Mexico, Virginia, West Virginia and Wyoming, incidents have been recorded in which residents have reported changes in water quality or quantity following fracturing operations of gas wells near their homes. Common complaints include: murky or cloudy water, black or gray sediments, iron precipitates, soaps, black jelly-like grease, floating particles, diesel fuel or petroleum odors, increased methane in water, rashes from showering, gassy taste and decrease or complete loss of water flow. In most cases, the agencies conducting follow-up water quality sampling do not know what chemicals have been used in fracturing operations because companies are not required to disclose this information.[2]

According to the Interstate Oil and Gas Compact Commission, 90 percent of oil and gas wells in the U.S. undergo fracturing to stimulate production.[3] Despite the widespread use of the practice and the risks hydraulic fracturing poses to human health and safe drinking water supplies, the EPA still does not currently regulate the injection of fracturing fluids under the Safe Drinking Water Act. The oil and gas industry is the only industry in the U.S. that is allowed by EPA to inject hazardous materials –unchecked– directly into or adjacent to underground drinking water supplies.

In 1990, OGAP staff began work with Representative Rahall to lift the Subtitle D exemption for the oil and gas industry under the Resource Conservation and Recovery Act (RCRA). In 2004, OGAP then joined forces with other organizations to try to address a pattern of illegal waste handling and disposal practices at gas well production facilities in San Juan and Rio Arriba counties, New Mexico, under RCRA. These practices included such problems as the chronic and widespread spillage of drilling waste materials; failing to secure waste materials and leaving them accessible to humans, livestock and wildlife; and disposing of oil and gas waste in a manner that destroys vegetation and renders the soil sterile. Essentially, the oil and gas companies were maintaining open waste dumps, a practice that had been made illegal under other sections of RCRA. However, because of the way the open dumping sections of RCRA are structured, we would have been forced to file suit on each and every well site to get the companies to clean up the chemical, coal or hydrocarbon-based solid waste at each site.

OGAP joined with other organizations in 2006 to petition for review of EPA's interpretation of its authority over stormwater run-off from oil and gas sites under the Energy

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[1] Oil and Gas Accountability Project, *Our Drinking Water At Risk: What EPA and the Oil and Gas Industry Don't Want Us to Know About Hydraulic Fracturing* (2005). Available at: http://www.earthworksaction.org.

[2] *See id.*

[3] Testimony Submitted To The House Committee On Energy And Commerce By Victor Carrillo, Chairman, Texas Railroad Commission, Representing The Interstate Oil And Gas Compact Commission, February 10, 2005. Available at: http://www.rrc.state.tx.us/commissioners/carrillo/press/energytestimony.html.

Policy Act of 2005. We challenged the agency's reversal of its determination that sediment-laden discharges from oil and gas sites that contribute to violations of water quality standards are not contaminants under the Clean Water Act. The EPA had unilaterally exempted a major contaminant, sediment from oil and gas sites, from regulation under the act without Congressional authorization or factual basis. Beginning two years earlier, OGAP had worked with other Colorado organizations to petition the State of Colorado not to follow EPA's lead in delaying regulation of stormwater run-off. The Colorado Department of Public Health and the Environment (CDPHE) subsequently, through its own rulemaking process, maintained the stormwater permit requirement for oil and gas construction sites, despite EPA's failure to do so.[4]

OGAP has been working with the Oil Conservation Division (OCD), State of New Mexico, since 2002 to revise its state regulations covering the use of drilling pits. Unlined and poorly lined oil and gas pits have threatened New Mexico's water, soil, and residents for years with hydrocarbons, heavy metals and chlorides. In 2005, the New Mexico Oil Conservation Division released specific data showing nearly 700 instances of groundwater contamination from oil and gas sites in New Mexico.[5] An OGAP analysis of that data, attached to this written testimony, shows that close to 400 incidents of groundwater contamination had been documented from oil and gas pits in the state.[6]

Most recently, as part of a stakeholder process, the OCD released pit-sampling data that showed carcinogens present in all the samples and heavy metals in two-thirds of the pit samples. New Mexico residents living in subdivisions and operating ranches have routinely complained to OCD of odors and leaks from well sites and wildlife that have died from drinking out of these pits. All the while, the oil and gas industry could afford to properly take care of its drilling wastes. For example, the average gas well in New Mexico will generate about $400,000 per year in revenue and make more than $3 million in profit over the course of it's life time.[7]

In response to similar complaints from residents of Colorado, in 2006, OGAP undertook an analysis of the Colorado Oil and Gas Conservation Commission online database.[8] In a four-year period between June 2002 and June 2006, there were approximately 924 spills from oil and gas sites. A copy of this analysis is attached.[9] Spilled products included crude oil/ condensate, produced water, and "other" products. The "other" products included diesel fuel, glycol, amine, lubricating oil, hydraulic fracturing fluids, drilling muds, other chemicals, and natural gas leaks.

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[4] Colorado Department of Public Health and the Environment, Water Quality Control Division, Stormwater program, *Stormwater Factsheet-Construction at Oil and Gas Facilities* (July 2007).
[5] New Mexico Oil Conservation Division, *Generalized Record of Ground Water Impact Sites (2005).* Available at: http://www.emnrd.state.nm.us/ocd/Statistics.htm.
[6] Oil & Gas Accountability Project, *Oil and Gas Industry Groundwater Contamination Events – by oil and gas facility type* – (2005). Attachment #1.
[7] Figures are based upon the 2006 Annual Natural Resources Report posted on the OCD's website, available at http://www.emnrd.state.nm.us/ocd/Publications.htm.
[8] The database can be accessed at http://oil-gas.state.co.us/.
[9] Oil & Gas Accountability Project, *Colorado Oil and Gas Industry Spills: A review of COGCC data (June 2002-June 2006)* (2006). Attachment #2.

Twenty percent of all of these oil and gas industry spills contaminated water, with 14 percent of the spills affecting groundwater and 6 percent of all spills affecting surface water.

In 2005 and 2006, OGAP participated in the New Mexico OCD's comprehensive rulemaking governing the regulation of the disposal of wastes from oil and gas operations, including spills and wastes generated during "normal" operations. While the final rules adopted by the OCD were based upon the best science available and the need to protect groundwater from contamination, the oil and gas industry fought their adoption before the agency and in the state courts. To date, the rules have been upheld; yet, the industry spent nearly $500,000 to defeat these efforts.[10]

The CDPHE's emissions inventory data show that Volatile Organic Compound (VOC) emissions from existing oil and gas facilities are both significant and have been increasing statewide. Based upon the inventory data for 2004 and 2005, oil and gas production facilities are responsible for more than 50 percent of all VOCs released from stationary sources in the state of Colorado. For some counties in the state, oil and gas production facilities release over 90 percent of all VOCs released by stationary sources. Existing health studies show that VOC's are directly linked to increases in respiratory problems, especially asthma, and that this increase in VOC related health problems has significant direct and indirect economic costs. The health impacts of ground level ozone, formed through the combination of Nitrous Oxide (NOx) and VOCs, are well known as being linked to a range of illnesses, including asthma, respiratory illness and heart disease.[11]

Research has also shown that the costs incurred for treating asthma in the U.S. are significant. Review of the National Medical Expenditure Survey database by university researchers arrived at a total estimated cost of asthma in the U.S. in 1994 of $5.8 billion, with hospitalizations making up nearly 50 percent of that cost.[12] Given rising levels of asthma and inflation since that survey, the economic cost of asthma can only have significantly increased in the past decade.

After nearly eight years of effort, OGAP and other organizations in both Colorado and New Mexico drafted and passed legislation in the first half of 2007 that provided additional rights for surface estate owners vis-à-vis the oil and gas industry. The legislation in Colorado provided that the oil and gas industry must "minimize intrusion and damage" to the surface.[13]

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[10] Personal communication from the staff of the New Mexico Oil Conservation Division.

[11] For an annotated summary of air pollution health studies related to ozone and particulate matter through 2003, see the appendix in *Unhealthy Air, Unhealthy Kids: How Air Pollution Threatens the Health of Colorado's Children.* Available at: http://www.environmentcolorado.org/envcoenergy.asp?id2=12139.

[12] Smith et al., *A National Estimate of the Economic Costs of Asthma*, Am.J.Respir.Crit.Care Med. Vol. 156, pp. 787-93 (1997).

[13] For more information see: http://www.earthworksaction.org/cosopa2.cfm.

The legislation in New Mexico provided that the industry must compensate the surface owner for damage caused to the surface by oil and gas operations.[14]

These many years of experience provided the impetus for the research set forth in the attached report, prepared by our Research Director, Renee Lewis Kosnik.[15] In carrying out her assessment of the oil and gas industry's exclusions and exemptions, Ms. Lewis Kosnik found that the oil and gas industry enjoys sweeping exemptions from provisions in the major federal environmental statutes intended to protect human health and the environment. This lack of regulatory oversight can be linked to many illnesses, and even deaths, for people and wildlife across the country. Because of the exemptions and exclusions, toxic chemicals and hazardous wastes from the industry are permeating the soil, water sources and the air threatening human health to an alarming extent.

Thank you again for the opportunity to comment in this oversight hearing on pertinent issues to secure protections for human health and the environment. We look forward to the outcomes on this matter. Please direct any further correspondence to Jennifer Goldman at (406) 587-4473 or jennifergoldman@ogap.org.

Very Truly Yours,

QuickTime™ and a
TIFF (LZW) decompressor
are needed to see this picture.

Gwen Lachelt
Executive Director
Oil & Gas Accountability Project

Jennifer Goldman
Public Health & Toxics Campaign Director
Oil & Gas Accountability Project

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[14] For more information see: http://www.earthworksaction.org/PR_OGAP_SOPA.cfm.
[15] Oil & Gas Accountability Project, *The Oil and Gas Industry's Exclusions and Exemptions to Major Environmental Statutes* (2007). Attachment #3.

Statement of
Aaron Wernham, MD, MS
Alaska Inter-Tribal Council, Health Impact Assessment Project
Fellow, Columbia University Center on Medicine as a Profession

Re: "Oil and Gas Development: Exemptions in Health and Environmental Protections"

Committee on Oversight and Government Reform
U.S. House of Representatives

October 31, 2007

I. Introduction

I am honored to present this written testimony regarding the relationship between oil and gas regulatory exemptions and public health. I am a physician with over 15 years of experience in health care and public health for American Indian and Alaska Native communities. I work with the Alaska Inter-Tribal Council, a non-profit representing the interests of Alaska's federally recognized tribes, on an initiative aimed at addressing the health effects of industrial development through the environmental impact statement (EIS) process.

In the 35 years since the construction of the trans-Alaska pipeline, oil and gas activity in Alaska's North Slope has become a dominant influence on many aspects of life, culture, economy, and well-being in the Inupiat communities of this region. Surprisingly though, the EIS process for North Slope oil and gas routinely omits any substantive consideration of potential impacts to human health. An EIS for North Slope development commonly contains over 3,000 pages, and exhaustively evaluates potential impacts to every aspect of the environment, flora, and fauna. Yet in a typical EIS no public health data are cited; little or no effort is made to identify potential impacts on public health; and, most disturbingly, no substantive measures to protect public health are considered aside from compliance with existing regulatory standards.

The exemptions to reporting, monitoring, and control technology standards enjoyed by North Slope oil and gas producers under the Clean Air Act (CAA) render efforts to understand the true nature of health effects faced by area residents even more challenging.

The Inupiat residents of North Slope communities have identified a wide range of health concerns related to oil and gas development over decades of testimony in previous EIS hearings. Concerns expressed range from physical health problems such as tumors in harvested fish and game and marked increases in asthma, cancer (the North Slope region now has the highest cancer mortality rate in Alaska), and thyroid disease; to epidemic increases in social and psychological problems such as drug and alcohol abuse, suicide, and family violence. Yet agency response to these concerns in NEPA documents has been either dismissive or absent. Again, the available public health data are not examined, public health authorities are not consulted for advice on how best to evaluate and respond to these concerns, and no effort is made to implement substantive mitigation measures.

In 2003, the National Research Council undertook a comprehensive review of the cumulative effects of North Slope oil and gas activities. The report concluded that the human health effects of oil and gas activities on the North Slope were an area which had been largely ignored in the research and regulation of oil and gas impacts in the region, and recommended a series of measures to correct this problem.[1] To date, this has not resulted in any substantive change in the regulatory strategy for the region.

II. Protecting Public Health is a fundamental objective of the National Environmental Policy Act (NEPA):

NEPA is intended to protect public health. The fundamental purpose of the Act is to "stimulate the health and welfare of man" (42 USC § 4321). The text goes on to define public health as one of its central concerns through five subsequent references to health. The code of federal regulations on NEPA's implementation defines the "effects" that must be considered in an EIS as including "ecological...,aesthetic, historic, cultural, economic, social, and health, whether direct, indirect, or cumulative" (40 C.F.R.§ 1508.8). Furthermore, 40 C.F.R. § 1508.27 states that in determining the intensity of an impact, an agency must evaluate the "degree to which the proposed action affects public health or safety."

III. NEPA's Public Health mandate is routinely ignored in practice in the U.S.

Despite NEPA's mandate to address public health, in practice the omission of public health analysis in NEPA documents is widespread across agencies and throughout the U.S. Several surveys of NEPA practice nationally have documented a dearth of public health information in EISs.[2] Indeed, one study found that 85% of a random sample of 45 EISs contained no public health information whatsoever, and the remainder mentioned public health issues only briefly, generally in the form of narrow and limited discussions of the potential health effects of direct contact with specific contaminants.[3] Agencies do not generally consult local public health authorities in the process of completing an EIS, and most agencies and EIS contractors lack public health expertise among their scientific staff.

IV. Compliance with regulatory statutes is not an adequate proxy for health analysis under NEPA

As a proxy for health impact analysis in NEPA documents, it is commonplace to simply rely on compliance with regulatory statutes such as the Clean Air and Clean Water Acts as demonstration that public health is protected. This approach is clearly inadequate to fulfill NEPA's requirements for a comprehensive analysis of impacts based on the best available data. Furthermore, it risks failing to identify causal linkages between project

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[1] National Research Council. 2003. Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope. National Academies Press. Washington, D.C.

[2] Davies K, Sadler B. 1997. Environmental Assessment and human health: perspectives, approaches, and future directions. Ottawa: Health Canada.

Cole B, Wilhelm M, et al. 2004. Prospects for health impact assessment in the United States: new and improved environmental impact assessment or something different? Journal of Health Politics, Policy, and Law. 29(6) 1153-1186

[3]Steinemann A. Rethinking Human health impact assessment. Environmental Impact Assessment Review 2000. 20: 627-645.

impacts and human health, particularly linkages that do not involve direct impacts from pollution; and it fails to take into account any baseline health disparities and vulnerabilities that may render affected communities more sensitive to pollution than the general population. Furthermore, it relies on the regulatory laws to substantively and thoroughly protect health, even though these laws contain multiple exemptions for large industry such as oil and gas producers and refineries.

V. The Alaska Inter-Tribal Council's Health Impact Assessment Project

Health Impact Assessment (HIA) is a methodology that allows for a comprehensive and systematic approach to public health within an EIS. HIA is an increasingly common standard for evaluation of large industrial proposals internationally. The World Health Organization advocates its routine use for large projects;[4] the World Bank and many large lending banks now require its use for large development loans;[5] the International Association of Oil and Gas Producers advocates that industry adopt HIA as a means to protect communities from unintended harm; and even producers themselves, such as Royal Dutch/Shell, have now adopted internal guidelines requiring the use of HIA.[6] In this light, NEPA practice in the U.S. falls woefully short of an emerging international standard that recognizes the complex and often substantial impacts that oil and gas production can have on local communities.

Working with the tribes and municipalities of the North Slope, the Alaska Inter-Tribal Council recently successfully negotiated with the Bureau of Land Management and Minerals Management Service for the inclusion of the first comprehensive HIAs ever integrated formally into a U.S. EIS. We completed these assessments in cooperation with the regulatory agencies, and they are included in recently published EISs for oil and gas development in the North Slope region.[7] We believe that this work represents a substantial step forward toward protecting public health and fulfilling the fundamental intent of NEPA, and we appreciate and recognize these agencies for finally agreeing to consider the local communities' concerns in depth.

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[4]World Health Organization. 2007. Health Impact Assessment (website). http://www.who.int/hia/en/

[5] Mercier J. 2003. Health Impact Assessment in international development assistance: the World Bank experience. Bulletin of the World Health Organization. 81(6) 461-462

[6] See Shell website, http://www.shell.com/home/content/envirosoc-en/making_it_happen/impact_assessment/impact_assessment_13062007.html

[7] Minerals Management Service. 2007. Final Environmental Impact Statement, Chukchi Sea Planning Area: Oil and Gas Lease Sale 193 and Seismic Surveying Activities in the Chukchi Sea. U.S. Department of the Interior, Alaska OCS Region. (HIA contained in "Environmental Justice" subsections for the Alaska OCS region.)

Minerals Management Service. 2007. Final EIS. Outer Continental Shelf Oil & Gas Leasing Program: 2007-2012. U.S. Department of the Interior. Washington, D.C. (HIA contained in "Environmental Justice" subsections for the Alaska OCS region.)

Bureau of Land Management. 2007. Northeast NPR-A Draft Supplemental IAP/EIS. Washington, D.C. (HIA contained in new subsections labeled "public health".)

VI. The analysis of Public Health impacts is limited by exemptions in Clean Air Act regulations.

Unfortunately, however, our efforts to scientifically evaluate contaminant-related concerns through the HIA process were severely limited by the regulatory exemptions enjoyed by oil and gas producers. Because of the multiple reporting and monitoring exemptions data on air quality and water-born contamination were not adequate to allow us to make a strong assessment of the effects of locally produced pollutants such as hazardous air pollutants (HAP) on community health in the North Slope. It is very important to emphasize, however, that this is *not* equivalent to saying that there is reason to be reassured. Indeed, based on the available data, I would offer the following observations:

(a) Local oil development produces large amounts of pollutants such as HAP;
(b) Some pollutants commonly produced by oil and gas development activities bioaccumulate in fish and game animals exposed to them;
(c) Fish and game in the vicinity of oil and gas exploration and development facilities may be exposed to these pollutants through air, water, or foraging on local plants;
(d) The North Slope villages consume extraordinarily high quantities of locally harvested fish and game;
(e) North Slope villages have had a marked increase in cancer and asthma over the last 30 years, and now have among the highest rates in Alaska or the U.S. North Slope villages have also experienced marked increases in pulmonary diseases, and now experience nearly twice the mortality rate from pulmonary disease as the general U.S. population.

VI. Causal certainty is not a reasonable threshold for regulatory action

The above observations do not prove an association between local oil and gas activities and adverse health outcomes on the North Slope. They do, however, suggest the existence of a plausible linkage.

Because of the limitations of statistical analysis in the field of public health, in many cases of community exposure to environmental contaminants, it is often impossible to determine causal relationships between environmental exposures and individual health outcomes with certainty. For example, no test exists to prove the cause of most cancers in an individual patient, yet we have excellent data suggesting that many organic pollutants are potent human carcinogens.

During this hearing, you will hear compelling personal accounts of individual ailments suffered by people living near oil and gas activities. Industry often argues in such cases that there is no medical proof that these illnesses are caused by exposure to local contaminants. While this may be true, it is *not* equivalent to saying that there is evidence of a lack of association.

VII. The Nation's public health goals require a more cautious approach to controlling contaminant emissions

As expressed by the U.S. Department of Health and Human Service's *Healthy People 2010* initiative, the Nation's top public health objective is the elimination of health disparities. "Health disparities" is a term referring to the greater burden of disease and poorer overall health noted in ethnic minority and low income populations in the U.S.

As demonstrated by the North Slope experience outlined in section VI, exemptions in pollution reporting, monitoring, and control standards compromise our ability to evaluate and control observed health disparities (such as the high rates of cancer and respiratory illness in North Slope communities). As written, these exemptions therefore pose a substantial risk of exacerbating health disparities and thus contravent the Nation's stated public health objectives. A more cautious approach and thoughtful approach will be required if we hope to fulfill the Healthy People 2010 objectives.

VII. Conclusion and Recommendations:
The current regulatory approach for oil and gas exploration and development in the U.S. does not adequately protect public health. The NEPA-mandated EIS process fails to include readily available public health information, and agencies do not seek input from public health professionals when undertaking an EIS. Compounding the problem, the exemptions enjoyed by oil and gas producers for reporting and monitoring of pollutants known to harm health weakens any effort to scientifically evaluate the risks for communities. At the same time, exemptions from control technology standards permit emissions at levels that could certainly pose a risk to neighboring communities, particularly Alaska Native communities which depend so heavily on locally harvested fish and game. The burden of these exemptions often falls on ethnic minority and low income communities, exacerbating health disparities.

A more reasonable and equitable approach to regulation of airborne emissions should therefore include the following:

1. Regulations must not be based on a standard of causal certainty.
2. Regulations should take into account the baseline health status of the affected population, vulnerable groups within the population, and pre-existing health disparities.
3. Strict monitoring and control technology standards should be applied when there is a biologically plausible pathway through which emissions of contaminants with known adverse human health effects might contact human populations.
4. In NEPA based evaluations of new oil and gas development, NEPA requirements for health impact analysis must be strictly enforced, and public health experts and data sources must be consulted during the EIS process.

Thank you for this opportunity to testify on the public health implications of regulatory exemptions for oil and gas development. We are quite encouraged that Congress has taken this first step toward addressing a problem that impacts our communities on a daily basis.

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