

**Senate Standing Committee on Environmental Conservation  
Senator Antoine M. Thompson, Chair**

**Roundtable Discussion  
11/10/2009**

*CWCWC* is a not-for-profit organization among whose concerns is the protection and preservation of NYS's high quality drinking water. We are troubled that the proposal to extract natural gas in the underlying Marcellus Shale through high-volume hydraulic fracturing with horizontal drilling or "fracking" (see attachment: A Brief Introduction to Fracking), will lead to the contamination and pollution of NYC's unsurpassed, still unfiltered source of water that supplies 9 million NYS residents. We are equally concerned that fracking of source water in NYS's other watersheds that overlay the Marcellus Shale could be similarly polluted.

DEC's 803-page, September 2009, draft Supplemental Generic Environmental Impact Statement (dSGEIS) on the Oil, Gas and Solution Mining Regulatory Program (Well Permit Issuances for Horizontal Drilling and High-Volume Hydraulic Fracturing to Develop the Marcellus Shale and Other Low-Permeability Gas Reservoirs, dSGEIS) does little to alleviate those fears of contamination. In addition, even though air quality standards admittedly will be exceeded at individual fracking units, yet the cumulative effects of many units are not even mentioned. Nor is there mention of the impacts on threatened or endangered species, on forests due to fragmentation, of stormwater runoff, on the health of onsite workers, and of noise pollution.

Because of the many threats to our environment that are evident in the dSGEIS, several members of *CWCWC* have undertaken to analyze the document. Unfortunately, in addition to being unnecessarily long due to some of the issues being presented in a repetitive fashion, the end result is that the dSGEIS offers little protection, and our water, air and environmental surroundings will remain frighteningly vulnerable to the impacts of fracking.

In the following, we shall explain some of those concerns. Rather than repeat issues that have already been belabored, we include those that we think have not been sufficiently addressed in the dSGEIS. These are:

- The Precautionary Principle and the Burden of Proof
- SEQRA and the approval process should be strengthened, not streamlined
- Storage and treatment of hazardous wastes
- Long-term and cumulative impacts
- Rulemaking

## **THE PRECAUTIONARY PRINCIPLE AND THE BURDEN OF PROOF**

From Wikipedia: "The precautionary principle is a moral and political principle which states that if an action or policy might cause severe or irreversible harm to the public or to the environment, in the absence of a scientific consensus that harm would not ensue, the burden of proof falls on those who would advocate taking the action. The principle implies that there is a responsibility to intervene and protect the public from exposure to harm where scientific investigation discovers a plausible risk in the course of having screened for other suspected causes."

The Precautionary Principle also emphasizes the importance and necessity for public participation in the decision-making process, i.e. the importance of a democratic process, and the need for an in-depth review of alternatives. Most important is the emphasis on preventive action in the face of uncertainty.

In several cases, local residents whose wells have been adversely affected have considerable trouble being reimbursed for the damages they have suffered. Drilling companies have argued, for example, that the chemicals found in a well are the same as those used as lawn pesticides. The burden of proof is thus cleverly shifted to the victims

who seldom, if ever, have the engineering, legal or financial resources to match the drilling company's.

We urge that all local wells, within a 2-mile range from any spacing unit, be carefully tested for all chemicals whether separate or in compounds, prior to the start of fracking operations. If any new fracking chemicals are subsequently discovered in those wells, then the burden of proof must lie with the drilling company to prove that they are not responsible.

Given the cutback in manpower at DEC for the sake of so-called "streamlining", adequate monitoring of wells is problematical and local residents who have lost their potable water will be left with little recourse.

Examples (see attachment: Examples of Contamination Due to Fracking) from various parts of the country, showing contamination by fracking, provide compelling evidence why the Precautionary Principle should be fully implemented before any more permits are issued.

### **SEQRA AND THE APPROVAL PROCESS SHOULD BE STRENGTHENED, NOT STREAMLINED**

DEC's dSGEIS comes at a time of severe economic stress for NYS, when Governor Paterson is trying, by any means possible, to close the state's \$3 billion budget gap. Estimates for the revenue from fracking for gas in the Marcellus Shale are in the \$1 billion figure.

Governor Paterson is trying to streamline the approval process for developments in NYS.

One approach was by the Governor issuing Executive Order #25. As stated in our 8/14/09 letter to the Governor, " ... the Regulatory Review and Reform Program, purportedly for the purpose to ' evaluate, reform, or repeal, where necessary, rules and

paperwork requirements...' would merely streamline the processes through which developers, oil and gas companies and others could obtain permits, and make it more difficult, if not impossible, for the average citizen to have a voice in preventing environmental degradation."

In keeping with the streamlining process, the Governor has been pushing for early hearings and the rapid acceptance of the dSGEIS. Until 11/4/09, the public had only until November 30th to respond with written comments, a ridiculously short time for having to read, understand, and comment on over 800 pages laden with a heavy technical content. Furthermore, the document appears to not have been available for several weeks in some of the NYC public libraries, listed by DEC as repositories for the report. This contravenes 6 NYCRR Part 617.12(b)(3): "All SEQR documents and notices, including but not limited to, EAF, negative declarations, positive declarations, scopes, notices of completion of an EIS, EISs, notices of hearings and findings must be maintained in files that are readily accessible to the public and made available on request" and (5) "If sufficient copies of the EIS are not available to meet the public interest, the lead agency must provide an additional copy of the documents to the local library."

The fact that DEC started the review process prior to the document being available in the local libraries, appears to contravene SEQR law. The clock should start when all documentation needed for comments is readily available to members of the public. Given this late availability, and the intervening holiday season, the written comment period should be extended to January 31st, 2010.

However, as the result of insistent urging, that deadline has at least been extended to 12/31/09.

Prior to the appearance of the dSGEIS, the Draft NYS Energy Plan already called for gas drilling in the Marcellus Shale, one of its recommendations being to "Encourage development of the Marcellus Shale natural gas formation with environmental safeguards that are protective of water supplies and natural resources."

At the 8/21/09 Public Hearing held at Hunter College, *CWCWC* expressed the view that fracking within the NYC watershed is a dire threat, indeed an unacceptable threat, to the integrity of the drinking water supply for over 9 million NYS residents. Indeed, *CWCWC* considers the threat to the integrity of any watershed in NYS to be unacceptable.

Another approach being promoted by the Governor is to streamline SEQRA that has not been revised since 1996.

*CWCWC* agrees that SEQRA needs revision but in a direction in keeping with the Precautionary Principle that emphasizes "the importance and necessity for public participation in the decision-making process". For now, the public's input to SEQRA is marginal. The public may submit written comments at the DEIS level to which the applicant has to respond. If the applicant's responses in the FEIS simply skirt some issues or are inaccurate, the public has no further opportunity to comment unless someone petitions the lead agency to keep the comment period open. SEQRA should be amended to allow the public the opportunity to respond, as of right.

Also, the SEQRA process is often accelerated by the Lead Agency rendering its Findings prior to all the Involved Agencies submitting their Findings. The lead Agency, in order to fulfill due diligence and its duty to the public, should have all the relevant information at its disposal prior to rendering its own Findings. This might lengthen the process but it would help avoid some uninformed decisions by the Lead Agency.

## **STORAGE AND TREATMENT OF HAZARDOUS WASTES**

There are various estimates on how much of the injected, chemically-laden water, flows back to the surface. Estimates vary between 40% and 70%. This flow-back water is also laden with existing contaminants in the shale such as cobalt, chromium, salts and lead, among others. An additional concern is the surfacing of materials containing Naturally Occurring Radioactive Material or NORM. According to the River Reporter

(see <http://www.riverreporter.com/issues/09-01-08/news-backflow.html>), "NORM consists of Radium 226 and Radium 228, which are bone seekers that result in lung cancer and bone cancer." This wastewater has an unusually high brine water content, as well as Total Dissolved Solids (TDS), radionuclides and chemicals, all of which must be disposed of safely. Bromides are a concern since their disinfection byproducts are as dangerous, or even more so, than the haloacetic acids and trihalomethanes normally found to some extent in NYC water. Disinfection byproducts due to bromides could cause NYC water to be out of compliance with Stage 2 Disinfection Byproduct Rule.

It is shocking to see pictures of the hazardous waste water that is retrieved from the drilling process "stored" in open pits, lined only with a plastic sheet. There appear to be no viable storm water devices to mitigate the effects of a heavy storm that could easily wash the mostly poisonous mix into neighboring streams, lakes, and wetlands with disastrous effects on local fish and wildlife. The spacing units that can cover 640 acres, i.e. one square mile, are largely impervious and rendered even more so by the heavy traffic of hundreds of trucks carrying hazardous materials and fracking equipment of all kinds.

Installation of the feeder pipes carrying the gas to major pipelines is another source of pollution. Gas transmission pipelines may lie above ground or up to 6 feet below ground. Construction of a pipeline requires the use of herbicides and other 'cides that can severely impact sensitive wildlife habitat as well as neighboring streams, wetlands and reservoirs.

Thus, those 640 acres will become a source of uncontrolled and uncontrollable pollution to the surrounding land and water unless unremitting care is exercised.

A usual procedure, if on-site storage is only temporary, is to transport the hazardous waste to a sewage treatment plant (STP) that is supposedly capable of cleaning it. This can present a multitude of problems.

First, only a few STPs are capable of dealing with an unusual mix of chemicals besides regular waste, some of which are not required to be revealed under the Trade Secret Law. Since tens of millions of gallons of water are used in fracking, and these have to be treated by the STPs, the result is that an individual STP will likely not be able to process the volume. The result will be improperly treated effluent - not only the fracking water but also the sewage waste that the STP was originally designed for.

In NYS there are no specialized STPs for this kind of waste. An alternative might be to store the waste via deep underground injection wells. However, disposal sites are limited due to the volume and the hazardous nature of the material. According to the DEP's September, 2009 Rapid Impact Assessment Report (RIAR), "Overall, waste management failures were responsible for the majority of documented water contamination incidents related to natural gas development." In addition, costs could be exorbitant. Even if suitable waste disposal sites were found, their use would still be problematical since the Underground Injection Control (UIC) program does not regulate materials that are not being injected under the waste disposal programs. In other words, there would be little supervision or control.

Thus, the problems associated with storing hazardous waste could, of themselves, be sufficient to ban gas drilling in the NYS Watersheds.

The transport of these hazardous wastes is also a problem. Most will be transported in NYS approved trucks, some having a capacity of up to 9,000 gallons. A fracking operation can use up to 9 million gallons (mg) of water. Unless these 9mg are sucked out of the ground locally, they will have to be transported to the site by truck. That would require, at least, 600 trips of the largest trucks to bring the fracking water to the site, and a near equivalent number to haul the wastewater away, depending on how much is retrieved.

Accidents are unavoidable. Some trucks filled with hazardous waste will inevitably spill their contents and spread contaminants to the surrounding land.

## **LONG -TERM AND CUMULATIVE IMPACTS**

Large areas of the Marcellus Shale are heavily forested and relatively undeveloped. Fracking involves laying bare anywhere from 40 to 640 acres (1 square mile) of mostly forested land in order to provide the area for the machinery. To access the spacing units, roads must be cut through the forests in order to haul the heavy equipment to the drilling pads. The dSGEIS claims that these roads will be narrow, yet the pictures show otherwise, with wide swaths on either side of the access roads devoid of trees.

If fracking becomes prevalent, the cumulative effects will be devastating to wildlife and any endangered and/or threatened species whose habitats will be destroyed. Yet, the dSGEIS does not address this issue - a serious omission that must be addressed.

Also, the landscape will change from heavily forested to an unrecognizable patchwork of forest fragments dotted with clearings filled with trucks, pipes and an assortment of drilling equipment. Fragmenting invites invasive species; long-term, it destroys the viability of the forest.

The loss of forest has serious consequences in terms of air and water quality. Since forests are well known to be the best providers of clean water and clean air, the cumulative effects of forest destruction lead to a less healthy environment for that area's population. These consequences must be addressed in the dSGEIS.

The dSGEIS concedes that air pollution from fracking is a serious problem. Even one unit can exceed national air quality standards at so-called receptor points. The cumulative and long-term effects of many units are not even mentioned. Rather than try and diminish air pollution to comply with national air quality standards, the dSGEIS simply recommends that fencing be installed to keep the public at some safe distance away from the polluted areas.



The long-term effects of air pollution on the health of the on-site workers are not even discussed.

Testing for the location of shale deposits is accomplished by detonating explosives below ground where they generate energy in the form of waves. The various paths taken by the waves give an indication of below-ground conditions. These explosions can generate waves with energies up to 100,000 pound-foot, sufficient to generate earthquakes that can further increase the fissures promoted by fracking. Long-term, there is the possibility of deep-lying toxic brine seeping through the intervening layers, and into the overlying groundwater.

## **RULEMAKING**

The preceding discussion should make clear that fracking can have a major negative environmental that requires a specific regulatory framework. The patchwork of permitting procedures that now apply are obviously insufficient. They can be too easily circumvented by the applicant, with the public unable to examine the many hundreds of applications that will be submitted.

Since fracking is occurring in many parts of the U.S., and since it involves procedures that have demonstrated the potential for inflicting major environmental harm, well beyond any impacts that now occur through vertical drilling, we recommend that fracking in NYS be administered through state rulemaking under the state Administrative Procedure Act.

We urge that the NYS legislature enact a law that embodies the goals it needs to achieve, including the protection of public health and safety, and the protection of the environment from the impacts of fracking. Either a new entity or an existing administrative agency should be assigned to craft more detailed regulations, based on the best available research. The regulatory language should be approved by the public and all involved parties, and subsequently codified under NYS law.

Since fracking is still rare in NYS, regulated parties should come into compliance soon after publication of the rule.

Fracking presents threats to human health and safety, and to the environment, that go far beyond conventional drilling. Before it is too late, the present patchwork of permitting rules must be superseded by regulations, based on sound law and sound science, that are truly protective of public health and the natural environment.

Marian H. Rose, Ph.D.  
CWCWC, Director

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## EXAMPLES OF CONTAMINATION DUE TO FRACKING

### 1. More Gas Contamination Affects Pennsylvania Residents

by [Abrahm Lustgarten](#), ProPublica - August 4, 2009 1:45 pm EDT

**A drilling crew move a section of steel pipe at a natural gas well site near Bradford, Pa., last August. (Robert Nickelsberg/Getty Images)**

Pennsylvania environment officials are investigating another natural gas well leak, after residents near the town of Roaring Branch complained last month that rust-colored water was flowing from a spring and two small creeks were bubbling with methane gas.

The incident is the latest in a string of more than 50 similar cases related to gas drilling in the state, and comes as ProPublica published an article last week reporting that **[such events were more frequent than officials said](#)**.

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### 2.EPA's study of gas drilling in Wyoming could impact local operations

*By Tom Wilber*

[twilber@gannett.com](mailto:twilber@gannett.com)

Debate over the environmental consequences of natural gas drilling in Broome County is reaching across the country.

**The federal Environmental Protection Agency has found evidence of caustic chemicals associated with natural gas production in 11 private water supplies in the state of Wyoming.** Those findings -- featured on Web sites and list-servers of advocacy groups urging more oversight of the drilling industry locally and nationally -- have intensified battle lines over controversial drilling regulations proposed by members of Congress representing communities in the Southern Tier and Colorado.

Meanwhile, local and national proponents of the drilling industry are rallying to defeat the proposal, called the FRAC Act, sponsored by Reps. Maurice Hinchey, D-Hurley, and Diana DeGette, a Democrat from Colorado.

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**3(a). Sudden death of ecosystem ravages long creek**

**'Everything is being killed': 161 aquatic species have died along Dunkard Creek**

**Sunday, September 20, 2009**

**By Don Hopey, Pittsburgh Post-Gazette**  
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**3(b). Bob Donaldson/Post-Gazette**

Just 20 days ago, Dunkard Creek, which meanders lazily back and forth across the border of Pennsylvania and West Virginia, was one of the most ecologically diverse streams in both states, containing freshwater mussels, mudpuppy salamanders and a host of fish species from minnows to 3-foot-long muskies.

But today, the 38-mile creek is all but dead, its 161 species of fish, mussels, salamanders, crayfish and aquatic insects killed by mysterious pollutants coming from sources state and federal agencies have yet to pinpoint despite aggressive field work.

Environmental agencies are treating the creek as a crime scene. Longtime environmental and fisheries officials say the fish kill, which preliminary counts have put at more than 10,000, is one of the worst they've seen.

The Pennsylvania Department of Environmental Protection on Friday said more than 30 miles of the stream have been damaged by the discharge. It has killed 18 species of fish and at least 16 species of freshwater mussels, including the salamander mussel and the snuffbox mussel -- both candidates for federal listings as endangered species.

"This is the worst fish kill I've experienced in 21 years in West Virginia," said Paul Ziemkiewicz, director of the National Research Center for Coal and Energy's Water Research Institute at West Virginia University.

Environmental agencies in West Virginia and Pennsylvania, the Pennsylvania Fish and Boat Commission, the West Virginia Department of Natural Resources and the EPA each have had inspectors on the creek in recent weeks, testing water samples, collecting dead fish and observing discharges into the water.

**... chemical analysis shows the creek water at the treatment facility site contains extremely high total dissolved solids, or TDS, and chlorides -- properties found in wastewater from Marcellus Shale gas well drilling operations but not mine water. Total dissolved solids may include metals, salts and other elements.**

**Marcellus Shale well drilling water contains about 100 chemicals added to reduce friction, eliminate algae growth and perform other functions when water is pumped underground under pressure to fracture the shale and release natural gas.**

**Up to 4 million gallons are used for each Marcellus Shale well. Disposal of wastewater from the wells has caused problems throughout Pennsylvania, including TDS readings that exceeded federal safe drinking water standards in the Monongahela River last winter and this year.**

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### **3(c)With Natural Gas Drilling Boom, Pennsylvania Faces an Onslaught of Wastewater**

by [Joaquin Sapien](#), ProPublica - October 3, 2009 11:05 pm EDT

The McKeesport Sewage Treatment Plant, one of nine plants on the Monongahela River that has treated wastewater from Marcellus Shale drilling operations. (Joaquin Sapien/ProPublica)

Workers at a steel mill and a power plant were the first to notice something strange about the Monongahela River last summer. The water that U.S. Steel and Allegheny Energy used to power their plants contained so much salty

sediment that it was [corroding their machinery](#) [1]. Nearby residents saw something odd, too. Dishwashers were malfunctioning, and plates were coming out with spots that couldn't easily be rinsed off

Pennsylvania's Department of Environmental Protection soon [identified the likely cause](#) [2] and came up with a quick fix. The Monongahela, a drinking water source for 350,000 people, had apparently been contaminated by chemically tainted wastewater from the state's growing natural gas industry. So the DEP reduced the amount of drilling wastewater that was being discharged into the river and unlocked dams upstream to dilute the contamination.

But questions raised by the incident on the Monongahela haven't gone away.

In August, contamination levels in the river [spiked](#) [3] again, and the DEP still doesn't know exactly why. And this month the DEP began investigating whether drilling wastewater contributed to the death of 10,000 fish on a 33-mile stretch of Dunkard Creek, which winds through West Virginia and feeds into the Monongahela. A spate of other [water contamination problems](#) [4] have also been linked to gas drilling in Pennsylvania.

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#### **4. Colorado county copes with methane mystery**

*By JUDITH KOHLER, Associated Press Writer – Sun Nov 1, 2009  
WALSENBURG, Colo. –*

Bernice and Jerry Angely like to show visitors the singed T-shirt a friend was wearing when their water well exploded and shot flames 30 feet high.

The friend wasn't hurt. But that and an explosion at another home weeks earlier forced Colorado to suspend natural gas drilling around this southern plains town until someone could find out why dangerous levels of methane were getting into the groundwater.

Two years later, Walsenburg and surrounding Huerfano County are still waiting, its residents caught in a collision between two of the West's vital resources: Water and natural gas.

"The water is so saturated with methane and other chemicals it is not to be used for human consumption," said Bernice Angely, who's had water trucked to her home 10 miles west of town since her well blew up in July 2007.

Petroglyph Energy Inc., a Boise, Idaho-based firm that has worked the rolling plains of the Raton Basin since 1999, suspended drilling until it can stem the methane. Colorado also is rewriting rules that had allowed Petroglyph to discharge water runoff from its drilling into streams and creeks.

But Petroglyph says it's not clear the drilling caused the methane leaks or

prompted other area water wells to run dry. Eying what it calls an extremely promising natural gas field, it believes a shallow water formation tapped by area homeowners isn't connected to a deeper one pumped by the company for its drilling operations.

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## **5. August 14, 2009**

### **EPA Confirms Drinking Water Contamination by Toxics Used in Hydraulic Fracturing**

Joint Press Release: EARTHWORKS \* Powder River Basin Resource Council

[http://earthworksaction.org/PR\\_EPApavillionDrinkingWater.cfm](http://earthworksaction.org/PR_EPApavillionDrinkingWater.cfm)

[ProPublica: "EPA will investigate nearby oil and gas development to determine contamination source."](#)

Pavillion, WY, August 14, 2009 - This week U.S. Environmental Protection Agency told a group of over 70 that initial investigations found 11 of 39 tested drinking water wells were contaminated. Among the contaminants are toxics used in oil and gas production.

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## **6. DEP Issues Citation to Pennsylvania Driller as a Third Spill Occurs**

by [Abrahm Lustgarten](#), ProPublica - September 23, 2009 12:13 pm EDT

**A drill site in Dimock, Pa., taken last February. (Abrahm Lustgarten/ProPublica)**  
Pennsylvania environment officials have charged Cabot Oil and Gas with five violations **after nearly 8,000 gallons of hydraulic fracturing solution spilled** from a pipe system in two separate incidents near the town of Dimock last week. The department reported that a third, smaller spill, occurred at the site Tuesday morning.

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## **7. More Gas Contamination Affects Pennsylvania Residents**

by [Abrahm Lustgarten](#), ProPublica - August 4, 2009 1:45 pm EDT

**A drilling crew move a section of steel pipe at a natural gas well site near Bradford, Pa., last August. (Robert Nickelsberg/Getty Images)**  
Pennsylvania environment officials are investigating another natural gas well leak, after residents near the town of Roaring Branch complained last month that rust-colored water was flowing from a spring and two small creeks were bubbling with methane gas.

The incident is the latest in a string of more than 50 similar cases related to gas drilling in the state, and comes as ProPublica published an article last week reporting that **such events were more frequent than officials said**.

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## **8. Dish, Texas - Interviews with residents affected by drilling**

To get the gas to market requires an underground highway of pipelines and compression stations. These big internal combustion engines make noise and spew pollutants into the air day and night.

Tillman stands in a field next to the compressor complex along a fence line of trees that died after the engines moved in. His tiny town changed its name to Dish.

Dish spent 15 percent of its \$70,000 annual budget on a private environmental consultant.

Mayor TILLMEN: And the air study showed extremely high levels of both carcinogens and neurotoxins, and so that's just caused us a lot of concern.

BURNETT: A memo written last week by the top toxicologist at the Texas Commission on Environmental Quality expressed concern that the presence of benzene, a potentially cancer-causing toxin detected near the compressors, could pose long-term health risks.

Ms. MEGAN COLLINS (Pediatric Nurse): We just always constantly heard the noise and constantly smelled the fumes. But every time we would ask, they would always just say that it was normal.

BURNETT: Then Collins read a newspaper story about the results of the Dish air emissions study. She says since her family has moved away from town, her symptoms have begun to ease.

Ms. COLLINS: I'm convinced, sadly convinced, that it's the emissions. I mean for doctor after doctor after doctor to tell me that I'm a mystery.

BURNETT: While Megan Collins grew sicker, something strange began to happen to Lloyd Burgess's(ph) horses. He runs a trucking company next to the compression station and he used to board horses on his property.

Mr. LLOYD BURGESS: I had a stallion here that we lost, ended up dying, had another mare in the same stall. She got a neurological defect and went blind in both eyes, had to put her down. There was a stud in the first stall down there,

been here for about two years, and he got sick. I had to move him somewhere else.

BURNETT: No Dish resident has been able to prove the compression stations made them or their animals ill. For their part, the five gas companies that own the compressors have criticized the Dish air emissions study as flawed and inconclusive. They maintain their facilities do not affect public health.