DEVLIN GAILUS
BARRISTERS AND SOLICITORS

Suite C-100 Nootka Court
633 Courtney Street
Victoria, BC, Canada V8W 1B9

Telephone: 250.361.9469
Facsimile: 250.361.9429
www.devlingailus.com

Reply to: Tim Thielmann
Mobile: 250.415.6761
E-mail: timt@devlingailus.com

Environmental Law Centre
UNIVERSITY OF VICTORIA

Faculty of Law, Fraser Building
PO Box 2400 STN CSC
Victoria, BC V8W 3H7
T: 250.721.8188
elc@uvic.ca

February 2, 2011

Via Fax: 250.356.9587

Honourable Colin Hansen
Minister of Health Services
PO Box 9050, STN PROV GOVT
Victoria BC V8W 9E2

Dear Minister Hansen:

Re: Request for *Public Health Act* Inquiry to Investigate Whether Current Regulation of Oil and Gas Development Adequately Protects Public Health

On behalf of the Peace Environment and Safety Trustees Society (PESTS), we hereby request that you exercise your discretion under s. 86 of the *Public Health Act* to appoint a public inquiry into the following questions:

- *Does current government law and policy governing natural gas production wells, facilities and pipelines adequately protect the public from sour gas and other health hazards?*
- *If not, what measures should be taken to improve the relevant law and policy?*
- *When laws and policies are developed and implemented for the oil and gas industry, is sufficient priority given to public health?*

- *If not, what measures should be taken to ensure that public health issues are given higher priority in:*

    - *Standard setting;*
    - *Creation of setbacks of facilities from residents;*
    - *Emergency plans;*
    - *Air quality monitoring;*
    - *Consultation and notification procedures;*
    - *Permit approvals; and*
    - *Compliance and enforcement efforts.*

- *What reform is necessary to make public health officials full partners in the development and implementation of laws and policies to better protect public health?* [1]

Section 86 authorizes creation of a public inquiry to consider whether current law and policy grant officials sufficient authority to protect the public from a health hazard.[2] There can be no doubt that sour gas leaks are a critical public health hazard – as demonstrated by a long list of accidents, including last year's sour gas leak that killed a horse and injured a Pouce Coupe woman. Yet Oil and Gas Commission officials do not have adequate expertise or authority to protect the public from sour gas. Indeed, as outlined below, the 2008 *Oil and Gas Activities Act* (*OGAA*) and recently-announced regulations continue to compromise public health and safety.[3] This regime:

- relies on vague, unenforceable standards;
- lacks scientific or health-based setbacks or air monitoring;
- gives officials broad powers to exempt industry from setback, leak-detection and emergency planning requirements, as well as other fundamental health protections;
- does not require adequate consultation of residents about industry hazards and risks;
- requires no regional, health-based criteria in permitting decisions; and
- is likely to perpetuate inadequate compliance measures – imposing fines the price of speeding tickets against companies that make billions in annual profits.

This must change. BC's medical health agencies must begin to participate fully in all aspects of regulatory development, implementation, and oversight for oil and gas production. A voice for public health must be at the table when facilities are being developed and regulated. Such reform is long overdue:

- In 2003, the Oil and Gas Commission Advisory Committee called on the Oil and Gas Commission to consider involving regional health authorities as soon as sour gas wells are proposed for development.[4]

- In 2006, a Northern Health Medical Health Officer's report recommended that Health Authorities be integrated into planning setbacks, organizing emergency response plans, and improving communications with the public.[5]

- In February 2010, the Auditor General called for reform of oversight of oil and gas contamination risks.[6]

- The same month, Northern Health Medical Health Officers supported the call for a Public Inquiry into the Pouce Coupe incident, and decried the continued lack of a proper system for involving Health Officers after gas accidents.[7]

It is simply unacceptable that Health Authorities continue to be assigned a peripheral role in natural gas regulation – and are mainly involved *after* an incident has occurred. An ounce of prevention is worth ten thousand pounds of cure. Proactive measures must be taken to prevent accidents *before* tragedies occur. That is the essence of good public health policy. Health professionals and agencies need to be made full partners in developing the rules necessary to protect the health of residents in Northeastern BC.

Therefore, we call upon you to exercise your jurisdiction as Minister of Health Services to appoint a Public Health Inquiry to investigate the questions posed above.

Sour Gas – The Dangers

Sour gas contains significant amounts of hydrogen sulphide (H_2S) that makes it smell like rotten eggs.[8] Oil and gas production often releases sour gas, since more than 30% of Canadian natural gas is considered "sour".

Sour gas is highly toxic. In fact, H_2S was used as a chemical warfare agent in World War I, and the U.S. Public Health Service has described it as "one of the most toxic of gases".[9] The gas triggers respiratory paralysis and unconsciousness at 500 parts per million (ppm), and is immediately fatal at levels of 1000 ppm.[10]

The dangers of sour gas are exemplified by a 2003 incident in Gao Qiao, Chongqing, China. Over 64,000 people fled when a well head blew out, releasing sour gas. The gas turned an area of 25 square kilometres into a death zone, killed 243 people, poisoned 9000, and left many survivors with reduced life expectancies and chronic respiratory

problems.[11] While a mishap of this magnitude has not yet happened in Canada, accidents are a regular occurrence, as will be described below.

Victims of sour gas exposure may experience abnormal reflexes, dizziness, insomnia and loss of appetite for months or years afterwards. Survivors may be affected by severe long-term symptoms including loss of memory, depression, and/or paralysis of facial muscles.[12] Sour gas exposure has been linked to increased risk of cancer,[13] cardiovascular disease,[14] diabetes,[15] hematological disorders,[16] immune system effects,[17] nervous system disorders,[18] and kidney disorders.[19] Turner Valley and the Black Diamond region -- home to Alberta's oldest sour-gas field -- has the highest rate of multiple sclerosis in the country.[20]

Apart from leaks of sour gas itself, when sour gas is disposed of by industrial flaring (a common practice), it produces sulfur dioxide (SO_2). SO_2 is a powerful respiratory irritant which can injure or kill.[21] In recognition of SO_2 hazards, the US EPA recently lowered the allowable SO_2 standard significantly.[22]

Although this submission focuses on sour gas, it should be noted that all types of natural gas production create extremely harmful emissions. For example, air emissions from sweet gas production contain massive amounts of benzene -- a class 1 carcinogen with zero recommended exposure and acknowledged health risk at any level of exposure. Such emissions also contain potent carcinogens such as toluene and xylene and highly toxic dioxins.[23] And while emissions from a single facility may not be that high, the combined effect of hundreds of facilities across the landscape may well have serious impacts on ambient air quality across northeast B.C. In addition to air emissions, hydraulic fracturing (fracing) processes are known to contaminate drinking water and otherwise threaten public health.[24]

The BC and Alberta Experience – A Litany of Sour Gas Accidents

Sour gas leaks from BC oil and gas wells are frequent. According to the Oil and Gas Commission, energy companies reported 73 gas leaks between 1999 and 2004.[25] Residents of Northeast BC are rightly concerned about the lack of rigorous regulation of oil and gas production, in light of the following:

- Last year's Pouce Coupe sour gas incident has raised serious concerns about the safety of Northeast residents. See Box for the story.

- Over the last three decades, H_2S leaks, flares or emissions have reportedly killed at least 34 workers in Alberta and BC, and disabled hundreds more.[26] For example, in

February 2001, Fort St. John resident Ryan Strand was killed after attending the site of an uncontrolled sour gas leak.[27]

- In 1982, a well blowout spurted sour gas for 67 days near Lodgepole, Alberta, killing two workers and hundreds of cattle. Thousands of people downwind complained of headaches, eye irritation, nosebleeds, miscarriages and flu symptoms.[28]

- Thousands of rural Albertans living downwind of sour gas facilities have reported health problems and reproductive abnormalities among livestock.[29]

- Similarly, BC residents are seeking medical attention for headaches, nausea, flu-like symptoms, respiratory problems, inflamed throats and lungs, asthma and chronic pain attributed to gas emissions.[30]

- In 1973, hundreds were forced from their homes after a cloud of hydrogen sulfide spewed into the air from an oil well south of Edmonton. The threat posed by the poisonous and potentially flammable cloud prompted authorities to seal off a 225-square-kilometre area.[31]

- In 1998, after repeated flaring at a well site near Vulcan, AB, members of the Graff family experienced dizziness, fatigue, insomnia, irregular heartbeats, nausea, nosebleeds, paralysis, pneumonia, seizures and weight loss. Both women in the family were diagnosed with multiple sclerosis – which has been linked to sour gas.[32]

- In 2000, a ruptured pipe released up to five million cubic feet of sour gas into the air in northeastern BC.[33]

- On December 12, 2004, a sour gas leak and fire west of Edmonton forced the evacuation of more than 500 people.[34]

- In November 2007, a sour gas leak from a Pincher Creek, Alberta pipeline forced ten families from their homes.[35]

- Emissions from a sour gas well paralyzed half of teacher Violet Holmes' face.[36]

The BC oil and gas industry is expanding rapidly, encroaching further and further into residential areas. In addition, affected communities are growing quickly, putting ever-increasing numbers of people at risk. This creates an urgent need to implement additional public health and safety measures.[37]

The Sour Gas Leak at Pouce Coupe

November 22, 2009, 2:30 AM: A resident of the South Peace area near Pouce Coupe noticed a strange sewage-like smell.

4:00 AM: The resident heard a loud roaring sound, like the sound of a jet, but did not think to notify anyone. In the next four hours two other residents heard the noise and smelled gas/rotten egg smell, but didn't notify anyone.

8:38 AM: Pressure data records indicate there was a sudden failure of the pipe at an Encana Swan Wellsite.

9:30 AM: A resident saw a gas cloud and detected a strong odour. After driving his pickup through the cloud, he phoned 911 to report the gas leak. He did not have the Company's emergency numbers. Residents alerted others, with the pickup driver directing people away from the area. 18 residents evacuated the area to escape the toxic sour gas leak.

10:02 AM: Encana staff arrived near the site, but they were delayed in approaching the site because of ongoing gas release.

10:16 AM: Encana contacted the 5 residents who live in the emergency planning zone around the facility (within 1.34 km) with advice about evacuation.

10:45 AM: The well was finally shut in.[38]

November 23: In the afternoon a horse died nearby. A resident reportedly visited the Emergency room at Dawson Creek Hospital, leading to several months of treatment for "scorched" lungs. A herd of weaned calves went off their feed for 3 weeks.[39]

The Oil and Gas Commission investigated and made the following findings[40]:

- The leak was caused by sand in the gas stream eroding the pipe.
- The company's integrity management program did not effectively mitigate the hazard of internal erosion.
- Leak detection and emergency isolation at the site did not achieve timely detection of the leak or control of the escaping gas.
- Encana's response did not conform to their emergency response plan. No notification to the BC Government was made prior to 10:42 AM.
- Encana's Public Information Package distributed to residents did not achieve its desired results, which may have contributed to the delay in reporting the incident. The Publication Information Package is intended to get residents to immediately call Encana if they think they smell H_2S. However, although residents suspected a leak as early as 2:30 AM, they did not notify Encana until 9:38 AM.

In the end, the OGC issued directives that Encana fix its equipment and take steps to improve its emergency response time and other procedures.[41] Charges were laid in September, 2010, but the system has not been fixed. The OGC took a year to issue a general *industry-wide directive* to upgrade the rules for other gas companies with similar problems. Unfortunately, the directive only addressed a handful of issues.[42] Furthermore, the OGC has refused requests to investigate the injury to members of the public and to livestock.

BC's New Oil and Gas Laws Continue to Compromise Human Health

In October, 2010, the new *Oil and Gas Activities Act* and associated regulations came into effect.[43] During consultation on the new legislation, members of the public raised many concerns about public health issues. However, a reading of the new legislation reveals that these concerns remain unaddressed, as public health has taken a backseat to competing priorities of increased industry flexibility and regulatory expediency.

Vague and Unenforceable Standards Do not Protect Human Health

The term "public health" is not mentioned once in the *Oil and Gas Activities Act.* In the few times that "public health" is used in the supporting regulations, the language is vague and lacks any measurable enforceable standards. In fact, the new regulations are replete with vague language and immeasurable standards. The Oil and Gas Commission likely intended to create a "results based" regime, one that increases expediency and gives industry additional flexibility. But these immeasurable standards make it impossible to know whether or not the desired "result" will ever be achieved. This approach not only deprives industry of certainty, it compromises essential protections for public health.

Take drinking water, for example. The *Environmental Protection and Management Regulation*[44] says that an oil and gas operator must not cause "material adverse impacts" to the quality, quantity, or flow of well water. But the regulation sheds no light on what the phrase "material adverse impacts" could possibly mean. There are no lists of banned chemicals, no maximum discharges proscribed, but it gets murkier still: the regulation goes on to say that operators *can* in fact cause such impacts, so long as it's "impracticable" to avoid them. What does "impracticable" mean, one might ask? Too expensive? Too time-consuming? These questions are left unanswered. All the operator must do, the regulation continues, is "minimize" those impacts (whatever that might mean) and write a letter to the person who owns the well.

Setbacks

Setbacks are the minimum required distances between oil or gas wells and other features such as buildings or places of public concourse. These "buffers" are one of the key protections between operating wells and nearby residents. However, the new regulations do not create any special setback distances for sour gas developments – despite the additional risks that sour gas poses. This is contrary to the concerns explicitly stated by the Oil and Gas Advisory Committee.[45] The Advisory Committee warned that:

> *Mere compliance with the minimum requirements set out in the statutes and the regulations will often not, therefore, be an answer to health and safety concerns of residents of an area where sour gas well development is proposed.*[46]

Current setback distances are not based on science or health-based criteria. They are based, rather, on a "historical perception of safety requirements."[47] A Northern Health Report concluded that data gaps exist regarding potential health impacts from chronic exposure to gas development emissions.[48] The Report went on to recommend a review of setback regulations involving better public consultation. Clearly, as long as the scientific data has gaps, the industry should be regulated to a strict precautionary standard.[49]

Further, the *Drilling and Production Regulation* allows Commission officials to exempt proponents from the minimum setback standards.[50] In Alberta, exemptions to setbacks are only allowed if there is "...minimal risk associated with the proposed well and provided that the landowner and occupant of the dwelling are in agreement".[51] But, BC's new regulation, by contrast, provides no rules whatsoever to govern when exemptions can be granted -- nor is there any obligation to even provide written reasons when doing so.

Air Quality Monitoring

The *Drilling and Production Regulation* also fails to provide for adequate air monitoring. Routine flaring is a prevalent industry practice of burning excess or non-marketable waste fuel. The new regulations limit the amounts of routine flaring for *some* wells in *prescribed circumstances*. But, there are no cumulative caps on the total amount of flaring permitted in a given region or in the province as a whole.[52] Nor are there health-based standards to limit local exposure.

Furthermore, flaring accounts for only a small proportion of the harmful emissions produced by the industry.[53] There is no program in place to monitor the health impacts of chronic exposure of residents to low levels of emissions.[54] This piecemeal approach to emissions regulation is allowing a permit-by-permit escalation of dangerous air pollutants in northeastern BC.

Current BC air monitoring is inadequate. People living near gas facilities often have no choice in the matter -- yet they don't have reliable systems to warn them and protect them. Laws require smoke alarms in public buildings, and carbon monoxide

monitoring systems are the norm. Why, then, doesn't the law require the oil and gas industry to install adequate detection systems to protect the public?

It is necessary to establish a system that provides immediate early warning of a gas leak at levels below mandatory evacuation levels -- to give people the chance to get out safely, and to pinpoint the source quickly.

Indeed, one of the main recommendations of a recent Alberta Inquiry into sour gas issues was the upgrading of air monitoring.[55] The BC Public Inquiry should consider whether legislation should require that Sentinel Air Monitoring Systems (SAMS) be installed wherever sour gas facilities (including wells, compressors, pipelines and plants) are in close proximity to residences. SAMS monitor background levels of fugitive emissions of sour gas, and can make current data readily available online.[56]

The temporary and intermittent monitoring provided by the recently announced BC Mobile Air Monitoring Laboratory (MAML) is no substitute for ongoing real-time monitoring whenever gas facilities are operating near residents.[57] As we learned at Pouce Coupe, disaster is unpredictable. While the short-term MAML will provide information about ambient air quality in specific locations during certain measurement periods, it is more important to protect the public at large every day. A network of safety monitors needs to be *permanently* established near residences.

The new *Drilling and Production Regulation* introduces rules that could, if applied, require automatic detection of leaks from sour gas wells. However, these rules only apply to *newly constructed*[58] gas wells, not to wells in operation prior to the enactment of the OGAA and its regulations. And, as with minimum setback rules, OGC officials have complete discretion to exempt proponents from putting these leak detection systems in place -- and are under no statutory obligation to contemplate prescribed health standards or impacts or to provide written reasons for their decisions.

The comprehensive air monitoring system established in Alberta's Drayton Valley should be considered for implementation across BC. That Valley has an effective system for recording and reporting ongoing air monitoring data.[59] This Pembina Sentinel Air Monitoring (PSAM) was developed as a result of community concern about increased sour gas exploration and development in the area. Key stakeholders, including the Pembina Agricultural Protection Association (PAPA), West Central Airshed Society, local municipalities, and concerned public collaborated to develop this permanent H_2S and SO_2 24-hour a day air monitoring network. There are 110 monitors scattered throughout the area; source monitors are located at wells or facilities; and receptors are near homes or public buildings. Some of the monitors also record wind

speed and direction. Readings are taken at intervals of not more than 15 minutes at each monitor, and the data is immediately downloaded to a publicly accessible website.

A Public Inquiry should examine the need for scientific, health-based monitoring systems to track cumulative effects of exposure to emissions and to provide adequate warning to residents in the event of emergencies.

Notification, Consultation, and Permit Decisions

Proponents require a permit to construct wells, facilities, or pipelines. Before applying for these permits, the *Consultation and Notification Regulation*[60] requires proponents to notify land owners and renters within prescribed distances of the proposed structure.[61] The notified party may then provide comments on the application. When making the permit decision, the OGC has to consider those comments, along with information provided by the proponent, and any *environmental* objectives that government may establish.[62]

However, there are several serious problems with the consultation and notification processes now in place. First, there is no requirement for a proponent to fully disclose the risks and hazards of proposed wells, facilities, or pipelines to the landowner (or other affected party)—only to provide a general description of the project.[63] Clearly the risk and hazard should be fully disclosed before the company enters an agreement for use of the landowner's property.

Many complaints have been raised about the inadequacy of company consultations and notifications prior to beginning operations. Residents have reported the following complaints to PESTS:

- One company satisfied their consultation duty by leaving papers taped to the resident's door when the resident was actually at home. The only phone number listed on the document was a Calgary office, a long distance charge the landowner did not wish to incur.

- While a concerned resident awaited response from a company concerning the consultation process, the resident discovered that the application had already been filed with the Oil and Gas Commission with no notice to the resident.

- A company held an unadvertised Open House at a local Community Hall. As expected, almost nobody attended and there was no written response of follow-up with attendees about concerns voiced.

- A company delivered letters of notification to landowners, with the deadline for responses from concerned landowners having already passed.

- A company delivered letters of notification to landowners between Christmas and New Year's, with the deadline for consultation expiring during the first week of January. Several of the landowners were out of the country on winter vacation.

- A company proposed a well which would cut off an escape route for residents living on a dead end road. Residents filed a Notice of Unresolved Concern, but the OGC issued a Right of Entry Order for the company. The well was virtually completed before the issue came before the Mediation and Arbitration Board.[64]

Second, there are no prescribed health objectives or standards for the Oil and Gas Commission to consider in permit decisions. Nor do public or non-governmental health organizations have a right to present submissions. The problem is that most residents receiving permit notifications are not petroleum experts or medical practitioners -- they will not have the expertise to assess health impacts. Further, since residents have only 21 days[65] to provide their comments, they may not have time to hire a qualified professional – even if they have the money to do so.

The fundamental problem is that without consideration of defined regional health objectives or standards, the cumulative impact of wells, facilities, and pipelines for regional health remains unknown. Clearly, permit decisions should, for example, consider the potential impacts of a well, facility, or pipeline on regional health standards such as air quality levels, or H_2S levels in particular.[66]

Emergency Response Plans

The Oil and Gas Commission Final Report on the Pouce Coupe leak identified failures of Encana's Emergency Response Plan. Of particular concern, residents in the immediate vicinity of the leak had "little understanding" of the emergency planning information made available by Encana. The Report also noted that Encana's delay in notifying residents was questionable.[67] Reliable emergency response plans require the *effective* communication of emergency information and responsibilities to residents -- so that they know exactly what to do when they smell gas or hear unusual sounds. The Pouce Coupe incident reveals that government's current approach has fallen short.

The emergency planning regulations associated with the Oil and Gas Activities Act are not yet in force. As expressed in our letter to your Ministry on October 12, 2010, we are urging BC's health agencies to become full partners in designing these regulations and in implementing emergency response measures. Yet, as noted below, repeated calls by health officials for greater involvement in this process have not been heeded.

A Public Inquiry should examine the informational components to be required in emergency response plans, set out the roles of various stakeholders and agencies, and examine feasible options for effective implementation.

Compliance and Enforcement

In light of the hazards posed by the oil and gas industry, and the flexibility industry now has to operate, one would expect rigorous enforcement of the safety standards that do exist.

However, failure to comply with rules appears to be alarmingly common in the industry. For example, an audit of Oil and Gas Commission field inspection statistics by the *Vancouver Sun* in 2005 found that in 2003 and 2004 *non-compliance* rates were in the range of 62 and 64 per cent.[68] This is likely related to weak enforcement efforts. A review by the Pembina Institute noted the insignificant fines imposed for industry non-compliance for those years:

> *The government responded in a way unlikely to deter further non-compliance: a total of 49 tickets were issued, ranging from $230 to $575 – little more than the cost of a speeding ticket.*[69]

For example, the Fossum family blames a gas leak for burning their noses and throats in 2004, but the incident led to only a $575 fine for British Petroleum.[70] Such low fines have questionable deterrent value for the large petroleum firms operating in this province. To set these small fines in perspective, it should be noted that Encana reported $6.41 billion in profits in 2006, setting a new record for the largest annual profit in Canadian history.[71]

The Pembina study found that while the number of wells being drilled in British Columbia was steadily increasing, significantly fewer inspections were being conducted on the land.[72] An inquiry must focus on the potential link between inadequate enforcement and risk to public health.

The Need for a "Voice for Health"

Alberta's Example

In 2000, the Province of Alberta responded to similar public concerns about sour gas by establishing an independent public review of the regulation of sour gas. This Provincial Advisory Committee on Public Safety and Sour Gas conducted extensive consultations, receiving submissions and holding numerous public meetings. The Committee finally issued a comprehensive set of recommendations that became the basis for sweeping reform of Alberta's regulatory system.[73] Among the reforms was enhanced involvement of health officials in the setting of sour gas regulations.[74]

In addition, Alberta developed a dedicated Public Safety Group within the Energy Resources Conservation Board (their Oil and Gas Commission) that focuses on public safety matters. It has established a "Public Safety Officer" who aims to protect public health and safety, without a conflicting mandate to promote economic development of the industry.[75] The Public Safety Officer is the "Voice for Health" and safety in the agency.[76]

The Oil and Gas Commission's Conflicting Mandate Leads to Submersion of Health Concerns

As illustrated above, BC's inadequate reforms to oil and gas regulations reveal the need for an independent "Voice for Health". Regulation of the oil and gas industry falls mainly to the Oil and Gas Commission (OGC) -- an independent regulatory agency that oversees technical aspects of oil and gas operations.[77] However, the OGC has a dual role: as both the promoter of development and regulator of the industry. As Energy BC has described it:

> [The OGC]...*works in assisting in developing the oil and gas industry, while regulating and monitoring its activities for transgressions including adverse environmental or social impacts.*[78]

Health and safety should be given the highest priority -- and not be subject to a conflicting mandate of "assisting in developing the oil and gas industry." Such conflicting mandates can be extremely dangerous. The Obama Administration concluded that similar conflicting mandates for the Minerals Management Service helped trigger the BP Gulf Spill. In response, the US Administration has now reorganized the agency.[79]

BC needs a body that is focused like a laser on public safety and sour gas issues. But the Oil and Gas Commission has made it clear that public health is not the Commission's primary focus. For example, after the Pouce Coupe accident Chairman Alex Ferguson stated that the Commission has neither the mandate nor the medical expertise to investigate the impacts of sour gas on human or animal health.[80]

Government needs to recognize this lack of expertise, and bring in appropriate experts to address this critical area, i.e. public health agencies and experts. Most importantly, these health bodies should not merely be consulted or brought in after the fact. The "Voice for Health" should also hold the pen when laws and policies are first drafted.[81]

Health Authorities Want to Become Full Partners in Oil and Gas Oversight

Health authorities and others have repeatedly noted the need for greater involvement of health officials in the regulation of the oil and gas industry in BC:
Report to the Board of Northern Health

The 2006 Report, *Population Health and Oil and Gas Activities,* from the Medical Health Officer to the Board of Northern Health reviewed scientific literature to develop an evidence-based approach to sour gas regulation in the Northeast. The Report found limited interaction had occurred in BC among provincial authorities, the Health Authorities (HAs), the public, and the gas industry in the planning and developing of setbacks, and organizing and coordinating emergency response plans.

The Report pointed out that the Health Authority should be a participant in multi-stakeholder committees before the earliest stage of any development – and deal with:

- Emergency Response Plans and Emergency Awareness Zone planning;
- Location of wells;
- Proximity to settlements;
- Setback distances, applying health-based criteria;
- Sour gas protocols; and
- Development of proactive land use planning protocols.[82]

Other Medical Health Officer Requests

Similarly, the Medical Health Officers of Northern Health have asked the Oil and Gas Commission to work with the Northeast Oil and Gas Working Group (NEOGWG) [which includes Medical Health Officers] to identify how the group can

assist with planning, implementation and reporting of an air quality monitoring program of high risk areas in the NE. [83]

Oil and Gas Commission Advisory Committee

The OGC Advisory Committee has similarly encouraged the involvement of the regional health authorities. The Committee recommended that the OGC:

> *Consider including the Regional District, other members of the local communities, and regional health authorities, early in the process of considering applications for proposed sour gas well developments.*[84] (emphasis added)

Medical Health Officers' Letter after the Pouce Coupe Accident

Despite all the above submissions, health officials are still not full partners in the sour gas regulatory team. The need to integrate health officials into proactive involvement with regulation of safety issues has still not been adequately addressed. Following the Pouce Coupe leak, the Medical Health Officers (MHOs) from Northern Health wrote in support of PESTS' February 10, 2010 letter calling a *Public Inquiry Act* investigation into the incident. The MHOs expressed concern that integration of health officials into the decision-making system had not yet been achieved:

> *... the necessary processes are not yet in place to coordinate/facilitate effective and efficient communications between key stakeholders and MHOs when significant oil and gas incidents were reported.*[85]

The MHOs were particularly troubled by the lack of communication with the medical authorities following that incident, since they specifically requested that emergency response plans include requirements to notify and consult with MHOs:

> *It is imperative to ensure that MHOs be consulted prior to evacuation of communities and/or returning of residents to affected communities. It would be important to develop a policy for best practices guiding evacuation procedures.*[86]

Clearly, there needs to be a formal role for health authorities within the regulatory structure for the BC oil and gas industry. Health experts need to be empowered to work more closely with government, industry, the public, and other impacted stakeholders to ensure that emerging issues and concerns are identified and addressed. Someone must be given the sole mandate of protecting public health relating to oil and

gas activities – and that body must be fully integrated into all regulation and policy making processes.

The continued lack of proper integration of health concerns into the regulatory process is a compelling reason for a public inquiry under the *Public Health Act*.

Conclusion

Since the Pouce Coupe sour gas incident, the Northern Health Authority and the Peace River Regional District, including all elected representatives and municipal mayors, have expressed their support for a public inquiry. Other organizations that supported a request that the Minister of Energy establish a public inquiry included:

- Pembina Institute
- The BC Federation of Labour
- Peace Valley Environmental Association
- West Moberly First Nations
- West Coast Environmental Law Association
- BC Sustainable Energy Association
- Canadian Parks and Wilderness Society
- Fort Nelson, Fort. St. John and Dawson Creek Trappers Associations
- BC Trappers Association
- BC Grain Producers Association (South Peace Region)
- Sierra Club of BC
- Western Canada Wilderness Committee
- Dogwood Initiative
- ForestEthics[87]

Thus far, the Minister of Energy has declined to act on that request for an inquiry. Yet the failure to integrate health concerns into the regulation of the oil and gas industry continues to put citizens' health at risk.

Therefore, in light of the above submissions and your statutory responsibility to protect public health, we ask that you establish a *Public Health Act* Inquiry into these matters.

Sincerely,

Calvin Sandborn

Calvin Sandborn
Barrister and Solicitor

Tim Thielmann
Barrister and Solicitor

Lois Hill
Peace Environment and Safety Trustees Society

cc: Steve Thomson, Minister of Energy
Alex Ferguson, CEO, Oil and Gas Commission
Murray Coell, Minister of Environment

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[1] Section 86 of the *Public Health Act* states: *(1) The minister may by order (a) appoint the provincial health officer, or any other person, to conduct an inquiry and report on a matter under this section, and (b) set the terms of reference of the inquiry. (2) An inquiry may be for one or both of the following purposes: (a) to assess the impact on health promotion or health protection of (i) a policy, an enactment, a plan, a practice or a procedure of the government, or (ii) an agreement to which the government is or may be a party; (b) to inquire into one or more specific issues respecting public health.* (emphasis added)

[2] See the wording of s. 86 underlined in footnote 1. The 2008 government Backgrounder describing the new *Public Health Act* states: "The *Act* updates existing legislation that enables medical health officers and environmental health officers to investigate health hazard complaints, supports preparations and responses for public health emergencies, and ensures that government and health officials have the authority they may need to mobilize resources and take actions to protect the health of the public." -- M. Stewart, The Ministry of Health, (April 9, 2008) "Backgrounder: British Columbia's New *Public Health Act*", 2008HEALTH0037-000503. Available online (last accessed December 9, 2010): The British Columbia Ministry of Healthy Living and Sport, Backgrounder #1, at

<http://www.health.gov.bc.ca/phact/pdf/Public%20Health%20Act%20News%20Release%20-%20Backgrounder%201.pdf>.

[3] We refer you to PESTS recent legal submissions detailing how the new legislation again gives public health a lower priority than creating flexibility for industry. See Appendix A for the letter from Tim Thielmann, Devlin Gailus, to the Honourable Bill Bennett, Minister of Energy, Mines and Petroleum Resources, Alex Ferguson, Chief Executive Officer and Commissioner, BC OGC, and the Honourable Kevin Falcon, Minister of Health Services, (October 12, 2010) "Re: New *Oil and Gas Activities Act* (OGAA) and Regulations Overlook Public Health". Online (last accessed October 20, 2010): <http://www.bcpest.ca/>.

[4] Kathi Dickie, Vice-Chair, Oil and Gas Commission Advisory Committee, letter to Derek Doyle, Commissioner, Oil and Gas Commission, "Re: Application for Reconsideration FY04-02", File: 20400-40., (September 11, 2003).

[5] Dr. L.M. Medd, Medical Health Officer, (2005-2006) "Population Health and Oil and Gas Activities: A Preliminary Assessment of the Situation in North Eastern BC", A report from the Medical Health Officer to the Board of Northern Health. Online (last accessed October 13, 2010): <http://www.llbc.leg.bc.ca/public/pubdocs/bcdocs/430879/oilandgasreport.pdf>.

[6] Office of the Auditor General of British Columbia, (February 2010) "Oil and Gas Site Contamination Risks: Improved oversight needed", – 2009/2010 – Report 8. ("Auditor General's Report"). See pages 29-34. Online (last accessed September 28, 1010): <http://www.bcauditor.com/files/publications/2010/report_8/report/bcoag-oil-gas-site-contamination-risks.pdf>.

[7] Letter from C.J. Badenhorst MD, to Alex Ferguson, Commissioner, OGC, on behalf of Northern Health's Chief MHO, Dr. D. Bowering; Dr. W. Osei, NI MHO; Dr. R. Chapman, Acting CMHO; and Lucy Beck, Regional Director Public Health Protection (February 26, 2010) entitled "Re: Letter dated February 10, 2010 to yourself and Minister Blair Lekstrom from Lois Hill and Karen Campbell, and the November 22, 2009 Well Failure, EnCana Swan Well Site A5-7-77-14 L W6M".

[8] Centre for Energy, Upstream Oil and Gas Industry, "Sour gas". Online (last accessed October 7, 2010): <http://www.centreforenergy.com/AboutEnergy/ONG/Environment.asp?page=4 >.

[9]For World War I reference, see http://books.google.ca/books?id=MQMGhInCvlgC&pg=PA109&lpg=PA109&dq=sour+gas+warfare&source=bl&ots=bDvCyBKFl3&sig=uu5raC7D1ZGYtkmWHgzRu9ubdvo&hl=en&ei=eovpTI3LNYTAsAPG2PmxCw&sa=X&oi=book_result&ct=result&resnum=2&ved=0CB8Q6AEwAQ#v=onepage&q&f=false Also see CUPE, "Hydrogen sulfide", (July 21, 1987). Online (last accessed August 0 <http://cupe.ca/health-and-safety/Hydrogen_Sulfide>. Also see Andrew Nikiforuk. (2002, October 1). "Flare up", *National Post* [National Edition], p. 94. Retrieved August 25, 2010, from Canadian Newsstand Major Dailies. (Document ID: 273291631). Online: <http://proquest.umi.com.ezproxy.library.uvic.ca/pqdweb?did=273291631&sid=1&Fmt=3&clientId=3916&RQT=309&VName=PQD> or <http://www.saboteursandbigoil.com/FlareUp.pdf>

[10] See "Table A3-1: Human Physiological Responses to H2S Exposure" adapted from Beauchamp et al. (1984); Reiffenstein et al. (1992); Guidotti (1996), as cited at p. 53 of L. M. Medd, Medical Health Officer, (2005-2006) "Population Health and Oil and Gas Activities: A Preliminary Assessment of the Situation in North Eastern BC". See also, CUPE, "Hydrogen Sulfide", (July 21, 1987), online: <http://cupe.ca/health-and-safety/Hydrogen_Sulfide>; and the Canadian Press, (January 27, 2010) "Controversy follows Sour Gas Around Alberta and BC" online: <http://www.bchydro.com/news/articles/conservation/sour_gas_controversy.html>.

[11] "China gas leak forces evacuations, no injuries", *New Zealand Herald*, March 27, 2006. Online: <http://www.nzherald.co.nz/world/news/article.cfm?c_id=2&objectid=10374560>; B. Parfitt, (July 8, 2004)

deaths that occurred, and not the injuries or diminished life expectancies. That info is cited in Parfitt's article.

[12] CUPE, "Hydrogen sulfide", (July 21, 1987), online (last accessed August 0 <http://cupe.ca/health-and-safety/Hydrogen_Sulfide>.

[13] *Andersson et al. (2001); Langseth and Andersen (2000); Brenneman et al. (2000); Gamble et al. (2000); Lewis et al. (2000); Sadowska et al. (1999); Friis et al. (1999); Andersson, E., Nillson, B. Persson et al. (1998); Betemps et al. (1994); Andersson, Hagberg, Nilsson et al. (1996); Friis et al, (1993); Halasova et al. (1993) Lafleur and Vena (1991); Ahlman et al. (1991); Wingren at al. (1991).*

[14] *Van Aalst et al. (2000); Betemps et al. (1994); Jappinen and Tola (1990); Hammar et al. (1992); Ahlman et al. (1991); Lewis et al. (2000); Gamble et al. (2000); Ng and Tonzetich (1984); Hayden et al. (1990a), (1990c); Tanaka et al. (1999); Bates et al. (1998); Schneider et al. (1998); Anonymous (1993); Horowitz et al. (1997); Bhambhani et al. (1994), (1996), (1997); Bhambhani and Sing (1991); Gregorakos et al. (1995); Friis et al. (1993); Tvedt et al. (1991a); Ahlman et al. (1991); Zhao et al. (2001); Lovati et al. (1996); Baldelli et al (1993); Kohno et al. (1991); Seredenko et al. (1991)*

[15] *Beelen et al. (2000); Chaturvedi et al. (2000); Watt et al. (1997); Wingren et al (1991); Zhao et al. (2001); Sidhu et al. (2001); Russo et al. (2000); Riedel and Maulik (1999); Hosoki et al. (1997); Lovati et al. (1996); Hayden et al. (1990b), (1990c); Legator et al. (2001); Kraut (2000); Wing and Wolf (2000); Anonymous Renville County (1996); TNRCC (1998) Martula et al. (1995); Anonymous National Institute for Occupational Safety and Health (1995); Haahtela et al. (1992)*

[16] *Legator et al. (2001); van Aalst et al. (2000); Sadowska et al. (1999); Walker et al. (1999); Bhambhani et al. (1995), (1997); Pach et al. (1996); Snyder et al. (1995); Jappinnen and Tenhunen (1990); Hooser et al. (2000); Khan et al. (1998); Church (1992)*

[17] *Legator et al. (2001); Sadowska et al. (1999); Khan et al. (1991), (1998b); Stair et al. (1996); Bochanovskii et al. (1995); Granlund-Edstedt et al. (1993); Persson et al. (1993).*

[18] Human Studies:

Legator et al. (2001); Thorn and Kerekes (2001); Wing and Wolf (2000); Vrijheid (2000); Hessel & Melenka (1999); Kilburn (1997), (1998), (1999); Boev et al. (1998); Bates et al. (1998); DeFruyt et al. (1998); Schneider et al. (1998); Anonymous (1993); TNRCC (1998); Berger (1996); Haahtela et al. (1992); Partti-Pellinen et al. (1996); Kuo et al. (1996); Pach et al. (1996); Snyder et al. (1995); Kilburn and Warsaw (1995); National Institute for Occupational Safety and Health (1995); Schuffman et al. (1995); Mattila et al. (1994b); Sanz-Gallen et al. (1994); Arentoft et al. (1993); Callender et al. (1993); Inoue (1993); Hua et ak, (1992); Tvedt et al (1991b); Jappinen et al. (1990); Shusterman et al. (1989)

Animal Studies:

Struve et al. (2001); Dorman et al. (2000); Partlo et al. (1998); Khan et al. (1998); Stair et al. (1996); Baldelli et al (1993); Sandu et al. (1993); Boev et al. (1992); Skrajney et al. (1992); Hannah and Roth (1991); Warencia et al. (1990); Hannah et al (1990)

In Vitro Neurochemical Effects Studies:

Kimura (2000); Abe and Kimura (1996); Kombian et al. (1993); De Santis et al. (1990)

[19] *Legator et al. (2001)*

[20] The national average is between 100 and 200 cases per 100,000. See Andrew Nikiforuk, (October 1, 2002) "Flare up", *National Post* [National Edition], p. 94. Retrieved August 25, 2010, from Canadian Newsstand Major Dailies. (Document ID: 273291631). Online (accessed August 28, 2010): <http://proquest.umi.com.ezproxy.library.uvic.ca/pqdweb?did=273291631&sid=1&Fmt=3&clientId=3916&RQT=309&VName=PQD> or <http://www.saboteursandbigoil.com/FlareUp.pdf>. See also: Sterling News, Turner Valley/Black Diamond, "MS cases prompt health probe" *Calgary Herald* (9 March 2001) and G. Beckett, "residents claim gas flaring is responsible for health concerns", *Okotoks Western Wheel* (7 March 2001).

[21] There have been 120 peer reviewed studies which the World Health Organisation included in a review of the health effects of SO2. As a result of this review, a panel the WHO panel (~80 experts) recommended, by consensus, that 20 ug/m3 24 hour average be the WHO guideline for SO2. These studies were mostly mortality studies. The WHO further acknowledged that there were studies that showed significant effects (i.e. increased death) following 24 hour exposures to very low concentrations of SO@. Studies have shown reproductive effects such as low birth weight pre-term birth are also significantly associated with a number of pollutants including SO2 in low 24 hour concentrations. One of these studies was done in Vancouver. See *"WHO Air Quality Guidelines for Particulate Matter, Ozone, Nitrogen Dioxide and Sulfur Dioxide. Summary of Risk Assessment" 2005*
Association between Gaseous Ambient Air Pollutants and Adverse Pregnancy Outcomes in Vancouver, Canada Shiliang Liu,1 Daniel Krewski,1 Yuanli Shi,1 Yue Chen,1 and Richard T. Burnett1,2 Environmental Health Perspectives • VOLUME 111 | NUMBER 14 | November 2003 p 1773.

[22] **35520 Federal Register** / Vol. 75, No. 119 / Tuesday, June 22, 2010 / Rules and Regulations :
"Specifically, EPA is establishing a new **1-hour SO2** standard at a level of **75 parts per billion (ppb)**. The EPA is also revoking both the existing 24-hour and annual primary SO2 standards..."EPA is also establishing requirements for an **SO2 monitoring network**. These new provisions require monitors in areas where there is an increased coincidence of population and SO2 emissions."(p. 35521) "The requirement that primary standards include an **adequate margin of safety** is intended **to address uncertainties associated with inconclusive scientific and technical information** available at the time of standard setting. It is also intended to provide a **reasonable degree of protection against hazards that research has not yet identified.**"(pg. 35521) Note that Dimethyl Sulfate is found downwind of sour gas plants and facilities, and is a direct acting carcinogen with acute toxic effects. [Environmental Health Criteria 48 (WHO)]

[23] For example, the emissions produced by sweet gas flares are not innocuous. M. Strosher produced a chart in 1996 which identifies the "short-list" of 43 chemicals found downwind of sweet flare plumes. See M. Strosher, *Investigations of Flare Emissions in Alberta, Final Report to Environment Canada Conservation and Protection, The Alberta Energy and Utilities Board, and the Canadian Association of Petroleum Producers,* Environment Technologies, Alberta Research Council Calgary, Alberta November, 1996.
Note that dioxins are extremely poisonous chemicals produced by combustion of chlorine in the presence of hydrocarbons. Chlorine based chemicals are used in fracking fluids, which routinely enters the flarestack along with natural gas during the clean-up flaring process. The water produced from the deep formations is generally high in salt content, pumping still more chlorine into the flare stack. Routine flaring of natural gas results in incomplete combustion, which allows the release of Volatile Organic Compounds (VOCs) and H2S into the atmosphere. VOC'S present in raw natural gas include Benzene, Toluene and Xylene. These are extremely carcinogenic chemicals. Toluene is a potent central nervous system toxicant. Xylenes are developmental toxins leading to delayed development, decreased fetal body weight and altered enzymes. VOC's are released into the air in a form of aerosol because of incomplete combustion and will be transported up to a hundred km on the ambient wind. Benzene is a class 1 carcinogen with zero recommended human exposure. The Canadian Association of Petroleum Producers issued a document in 2006 (*Benzene Control BMP)* recommending a Benzene emission limit of 1 tonne per year per facility in spite of its carcinogenic properties. Ref. *OGC Information Letter # OGC 07-03*. This is the amount permitted by the OGC, no matter how close a facility is to a human residence. Information Letter #OGC 07-03.

[24] Although the exact chemical composition of frac'ing fluids is closely guarded by extraction companies and varies depending on the type of rock the gas is being extracted from, various chemicals are known to be generally used in frac'ing fluid mixtures. These chemicals include known carcinogens, as well as various other endocrine disruptors and mutagens. [Michael Berkowitz, Environment America Research and Policy Center, "Toxic Chemicals on Tap:

How Natural Gas Drilling Threatens Drinking Water", November, 2009. Available online at: <http://cdn.publicinterestnetwork.org/assets/4fe0dcbda2ad62ab03a8440346c90cd8/AME-toxics-report-final-lo-res.pdf>.] The ability to recover these chemicals from a well varies with between 15% and 80% being recovered. [U.S. Environmental Protection Agency, "Hydraulic Fracturing Research Study", June 2010, at page 2. Available online at: <http://www.epa.gov/safewater/uic/pdfs/hfresearchstudyfs.pdf>.] Moreover if not disposed of immediately and properly, the chemically-laced "produced" water retrieved from the well can seep through the ground and potentially contaminate the water table. Storage pits for the water can also risk overflowing from rain- or snowfall. [Paula Barrios, Shareholder Association for Research and Education, "Hydraulic fracturing and water pollution: Investor risks from North America's shale gas boom", 2010, at page 2. Available online at: <http://www.share.ca/files/Hydraulic_Fracturing__Investor_Brief.pdf>.] Further potential for contamination is from naturally occurring contaminants that have been disturbed by the frac'ing process finding their way into the water supply. [U.S. Environmental Protection Agency, "Hydraulic Fracturing Research Study", June 2010, at page 2. Available online at: <http://www.epa.gov/safewater/uic/pdfs/hfresearchstudyfs.pdf>.] Due to recent reports of groundwater contamination in the United States, the Environmental Protection Agency is currently undergoing an investigation into the environmental and health effects of hydraulic fracturing. [U.S. Environmental Protection Agency, "Hydraulic Fracturing". Available online at: <http://water.epa.gov/type/groundwater/uic/class2/hydraulicfracturing/index.cfm>.]

[25] B. Parfitt, (July 8, 2004) "Killing Fields", *Straight.com*. Online (accessed August 22, 2010): <http://www.straight.com/article/killing-fields>.

[26] Andrew Nikiforuk, (October 1, 2002), "Flare up", *National Post* [National Edition], p. 94, retrieved August 25, 2010, from Canadian Newsstand Major Dailies. (Document ID: 273291631). Online: <http://proquest.umi.com.ezproxy.library.uvic.ca/pqdweb?did=273291631&sid=1&Fmt=3&clientId=3916&RQT=309&VName=PQD> or <http://www.saboteursandbigoil.com/FlareUp.pdf>.

[27] B. Parfitt, (July 8, 2004) "Killing fields". *Straight.com*. Online (last accessed October 18, 2010): <http://www.straight.com/article/killing-fields>.

[28] "Historical Data", United Nations Environmental Programme: Division of Technology, Industry, and Economics. Online (last accessed October 18, 2010): <http://www.unepie.org/scp/sp/disaster/casestudies/china/gaoqiao.htm#Historical>.

[29] Andrew Nikiforuk, (October 1, 2002), "Flare up", *National Post* [National Edition], p. 94,retrieved August 25, 2010, from Canadian Newsstand Major Dailies. (Document ID: 273291631). Online: <http://proquest.umi.com.ezproxy.library.uvic.ca/pqdweb?did=273291631&sid=1&Fmt=3&clientId=3916&RQT=309&VName=PQD> or <http://www.saboteursandbigoil.com/FlareUp.pdf>

[30] Personal communication with Lois Hill, who has received this information from residents of the Northeast.

[31] "Hundreds flee from poison gas cloud", CBC Radio, The World at Six, CBC Digital Archives (Oct. 3, 1973). Online: <http://archives.cbc.ca/environment/pollution/clips/12450/>, see also: <http://archives.cbc.ca/version_print.asp?page=1&IDLan=1&IDClip=12450&IDDossier=3357&IDCat=&IDCatPa>

[32] Andrew Nikiforuk, (October 1, 2002) "Flare up", *National Post* [National Edition], p. 94. Retrieved August 25, 2010, from Canadian Newsstand Major Dailies. (Document ID: 273291631). Online (accessed August 28, 2010): <http://proquest.umi.com.ezproxy.library.uvic.ca/pqdweb?did=273291631&sid=1&Fmt=3&clientId=3916&RQT=309&VName=PQD> or <http://www.saboteursandbigoil.com/FlareUp.pdf>

[33] B. Parfitt, (July 14, 2004) "Gas Leaks Sour Landowners". *Straight.com*. Online (accessed September 28, 2010): <http://www.straight.com/article/gas-leaks-sour-landowners>.

[34] CBC and the City of Edmonton estimated 700 evacuees. http://www.cbc.ca/canada/story/2004/12/14/edmonton-gas-leak041214.html and http://www.edmonton.ca/for_residents/Edmonton_Disaster_Timetable.pdf. Another account estimated the number of people evacuated at 800 people. See "Review of some disaster events in Alberta", Online (last accessed October 18, 2010):

https://mahextranet.gov.ab.ca/quiz/Chapter_2/Review_of_Some_of_the_Disaster_Events_in_Alberta_since_1986.htm>. A different article estimated the number of evacuees at over 600: http://www.lloydminsterheavyoil.com/acclaimblow.htm. Finally, the Alberta EUB estimated 500 were evacuated, but did not need to be: http://www.ercb.ca/docs/products/newsletter/pdf/atb_september_2005.pdf (at page 3).

[35] "Sour gas leak evacuates southern Alberta homes" (November 19, 2007), online: <http://www.cbc.ca/canada/calgary/story/2007/11/19/sourgas-leak.html>.

[36] Andrew Nikiforuk, Calgary Herald (April 13, 2004) "Leave it down the hole with the devil: Sour gas not safe by any measure" Online: <http://www.sierraclubchinook.org/SourGas/Articles/LeaveDownHole.html>

[37]Population Health and Oil and Gas Activities; A Report By Northern Health, (2007), p. ix, online, <http://www.llbc.leg.bc.ca/public/pubdocs/bcdocs/430879/oilandgasreport.pdf>

[38] For the above information see the preliminary and final BC Oil and Gas Commission reports on the incident: "Failure Investigation Report: 22 November 2009 Failure of Piping at EnCana Swan Wellsite A5-7-77-14 L W6M" (February 4, 2010), pp. 4-7 and 10-11 at: <http://www.ogc.gov.bc.ca/document.aspx?documentID=518&type=.pdf>; and "Failure Investigation Report: Final Report on the November 22, 2009 Failure of Piping at Encana Swan Wellsite A5-7-77-14 L W6M" (November 2010), pp. 5-10 at: http://www.ogc.gov.bc.ca/document.aspx?documentID=1026&type=.pdf .

[39] "Last November one EnCana sour gas release created a cloud 150 feet high. It killed several cattle and a horse." Andrew Nikiforuk, (January 13, 2010) "The Bombings, the Olympics and the Police: Investigators won't succeed by treating rural citizens like Taliban suspects" *TheTyee.ca*. Online (last accessed October 25, 2010): <http://thetyee.ca/Opinion/2010/01/13/BombingsAndOlympics/>. Also, personal communication, Lois Hill.

[40] BC Oil and Gas Commission, "Failure Investigation Report: Final Report on the November 22, 2009 Failure of Piping at Encana Swan Wellsite A5-7-77-14 L W6M" (November 2010), p. 15 at: http://www.ogc.gov.bc.ca/document.aspx?documentID=1026&type=.pdf .

[41] BC Oil and Gas Commission, "Failure Investigation Report: Final Report on the November 22, 2009 Failure of Piping at Encana Swan Wellsite A5-7-77-14 L W6M" (November 2010), pp. 15-16 at: http://www.ogc.gov.bc.ca/document.aspx?documentID=1026&type=.pdf .

[42] The new directive requires companies to establish procedures for monitoring sand in systems and define cleanup target criteria; establish erosion/corrosion monitoring programs; install shutdown devices closer to the wellhead in certain (new) wells; and consult with and involve local responders in emergency planning and emergency exercises. See BC Oil and Gas Commission, Directive 2010-06, November 23, 2010, "Wellsite Failure Investigation Prompts New Directive for Gas Wellsites in BC". See http://www.ogc.gov.bc.ca/document.aspx?documentID=1028&type=.pdf The lack of more new rules for industry as a whole is troubling, in light of a statement from another company, that conceded that their company would not do anything over and above what the law required. Personal Communication, Lois Hill.

[43] Consolidating and updating the *Oil and Gas Commission Act*, the *Pipeline Act* and the *Petroleum and Natural Gas Act*.

[44] *Environmental Protection and Management Regulation,* [BC Reg/2010], s. 9. Available at: http://www.ogc.gov.bc.ca/documents/OGAA/OIC_and_EPM_regulation_June_23_2010.pdf (last accessed October 5, 2010).

[45] Kathi Dickie, Vice-Chair, Oil and Gas Commission Advisory Committee, letter to Derek Doyle, Commissioner, Oil and Gas Commission, "Re: Application for Reconsideration FY04-02", File: 20400-40., (September 11, 2003):

"The Committee notes with concern that the legal requirements for Well Position, Spacing and Target Areas, as set out in the Drilling and Production Regulation*, do not distinguish between sour gas wells and other types of wells in setting out minimum distances from building and residents, notwithstanding the additional health and safety issues associated with sour gas well.*

...

The absence of legal requirements [for setbacks] *that specifically address additional concerns associated with sour gas wells means that the additional positioning issues with sour gas wells in relation to residential areas, and the permit conditions that are necessary in the circumstances are left to the discretion of the proponent and the Commission.*

[46] Kathi Dickie, Vice-Chair, Oil and Gas Commission Advisory Committee, letter to Derek Doyle, Commissioner, Oil and Gas Commission, "Re: Application for Reconsideration FY04-02", File: 20400-40., (September 11, 2003).

[47] Population Health and Oil and Gas Activities; A Report By Northern Health, (2007), p. 23, online, <http://www.llbc.leg.bc.ca/public/pubdocs/bcdocs/430879/oilandgasreport.pdf>.

[48] Population Health and Oil and Gas Activities; A Report By Northern Health, (2007), p. vii, online, <http://www.llbc.leg.bc.ca/public/pubdocs/bcdocs/430879/oilandgasreport.pdf>.

[49] As Former Minister Blair Lekstrom acknowledged, the current regulated distances are based on scientific studies done in Alberta in the late 1970s.

[50] *Drilling and Production Regulation, supra.*, ss. 4(1)(a); 5(2)(a), (b), and (d), **COMMENT: There is no s. 5(2)(f) in updated regulation** (B.C. Reg. 282/2010). **Section 4(1)(a) applies only to s. 5(2)(a) [40m minimum spacing from right of way or easement of any road allowance or public utility]**

Deleted: , and (f)

[51] Alberta Energy and Utilities Board, Interim Directive ID 97-6. Online (last accessed November 29, 2010): http://www.ercb.ca/docs/ils/ids/pdf/id97-06.pdf

[52] Tom Michelussi, Altus Environmental Engineering Ltd., (December 2006) "Best Management Practices for Facility Flare Reduction" Canadian Association of Petroleum Producers. Online (last accessed October 7, 2010) http://www.capp.ca/getdoc.aspx?DocId=114231&DT=NTV>. The maximum allowable volume of flared gas depends on the type of well, the stage at which flaring is required, and whether the operator has a permit that allows for flaring. See s. 42 of the *Drilling and Production Regulation, supra.* In addition, the Oil and Gas Waste Regulation allows for permits or exemptions for various types of flaring and other emissions, including those from tanks, motors, electricity generators, service rigs, and incinerators. See *Oil and Gas Waste Regulation,* [BC Reg. 4/2010] available at http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/32_254_2005 (last accessed October 7, 2010).

[53] A recent study by Judi Krzyzanowski of fugitive emissions from BC's oil and gas industry concluded that emissions are being drastically under-reported by British Columbia. It found that emission levels for nitrogen oxide, sulfur oxide and volatile organic compounds are double what the government reports. See Mark Hume, (March 22, 2010) "What do small leaks mean for public health?", Globe and Mail. Online (last accessed October 7, 2010): http://www.theglobeandmail.com/news/national/british-columbia/what-do-small-leaks-mean-for-public-health/article1507701/

[54] There are widespread concerns about the potential health impacts of such exposure. For example, see: CBC News, (October 21, 2008) "Spike in lung cancer concerns Dawson Creek doctor". Online (last accessed October 7, 2010): http://www.cbc.ca/canada/british-columbia/story/2008/10/21/bc-lung-cancer.html#ixzz11isz8NpX.

[55] Alberta Energy Utilities Board, (March 2007) *Public Safety and Sour Gas: Final Report.* Online (last accessed October 25, 2010): <http://www.ercb.ca/docs/documents/reports/PSSG_FinalReport_2007-03.pdf>

See the Alberta Public Safety Group Final Report, "Public Safety and Sour Gas: Final Report, which states:

"Recommendation 65 and 68 – Air Monitoring

We recommend the EUB enhance its capability to conduct monitoring as part of its complaint response and compliance programs, and *undertake a review of the current monitoring response capabilities for events involving significant sour gas releases and ensure that adequate capability exists.*

Actions Taken

An inventory was compiled of the available equipment (stationary and mobile) throughout the province, including locations and equipment capabilities. The Lodgepole Blowout Inquiry recommendations were reviewed to identify any shortfalls, potential requirements, and additional strategic locations where monitoring equipment should be available in the event of an emergency.

An air monitoring protocol was developed for staff to ensure a consistent approach for gathering, recording, and analyzing air monitoring results. An air monitoring inspection guide was written to outline quality assurance and quality control calibration procedures to be followed by field staff when using the air monitoring equipment.

In attempting to improve air monitoring capabilities to provide effective response to complaints and in determining the exceedance of ambient air guidelines and taking appropriate corrective action, the ERCB has responded to this recommendation by purchasing a second mobile air-monitoring unit, hiring two fully trained air-monitoring technicians, and increasing the number of facilities monitored per year.

In 2005 the EUB inspected 768 monitoring inspections, as compared to 461 inspections in 2002, an increase of 60 per cent over the four-year period. This was a direct result of this recommendation.In addition to conducting monitoring inspections and responding to public complaints, the mobile monitoring units are on standby to respond to emergencies."

[56] "Internet monitoring system protects farmers from sour gas", *Canada.com* (May 18, 2008), online (last accessed October 18, 2010): <http://www.canada.com/story_print.html?id=e9ac172d-54d6-48d6-94df-ecbc9873661c&sponsor>.

[57] The Mobile Air Monitoring Laboratory first arrived in northeast BC in May, 2010, where it will be making periodic stops in various communities in the region. Online (http://www2.news.gov.bc.ca/news_releases_2009-2013/2010EMPR0019-000594.htm.) For general information on the MAML, see http://www.env.gov.bc.ca/epd/bcairquality/readings/maml.html.

[58] *Drilling and Production Regulation, supra.*, s. 39(10).

[59] Pembina Sentinel Air Monitoring Network, online (last accessed October 25, 2010): <http://www.pembinaairmonitoring.com/>.

[60] *Consultation and Notification Regulation,* B.C. Reg. 279/2010. Online <http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/1976694347#section11> (accessed October 29, 2010).

[61] Similar notification rules apply to permit amendment applications under s. 31 of the *Oil and Gas Activities Act, supra.*

[62] *Oil and Gas Activities Act, supra.*, s. 22(5); 23-25.

[63] *Consultation and Notification Regulation, supra.*, ss. 11(c) to (f)

[64] Personal communications from residents to Lois Hill.

[65] *Consultation and Notification Regulation, supra.*, s. 11(g)(i); *Oil and Gas Activities Act, supra.*, s. 22(5); 24.

[66]Only land *owners* and proponents may currently appeal permit decisions.[66] Other potentially affected parties, such as First Nations, land-renters and letters, local governments, health agencies, and public interest groups, were have no right to appeal such decisions. It is difficult to imagine a principled justification for this distinction. The threat posed by sour gas developments depends on *location,* not land *tenure.* The principles of procedural fairness do not support this distinction either. In *Cardinal v. Director of Kent Institution,* [1985] SCR 643, Ld Dain J. stated: *"The Court has affirmed that there is, as a general common law principle, a duty of procedural fairness lying in every public authority making an administrative decision which*

is not of a legislative nature and which affects the rights, privileges or interests of an individual." To become consistent with the principles of procedural fairness, the *OGAA* should contain an explicit right of appeal for any party subject to serious health or safety risks associated with well, facility, or pipeline permit applications. Furthermore, a land owner has only 15 days to launch this appeal. And the only issue that may be raised is whether the OGC official gave due regard for the land-owner's comments or the consultation record prepared by the proponent.[66] This means that new evidence about potential health or safety risks will not be admitted on appeal.

[67] BC Oil and Gas Commission, "Failure Investigation Report: Final Report on the November 22, 2009 Failure of Piping at Encana Swan Wellsite A5-7-77-14 L W6M" (November 2010), p. 14 at: http://www.ogc.gov.bc.ca/document.aspx?documentID=1026&type=.pdf

[68] *Vancouver Sun*, (May 16, 2005), "Oil and Gas Audit Reveals Noncompliance," p. A10, as cited in Pembina Institute, (October 2006) "Fact Sheet: Resource Development in the North – Who Protects the Land? Compliance Issues for Oil & Gas in British Columbia". Online (last accessed October 20, 2010): <http://pubs.pembina.org/reports/BC_oilgas07.pdf>.

[69] Pembina Institute, (October 2006) "Fact Sheet: Resource Development in the North – Who Protects the Land? Compliance Issues for Oil & Gas in British Columbia". Online (last accessed October 20, 2010): <http://pubs.pembina.org/reports/BC_oilgas07.pdf>.

[70] *Chetwynd Echo*, July 2, 2010, p. 28.

[71] "EnCana posts biggest annual profit in Canadian history."CBC News, February 15, 2007 Online (last accessed October 29, 2010) <http://www.cbc.ca/money/story/2007/02/15/encana.html >.

[72] Pembina Institute, (October 2006) "Fact Sheet: Resource Development in the North – Who Protects the Land? Compliance Issues for Oil & Gas in British Columbia". Online (last accessed October 20, 2010): <http://pubs.pembina.org/reports/BC_oilgas07.pdf>. See also: Pembina Institute – letter in support of PEST request for inquiry into Pouce Coupe leak, Online: <http://bc.pembina.org/pub/1305>.

[73] The Committee finally issued a report with 87 recommendations for reform – including recommendations for improving the sour gas regulatory system, reducing health impacts, and improving consultation with the public on all sour gas issues. The Committee also made recommendations regarding set-backs from wells, emergency response plans, and air monitoring, among other issues. In 2006 the Energy and Utilities Board formed the Public Safety Group, to ensure that the 87 recommendations were fully addressed.

In 2007 the Public Safety Group published "Public Safety and Sour Gas: Final Report". This report sets out the recommendations from the Public Inquiry, and cites the specific actions that have been taken to deal with the recommendations of the independent Advisory Committee's Inquiry. Issues dealt with included:

- Public Awareness and Understanding of Sour Gas Issues;
- The Provision of Clear, Understandable Information for All Residents; and
- Sour gas exposure monitoring;
- Emergency responses; and
- Establishing public consultation research teams,
- Setbacks

It should be noted that the Alberta Energy Resources Conservation Board now boasts that its current regulation scheme now addresses all 87 recommendations first made by the Alberta Advisory Committee inquiry. See Alberta Energy Utilities Board, (March 2007) *Public Safety and Sour Gas: Final Report*, at page 22. Online (last accessed October 25, 2010):
<http://www.ercb.ca/docs/documents/reports/PSSG_FinalReport_2007-03.pdf>

[74] In response to the Committee's recommendation that the Energy and Utilities Board improve coordination between itself and health officials, a protocol was developed with provincial, federal and

regional health authorities. The protocol committed the parties to using the following processes for sour gas issues:

- Engage local health authorities whenever the Board undertakes a review of its regulatory requirements or requires input into a Board policy or process;
- Establish regional dialogue processes to enhance the working relationship and increase understanding between Board staff and health officials on oil and gas issues;
- Take a continuous improvement approach to the Board applications process and emergency response planning process as a whole.

This dialogue process was tested and found effective. The dialogue process and involvement of health officials in the regulatory/policy review process has now become routine. (See Alberta Energy Utilities Board, (March 2007) *Public Safety and Sour Gas: Final Report*, at page 22. Online (last accessed October 25, 2010): <http://www.ercb.ca/docs/documents/reports/PSSG_FinalReport_2007-03.pdf>

[75] The Public Safety Officer has primary responsibility for coordinating public safety and health related matters and public safety-related land-use matters that may cross-jurisdictional boundaries and/or ERCB Branches. While many ERCB Branches have responsibility to ensure that regulatory requirements protect public safety, the Public Safety Officer brings an organizational focus and systemic approach to consistently managing public safety, health and related land-use conflict matters.

[76] He urges other branches of the agency to prioritize safety; constantly inventories safety issues across the agency, identifying areas for safety improvement; provides support and advice on safety and health to internal and external stakeholders; and works proactively to ensure public concerns are identified and addressed.

[77] including exploration, development, pipeline transportation and reclamation. The OGC states: "The Commission's core roles include reviewing and assessing applications for industry activity, consulting with First Nations, ensuring industry complies with provincial legislation and cooperating with partner agencies. The public interest is protected through the objectives of ensuring public safety, protecting the environment, conserving petroleum resources and ensuring equitable participation in production. See also BC Oil and Gas Commission, "Flaring, Incinerating and Venting Reduction Report for 2009" Online (last accessed October 12, 2010: <http://www.ogc.gov.bc.ca/document.aspx?documentID=904&type=.pdf>

[78] See http://www.energybc.ca/resource6b.html at the Energy BC website hosted by University of Victoria and Coasts under Stress.

[79]As Secretary of Interior Salazar stated in splitting the conflicting mandates: *"These three missions -- energy development, enforcement and revenue collection -- are conflicting missions and must be separated…So today I'm ordering the division of MMS into three distinct entities."* Jim Efstathiou, (May 19, 2010) "Obama Replaces Offshore Agency Faulted in BP Spill", *sqwalk.com*. Online (last accessed October 25, 2010): <http://www.sqwalk.com/q/obama-replaces-offshore-agency-faulted-bp-spill>. Note that the OGC reportedly raises revenue as well, collecting fees that pay for the operation of the OGC. See Chris Wood, (January 28, 2010) "Hydro-fracturing has a lucrative dirty secret", *theStraight.com*. Online (last accessed October 25, 2010): <http://www.straight.com/article-282210/vancouver/lucrative-dirty-secret>.

[80] Matthew Bains, "Many not satisfied by EnCana, OGC response to gas leak." Northeast News, p. 13, February 18, 2010. Online (last accessed October 17, 2010): <http://issuu.com/northeastnews/docs/021810-nenews>.

[81] The lack of commitment to addressing public health concerns is demonstrated by the response of the OGC following the incident at Pouce Coupe. Citizens clearly expressed in writing that they wanted the OGC to analyze the connection between the leak and adverse health effects. When the OGC cancelled a public meeting, residents gathered anyway to make known their concerns and to demand they be addressed. Nevertheless, the OGC Final Report failed to respond to these health questions. [See Greg Amos, (May 2010), "Something in the Air: Answers on industry emissions pursued by Northern Health",

online (last accessed October 18. 2010): <http://www.northwestbusiness.ca/2010/05/something-in-the-air/>. And
BC OGC Information Bulletin # 03-10 (January 13, 2010), "INVESTIGATION MEETING POSTPONED". Online (last accessed October 25, 2010):
<http://www.ogc.gov.bc.ca/documents/informationbulletins/IB%2003-10%20Investigation%20Meeting%20Postponed.pdf>. Byron Christopher, (February 17, 2010) "Mystery at Trickle Creek" *The Dominion.* Online (last accessed October 25, 2010):
<http://www.dominionpaper.ca/articles/3200>.]

[82] L.M. Medd, Medical Health Officer Report to the Board of Northern Health, *Population Health and Oil and Gas Activities,* p. viii and x.

[83] Letter from C.J. Badenhorst MD, to Alex Ferguson, Commissioner, OGC , (February 26, 2010) "Re: Letter dated February 10, 2010 to yourself and Minister Blair Lekstrom from Lois Hill and Karen Campbell, and the November 22, 2009 Well Failure, EnCana Swan Well Site A5-7-77-14 L W6M", also reported in Mark Hume, (March 22, 2010) "What do small leaks mean for public health?", *Globe and Mail,* online: <http://www.theglobeandmail.com/news/national/british-columbia/what-do-small-leaks-mean-for-public-health/article1507701/>.

[84] Kathi Dickie, Vice-Chair, Oil and Gas Commission Advisory Committee, letter to Derek Doyle, Commissioner, Oil and Gas Commission, "Re: Application for Reconsideration FY04-02", File: 20400-40., (September 11, 2003).

[85] Letter from C.J. Badenhorst MD, to Alex Ferguson, Commissioner, OGC, on behalf of Northern Health's Chief MHO, Dr. D. Bowering; Dr. W. Osei, NI MHO; Dr. R. Chapman, Acting CMHO; and Lucy Beck, Regional Director Public Health Protection (February 26, 2010) "Re: Letter dated February 10, 2010 to yourself and Minister Blair Lekstrom from Lois Hill and Karen Campbell, and the November 22, 2009 Well Failure, EnCana Swan Well Site A5-7-77-14 L W6M", also reported in Mark Hume, (March 22, 2010) "What do small leaks mean for public health?", *Globe and Mail,* online: <http://www.theglobeandmail.com/news/national/british-columbia/what-do-small-leaks-mean-for-public-health/article1507701/>.

[86] See: Letter from C.J. Badenhorst MD, to Alex Ferguson, Commissioner, OGC , (February 26, 2010) "Re: Letter dated February 10, 2010 to yourself and Minister Blair Lekstrom from Lois Hill and Karen Campbell, and the November 22, 2009 Well Failure, EnCana Swan Well Site A5-7-77-14 L W6M", also reported in Mark Hume, (March 22, 2010) "What do small leaks mean for public health?", *Globe and Mail,* online: <http://www.theglobeandmail.com/news/national/british-columbia/what-do-small-leaks-mean-for-public-health/article1507701/>.

[87] See Appendix B for the original letter to the Minister of Energy.