Letters from Groups Submission by J. Wiseman

May 5. 2015

1 – (J. Wiseman comments) "Here is the position of the Maritime Conference of the United Church of Canada. Fracking is a moral issue."

Title:	**Calling for a Moratorium on On-Shore Shale Gas and Coal Bed Methane Development**
Originating Body:	Maritime Conference Church in Action Committee (Environmental Working Group)

The 87th Maritime Conference (2012) approved that:

That Maritime Conference urge the four provincial governments within its bounds to place a moratorium on on-shore shale gas and coal bed methane development until there are sufficient scientific studies completed and legislated regulations that require:

i. **meaningful consultation about any proposed development with communities, including Aboriginal and rural;**
ii. **environmental impact assessments, that acknowledge ecologically sensitive areas and the carrying capacity of ecosystems, as a condition of exploration leases/permits;**
iii. **independent base-line and ongoing testing of water, air, and soil quality in areas slated for development;**
iv. **full disclosure of the chemical composition of the drilling fluid;**
v. **strategies that address and seek mitigation of the associated human health and environmental impacts of this unconventional gas industry;**
vi. **adequate treatment of waste water - including both the added chemicals and those naturally-occurring chemicals potentially released in association with activities of this gas industry**
vii. **an adequate compensation plan for damages caused by the industry;**

by:

1. **writing letters to this effect to the Premiers and the responsible Ministers in New Brunswick, Nova Scotia, Prince Edward Island, and Quebec;**
2. **issuing media releases stating these positions;**
3. **distributing this action, including the background information and the media release, to presbyteries and congregations within the Conference inviting members to discuss the ethical and environmental issues that are the basis for these actions; and**
4. **encouraging members to approach their provincial government representatives and decision makers to share their views and concerns on the subject of on-shore gas development.**
5. **informing regional development and the ACCOA of this action**

BACKGROUND:

Ethical Principles

"The Earth is the Lord's and all that is in it, the world, and those who live in it."
Psalm 24:1

Energy needs to be understood holistically: it is linked to the ecological crises facing the Earth, health issues for us and for future generations, global justice, and our spiritual well-being in relation to other species and to our Creator. Over the course of the United Church's history, we have focused on energy through policy, study, and action. Key issues have been nuclear power, fossil fuels, hydroelectric developments, conservation, efficiency, and renewable energy sources. This body of work was brought together in the social policy, *Energy in the One Earth Community* (GC 2000). It is our ethical conviction that the right of people to their wellbeing and to the health of the land, water and air should take precedence over privileges granted to industry.

The ethical principles expressed in The United Church of Canada social policy *One Earth Community –Ethical Principles for Environment and Development* (GC 1992) and *The Earth Charter* (GC endorsed 2003) together form an ethical lens[1] for assessing development. Some of these ethical principles are specifically relevant for shale gas and coal bed methane development:

- In *One Earth Community*, it states in part: "Decision-making for just and ecologically-sound development must ensure the participation of individuals and groups, especially those most affected by the project." At this time, decisions about this industry are being made by provincial decision makers, with little to no meaningful consultation with the communities that are affected.
- *The Earth Charter* states in part: "Manage the extraction and use of non-renewable resources such as minerals and fossil fuels in ways that minimize depletion and cause no serious environmental damage." However, there are major hazards in the exploitation and development of shale gas and coal bed methane which have demonstrated risks of serious harm to the environment, as well as social and health problems.

Unconventional Natural Gas Development:

Natural gas is frequently promoted as a climate change solution or transition fuel that is less polluting when burned than oil and coal. However, dangers are associated with the recovery of natural gas trapped in rock formations which are unconventional, hard-to-access sources such as shale gas, coal bed methane and tight gas formations (gas in rocks that have a very low permeability). Many controversial issues have arisen in both the U.S. and Canada.

Conventional methods have been used since the 1950's to produce shale gas in small quantities from rock formations containing natural fissures. What is new is the use of a high-volume slickwater hydraulic fracturing technique, combined with approaches such as horizontal drilling and multi-well platforms (in some areas) commonly known as fracking. After vertical and often extensive horizontal drilling, millions of litres of water with thousands of litres of chemicals, and sand laced with radioactive tracers, are injected underground at very high pressure to create

[1]*One Earth Community – Ethical Principles for Environment and Development,* and *The Earth Charter* were amalgamated into an Ethical Lens, and applied to nuclear issues in the United Church of Canada Submission 2 to the Nuclear Waste Management Organization.
Available at www.united-church.ca/files/ecology/energy/nuclear_commentary.pdf

fractures in the rock to allow gas to flow up the well. This method, widely used in the U.S. for less than 10 years, is so new that peer-reviewed scientific information on environmental impacts is limited. However, sufficient information is available to give reason for pause and call for a moratorium on shale-gas development to allow for better study of the cumulative risks to water quantity and quality, and to air quality.

Water Contamination

There is substantial evidence that fracking chemicals are fouling water supplies with contaminants that are hazardous to human, plant, and animal health:

- At least 750 substances were used in hydraulic fracturing in the U.S. between 2005 and 2009; of these substances, 29 are known to be possible human carcinogens and/or regulated toxic chemicals.[2]
- The injected water and chemicals are not all returned to the surface. Studies indicate that 50% to 90% of injected fluids can remain underground.[3] There is little knowledge of what happens to the chemical mixture that remains underground.
- Fracturing wastewater that is recovered poses a significant hazard and management challenge.
- Additional risk is introduced when the injected fracking fluid releases naturally-occurring toxins including radioactive chemicals from the rock formations.[4]
- Despite precautions by industry, contamination from wastewaters from hydraulic fracking sometimes occurs through corroded well casings, spilled fracturing fluid at a drilling site, leaked wastewater, or the direct movement of methane or fluid upwards from deep underground.[5]
- There are documented incidents of hazardous levels of contamination from methane migrating into water wells causing drinking water contamination and risks of pollution of streams and rivers.[6]
- It is well known that methane can pose an asphyxiation and explosion hazard in confined spaces when it moves from the water into the air,[7] but there is essentially no peer reviewed

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[2] U.S. House of Representatives Committee on Energy and Commerce, Minority Staff Report. "Chemicals Used in Hydraulic fracturing." April 2011. p 1

[3] Linley, Dayna. "Fracking Under Pressure: The Environmental and Social Impacts and Risks of Shale Gas Development." *Sustainalytics*; August 2011. p 10

[4]The *New York Times* review of 30,000 pages of federal, state, and company records relating to gas wells in Pennsylvania and West Virginia revealed that fracturing wastewater containing worrying levels of naturally occurring radioactivity was being released into rivers, and that there was cause for concern of contamination of drinking water and radioactivity entering the food chain. ("Regulation Lax as Gas Wells' Tainted Water Hits Rivers." *New York Times,* 27 February 2011. p A1; on-line at www.nytimes.com/2011/02/27/us/27gas.html)

[5] Pennsylvania State College of Agricultural Sciences Cooperative Extension. *Water Facts 28: Gas Well Drilling and Your Private Water Supply*. March 2010.

[6] Based on groundwater analyses of 60 private water wells, methane concentrations were found to be 17-times higher on average in areas with active drilling and extraction than in non-active areas, with some drinking-water wells having concentrations of methane well above the 'immediate action' hazard level. (Osborn, S.G., A. Vengosh, N.R. Warner, R.B. Jackson. "Methane contamination of drinking water accompanying gas-well drilling and hydraulic fracturing." *Proceedings of the National Academy of Sciences*, *U.S.A*. 2011; DOI: 10.1073/pnas.1100682108.)

[7] U.S. Department of the Interior, Office of Surface Mining. *Technical Measures for the Investigation and Mitigation of Fugitive Methane Hazards in Areas of Coal Mining*. September 2001.

research on the health effects of low concentrations of methane in drinking water or household air.[8]

Air Pollution

Air pollution associated with hydraulic fracturing has become a major area of concern. The 2011 investigative report by the *New York Times*[9] highlights problems with fumes containing benzene and toluene, as well as vapours reacting to sunlight contributing to high levels of ground-level ozone.

During 2010-11, Global Community Monitor (GCM), responding to citizen odor and health complaints, launched a community-based pilot environmental monitoring program in northwest New Mexico, southwest Colorado, and western Colorado to document and measure air pollution from natural gas facilities. Through the course of this pilot study, residents, armed with their own air monitors, documented a potent mix of chemicals in nine air samples from different locations. The sites in this program are all natural gas production and processing sites. A total of *22 toxic chemicals* were detected in the nine air samples, including four known carcinogens, toxins known to damage the nervous system, and respiratory irritants. The levels of chemicals, including benzene and acrylonitrile, ranged from three to 3,000 times higher than levels established to estimate increased risk of serious health effects and cancer based on long-term exposure.[10]

Health Aspects

Health statistics in gas producing districts show preliminary evidence of health impacts in intensively drilled areas in Texas[11] and there is increasing anecdotal evidence that shale gas development including hydraulic fracturing is leading to serious health concerns. However the extent and cause of the problems remains unknown. Neither states nor the federal government have systematically tracked reports from people whose health is negatively affected by hydraulic fracturing, or comprehensively investigated how drilling affects human health. **More research is needed.**

Dr. Christopher Portier, Director of the U.S. Agency for Toxic Substances and Disease Registry and the National Center for Environmental Health, notes**:** "In some communities it has been a disaster. We do not have enough information on hand to be able to draw good solid conclusions about whether this is a public health risk as a whole."[12]

Jessica Ernst, landowner in Rosebud, Alberta, has filed a lawsuit against EnCana Corporation for negligence and unlawful activities. Her well water is contaminated with methane and other fracking chemicals and can be lit on fire. (Ernst v. Encana April 2011)

[8] Jackson, Robert, Brooks Rainey Pearson, Stephen Osborn, Nathaniel Warner, Avner Vengosh. Research and Policy Recommendations for Hydraulic Fracturing and Shale Gas Extraction. Duke University, Durham, NC. 2011. p 5

[9] "Regulation Lax as Gas Wells' Tainted Water Hits Rivers." *New York Times,* 27 February 2011. p A1; on-line at www.nytimes.com/2011/02/27/us/27gas.html

[10] "Gassed! Citizen Investigation of Toxic Air Pollution from Natural Gas Development." http://www.gcmonitor.org/downloads/gassedreport.pdf

[11] http://www.dentonrc.com/local-news/special-projects/gas-well-drilling-headlines/20110831-breast-cancer-rate-climbs-up.ece

[12] Lustgarten, Abraham, Nicholas Kusnetz and ProPublica. "Science lags as health problems emerge near natural gas wells." *Scientific American*, 19 September 2011. http://www.scientificamerican.com/article.cfm?id=science-lags-as-health-problems

Greenhouse Gas Emissions

There is now evidence that shale gas production will result in release of more methane and carbon dioxide, both greenhouse gases (GHG), than conventional natural gas, and have a greater GHG footprint than oil or coal. Shale gas typically comprises 90% methane.[13] A recent peer-reviewed study by Robert Howarth and colleagues indicated that between 3.6% and 7.9% of the methane from shale gas production escapes into the atmosphere in venting and leaks over the lifetime of a well. These methane emissions are at least 30% more than those of conventional gas. They conclude,

> *The footprint for shale gas is greater than that for conventional gas or oil when viewed on any time horizon, but particularly so over 20 years. Compared to coal, the footprint of shale gas is at least 20% greater and perhaps more than twice as great on the 20-year horizon …*[14]

Regulations

Oil and gas is primarily a provincial responsibility. In general, regulations vary widely from province to province. The decision-making process includes little or no meaningful consultation with the communities that are affected. The shale gas industry is seeking to head off opposition by proposing its own voluntary guidelines for disclosure of chemicals used in fracking and promising to comply with any mandatory disclosure requirements from provincial governments. Regulations affecting fracking for unconventional natural gas have been lagging behind industry growth in the U.S. and Canada - including the Maritime provinces.[15]

Already in Atlantic Canada there have been several non-conventional shale gas related accidents. For example: in 2007 there was a spill of hydraulic fracturing fluids on Prince Edward Island near Green Gables when a pipe burst discharging radioactive material; on 23 August 2006 in Penobsquis New Brunswick, the drilling company estimated that 2000-4000 litres of Frac Fluid with 200-400 litres of Frac Sand containing radioactive tracers Scandium-46, Antimony-124 and Iridium-192 was spilled.[16]

Numerous individual homeowners, and community, Indigenous, and faith-based groups, as well as environmental organizations, within the bounds of Maritime Conference, have been learning about these incidents and about all of the controversial impacts of fracking on water, land, health and climate change. Many have been speaking out against the practice of fracking.

Conclusion

- There is no valid, unbiased evidence that unconventional development of shale gas can be done in a way that protects the environment, health and climate at this time.

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[13] Jenkins, Creties D. and Charles M. Boyer II. "Coalbed- and Shale-Gas Reservoirs." *Society of Petroleum Engineers.* Distinguished Author Series. Feb. 2008.

[14] Howarth, R.W., Renee Santoro and Anthony Ingraffea. "Methane and the greenhouse-gas footprint of natural gas from shale formations." *Climate Change*, March 2011. DOI 10.1007/s10584-011-0061-5

[15] Branley, Matthew. *"Is Natural Gas a Climate Change Solution for Canada?*" Pembina Institute and David Suzuki Foundation, July 2011. www.pembina.org/pub/2240

[16] Corridor Resources Inc. "RE: August 23, 2006, Accidental Release from J-67 Well on Well Pad C-67/J-67/G-67." Letter to Residents and Landowners. 8 September 2006.
www.penobsquis.ca/wp-content/uploads/2011/07/fracspillfirst101.pdf

- Regulations need to push for investment in renewable, sustainable forms of energy.
- Coal and shale gas are not intermediate or long-term solutions for our energy needs. They are potentially more harmful than conventional oil and gas in terms of their ecological and human health effects.
- Large-scale gas extraction will lead to more reliance on fossil fuels rather than on conservation and development of alternative energy sources.
- There is not extensive peer-reviewed, independent scientific research analyzing the immediate and potential long-term and cumulative impacts and risks of shale gas and coal bed methane development and hydraulic fracturing. New scientific evidence is being presented daily and the practice remains highly controversial worldwide.
- Because of this uncertainty, a growing number of jurisdictions are implementing moratoria or bans on hydraulic fracturing until more is known. Our own Maritime provinces need to follow that lead as we continue to study the effects of fracking, to develop appropriate regulations (as proposed herein) to protect our water, air, land and health from known negative effects, and to focus on energy conservation and the development of renewable forms of energy.