PRESENTATION TO HYDRAULIC FRACTURING REVIEW PANEL
APPOINTED BY THE GOVERNMENT OF NEWFOUNDLAND AND LABRADOR

From

THE ROMAN CATHOLIC RELIGIOUS LEADERS
OF NEWFOUNDLAND AND LABRADOR

Hydraulic Fracturing and Well-Being in Newfoundland and Labrador

28 May 2015

The Roman Catholic Religious Leaders of Newfoundland and Labrador include the Archbishop of the Roman Catholic Archdiocese of St. John's, the Bishop of the Roman Catholic Diocese of Grand Falls, the Bishop of the Roman Catholic Diocese of Corner Brook and Labrador, the Congregational Leadership Team of the Sisters of Mercy of Newfoundland, the Provincial Leadership Team of the Sisters of the Presentation of Newfoundland and Labrador, the local leader of the Redemptorists at St. Teresa's Parish in St. John's, the local leader of the Jesuits of Eastern Canada at St. Pius X Parish in St. John's, and the local leader of the Christian Brothers at Mount St. Francis Monastery in St. John's.

INTRODUCTION

"Does the financial benefit to be gained from the introduction of hydraulic fracturing in Newfoundland and Labrador outweigh the costs to the health and well-being of persons and the environment?" The Roman Catholic Religious Leaders of Newfoundland and Labrador express serious concerns about the threats to human rights and the environment posed by the proposed sourcing of petroleum products in Western Newfoundland using the hydraulic fracturing process (fracking). It is our understanding that the areas of the province being considered for such development include the offshore under the Gulf of St. Lawrence in the Port au Port/St. George's Bay Area, Sally's Cove, Lark Harbour and several other communities along the coast including areas in close proximity to the Gros Morne National Park (a UNESCO World Heritage Centre). Our concerns relate to potential impacts on the health of humans and human communities, environmental integrity and ecological sustainability.

We do not approach this presentation from a scientific basis although we know from our research that there are many unanswered scientific questions relating to hydraulic fracturing. Scientific research is ongoing to develop and implement innovations related to water-free fracking, using recycled water or brine, eliminating diesel fumes, treating wastewater and plugging methane leaks. At the present time, these newer, more environmentally friendly technologies are still in the developmental phase and will generally cost more than the equipment they would replace. Although scienctific advances are improving the technology, there is still uncertainty and insufficient research about the impact on the health of persons and Earth. Anectodal evidence of negative impact is frequently present in the media in the United States.

We do not approach this presentation from an economic lens. We do know that oil self-sufficiency and economic benefit are the two primary goals inherent in approving the hydraulic fracturing processes. However, our research also shows that the economic benefits overall may not be as extensive as is sometimes assumed. The Institute for Sustainable Development and International Relations (IDDRI), a non-profit policy research institute based in Paris, predicts for the United States that the long-term effect of unconventional production through hydraulic fracturing on the level of US GDP "to be at about 0.84% between 2012 and 2035," while the European Union is predicted to produce only about 3-10% of its gas demand from shale gas by 2030-2035.

We do not approach this presentation from a religious lens. However, we do note that a recent gathering of religious leaders, political leaders, business leaders, scientists and development practitioners considered the overwhelming scientific evidence regarding human-induced climate change, the loss of biodiversity, and the vulnerabilities of the poor to economic, social, and environmental shocks. In light of this evidence, they emphasized the need for all to join together from many faiths and walks of life to actively respond to the threats to human-induced climate change, social exclusion, and extreme poverty. In the Roman Catholic tradition, Pope Francis has made it known that he is preparing an encyclical *on the environment and human ecology, the first from a pope to focus specifically on creation and human relationship with it.* Like his predecessors Popes Benedict XVI and John Paul II, Pope Francis has spoken regularly on environmental issues, such as protecting creation, climate change, environmental degradation and natural disasters, water, food and sustainability.

GUIDING PRINCIPLES

Our presentation focuses on the social responsibilty which relates to the decision to allow hydraulic fracturing in western Newfoundland. Our position is rooted in human rights and the actual or potential impacts of fracking on human rights. Such potential impacts – immediate or long term – relate to the rights to health, water (groundwater, surface water and atmospheric water), food (soil, crops and livestock), housing (quality, availability and pricing), information (right of access), participation (public debate and dialogue), and preservation of culture (cultural practices, specific ways of life, and cultural sites and landscapes).

We take very seriously the precautionary principle: if an action or policy has a suspected risk of causing harm to the public or to the environment, in the absence of scientific consensus that the action or policy is not harmful, the burden of proof that it is not harmful falls on those taking an action. The *Rio Declaration on Environment and Development* notes that States should apply the "precautionary approach" in order to "protect the environment" and "prevent environmental degradation" even if there is a lack of scientific information definitively showing specific environmental impacts.

In our comments, we are guided by the following five principles:

1. ***Ecological Sustainability*** – We are committed to ecological sustainability, that is, the capacity of ecosystems to maintain their essential functions and processes and retain their biodiversity in full measure over the long-term, meeting the needs of the present generation without hindering future generations from being able to meet their needs.
2. ***Stewardship*** – As stewards of all creation, we must identify wise, careful actions that will reverse negative impacts on the environment and avoid its potentially dangerous impact on all life, including human life.
3. ***Voices of Vulnerable Persons*** – Recognizing that destruction of the environment takes the greatest toll on the most vulnerable members of society, it is critical that vulnerable persons be present in the public debate about environmental destruction and that resources be available to enable these persons to participate fully.
4. ***Collective Action*** – Any threats to the environment call for courageous and creative action from individuals, communities, the province and the country. Together we must help shape responses that serve not only our own interests but those of the entire human family.
5. ***Intergenerational Equity*** – The present generation must ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.

WHAT IS KNOWN

By definition, hydraulic fracturing is a well-stimulation technique in which rock is fractured by a hydraulically pressurized liquid made of water, sand, and chemicals. A high-pressure fluid (usually chemicals and sand suspended in water) is injected into a wellbore to create cracks in the deep-rock formations through which natural gas, petroleum, and brine will flow more freely. When the hydraulic pressure is removed from the well, hydraulic fracturing proppants (a solid material, typically sand, treated sand or human-made ceramic materials) hold the fractures open. Fracking can be used in vertical (conventional) and horizontal (unconventional) formations. Horizontal hydraulic fracturing uses

significantly more resources than older, vertical hydraulic fracturing and means more truck trips, more chemicals, more wastewater and more opportunities for leaks and spills.

Flowing from this definition, the facts relating to such a process include the following:

1. ***Preparation for the well***
    a. Each drill pad (on average ten wells) needs approximately nine acres of surface land.
    b. The management of wastewater requires separate surface area for waste pits.
    c. The volume of water, chemicals and sand needed requires the use of many heavy trucks, adequate roadways to support such traffic and ongoing maintenance of these roadways.

2. ***Process of fracturing***
    a. Each well uses between two million and five million gallons of water over its lifetime.
    b. Each well uses varying estimates of between 40,000 and 70,000 gallons of chemicals per fracturing, with a mixture of some 750 chemicals possible for use. Many of these chemicals are possible human carcinogens.
    c. The majority of the drilling liquid (wastewater) remains in the ground with only 30-50% of the water typically recovered from a well. In some instances, given the differences in geological formations involved in the different shale fields, the recovery can be significantly less, indeed as low as 8%. This wastewater left in the ground can be highly toxic and is not biodegradable.
    d. The wastewater contains methane which escapes into the environment either by leakage, flaring or capturing for sale (the last named being very expensive). Flaring is also used to test well pressure and other measurements.
    e. The act of fracturing the rock causes significant noise pollution and ground vibrations.
    f. The operation of the well pad requires continuous lumination.
    g. Disclosure of chemicals used in the process is presently not required in the province of Newfoundland and Labrador.
    h. Where the rock to be fractured is thicker and older, more water and chemicals are needed.

3. ***After the fracturing***
    a. When the liquid composed of water, sand and chemicals is removed from the wellbore (the wastewater), it must be handled, tested, transported, treated and disposed. Operational failures and accidents can happen at any stage of this process.
    b. The yield from a well sometimes falls off after one or two years but a well may be used for several decades – whenever the wells have been exhausted and are no longer used, the land needs remediation.

Risks Associated With This Process

It follows from these facts that certain high risks are inevitable:

- ✓ The high level of water use risks the depletion of fresh water.

- ✓ The mix of water and toxic chemicals risks the contamination of groundwater and surface water (e.g., ponds, lakes, rivers, springs, wells, wetlands).
- ✓ The use of chemicals such as methanol and other toxins risks degrading air quality.
- ✓ The wastewater from the returning fluids is subject to spillage, risking pollution of water, land and air.
- ✓ The toxic liquid remaining in the ground risks contaminating water and soil.
- ✓ There are risks inherent in each phase of the management of wastewater – handling, testing, transportation, treatment and disposal.
- ✓ There is risk that the ground vibrations will have a negative impact on rock cliff degradation and falling rock.
- ✓ The presence of water, toxic chemicals, intense light from constant illumination and flaring, noise and vibration poses negative risk for wildlife – flora, fauna and fish – and risks the potential contamination of the food chain.
- ✓ The extensive use of surface land risks the loss of habitat for existing and potentially threatened plant and animal populations.
- ✓ The extensive use of surface land risks increasing deforestation.
- ✓ The fracturing of rock brings risk of shocks to geological formations and the potential for induced seismicity, that is, earthquakes that can be attributed to human activity.
- ✓ There is a risk of a significant amount of natural gas escaping during the process – methane, the main component of natural gas, is a potent greenhouse gas, 34 times stronger than carbon dioxide (CO_2).
- ✓ The diesel-powered equipment used in drilling and pumping wells brings the risk of harmful pollutants and carbon emissions that contribute to global warming.

These risks are compounded by what is known about the potential risks from large industrial sites in general:

- ✓ The introduction of any large industry into an area has significant impact on existing industries and businesses; while there will likely be short-term financial benefits to some industries (e.g., hotels, restaurants), there will likely be considerable risks to traditional industries (e.g., fishing, hunting, tourism).
- ✓ The "boomtown effect" from large industrial production areas often causes rapid change in population, industrial and economic prosperity which in turn leads to many social ills that impact community health. Such potential social ills include increased rates of crime, drug and alcohol abuse, sexually-transmitted infections, and domestic violence; inadequate supply and quality of housing; increased cost of living; increased community dissatisfaction; increased mental health and social services case-loads; increased hospital admissions; insufficient infrastructure; and insufficient capacity in public services, including policing, local government, social services, and health care.
- ✓ There are usually understated impacts on road management systems, emergency preparedness services and health services.
- ✓ The "boomtown effect" is more intense in rural areas than in larger urban areas.
- ✓ The most vulnerable populations, including children and older persons, are generally ignored in the planning processes.

WHAT IS NOT KNOWN

The most significant challenge arising from the consideration of implementation of the hydraulic fracturing process is the level of uncertainty relating to this process.

- ✓ What is the quality of rock in this area – is it thicker and older than rock on the parts of the continent where hydraulic fracturing has already been carried out? It has been suggested that the shale rock along the west coast of Newfoundland is several times thicker than other deposits in North America and has been broken up by moving tectonic plates, making it more difficult to fracture and to contain the subsequent unintended extension of the fracturing.
- ✓ Why would the St. Lawrence Lowlands (where hydraulic fracturing has been prohibited) be considered more sensitive environmentally than the west coast of the island of Newfoundland?
- ✓ What will be the impact of the wastewater left in the ground on geological formations for the next 20 years?
- ✓ How do we address the added difficulty which always exists in monitoring rural vs. urban water supplies?
- ✓ Social determinants of health are more than clean water and healthy air – what research is available on the impact of this process on the health of the persons living and/or working near these wells?
- ✓ Assessment of health status and health risks is always a challenge in this province because of our small numbers and limited financial resources – how can we meet the even greater challenge posed by an industry about which there presently exist insufficient long-term health-related data?
- ✓ How can we identify the true economic benefit, balancing the immediate financial advantage with the costs of related services during the lifetime of the well and after the well has been exhausted?
- ✓ How can we monitor the completeness and transparency of information which is often incomplete to protect the business interests of the company carrying out the work and which is often complex because of its technological nature and the rapidly evolving metholologies?
- ✓ Does this province have the capacity to ensure transparent community participation before hydraulic fracturing is permitted, during the lifetime of the wells and in the time after the wells have been exhausted?
- ✓ What have we learned from those other jurisdictions who have made decisions to suspend or prohibit hydraulic fracturing, jurisdictions as diverse as Canadian provinces such as Nova Scotia, New Brunswick and Quebec, American states such as Vermont, New York and Maryland, and countries like France, Bulgaria, Germany, Scotland and Wales?

The comprehensive report containing the *Chief Medical Officer of Health's Recommendations Concerning Shale Gas Development in New Brunswick* (dated September 2012 and listed on the Panel's website) lists seven areas of public health knowledge gaps: planning for social impacts, health status studies, health impact assessments, chemical toxicity information on products used by the industry, chemical toxicity information on wastes, exposure data, and extent, location and rates of development.

The report concludes that there is a lack of participation from Public Health in other jurisdictions' regulatory regimes where the industry exists and that the infrastructure, capacity, processes and legislation in New Brunswick are not adequate to meet the needs. The report then gives thirty

recommendations concluding that "proper controls and mechanisms to protect and monitor health must be put in place to reduce the risk of spoiling the potential benefits from economic gains through adverse health outcomes."

The health system in Newfoundland and Labrador at the present time is stretched to find adequate financial and human resources as it seeks to respond to current health needs. In the recent provincial budget, reductions of more than eight hundred positions across the four health authorities were announced. Therefore, there is a significant question to be asked about the province's ability to provide the financial resources needed to create the infrastructure, capacity, and processes to carry out the targeted and strategic actions needed to prevent and mitigate the negative health impacts of hydraulic fracturing in the province. Included in these actions needing to be funded is the research required to help answer the unanswered or poorly answered questions on the geological, economic, social and health dimensions relating to this hydraulic fracturing process.

CRITICAL QUESTIONS

We are not making specific recommendations to the Panel. Rather we ask the Panel to consider a number of critical questions as the report is being prepared.

1. Has the Panel considered the precautionary principle as a guide – if an action or policy has a suspected risk of causing harm to the public or to the environment, in the absence of scientific consensus that the action or policy is not harmful, the burden of proof that it is not harmful falls on those taking an action?
2. Given the relatively small size of its population base and its industrial base, does the province of Newfoundland and Labrador have the capacity and the financial resources to provide the monitoring and enforcement of a strengthened regulatory framework and continued overview of best practices in the hydraulic fracturing industry? What mechanisms can this province realistically put in place to hold the companies accountable before, during and after they develop the hydraulic fracturing process here?
3. Does the province of Newfoundland and Labrador have the capacity and the financial resources to provide the monitoring, assessment and management of the environmental consequences of hydraulic fracturing?
4. Are the public health system and the health care system in this province resourced well enough to provide the monitoring, assessment and management of the health consequences of hydraulic fracturing?
5. What will be the structure or system put in place to monitor, assess and manage the social consequences created by the effect of introducing hydraulic fracturing in an area in which traditional industries are fishing, farming, hunting and tourism?
6. Is the Panel confident that it is truly facilitating effective public participation, community engagement and input into the work of the Panel?
7. How is the Panel identifying the most vulnerable people who will be affected by the introduction of this hydraulic fracturing process in or near their communities? What ways is the Panel using to listen to their voices and to come to an understanding of their concerns?
8. What approach will the Panel take to help create space for the kind of ongoing dialogue needed among the public, government and industry about the results of the independent assessment

and, should hydraulic fracturing be approved, about the ongoing dialogue during the development, implementation and continuous evaluation of the process?

9. What structure and resourcing are in place to provide the level of independent research needed about the environmental, social, health, economic and policy issues relating to hydraulic fracturing today and as the industry evolves?
10. If the Panel does recommend approval of hydraulic fracturing, what criteria will be used to determine the areas designated for explicit exclusion?
11. How will the Panel explicitly show that they have found the appropriate balance between resource development and the protection of the environment and all lifeforms (human and non-human)?
12. Do the members of this Review Panel believe that the mandate which they have been given will lead to a transparent, participatory, independent and holistic assessment? Are they certain that it will address the environmental, social, health, economic and policy issues? Are they confident that it can identify all the risks of this hydraulic fracturing process for the province and its people?

CONCLUSION

The Hydraulic Review Panel has a complex mandate which will significantly influence whether or not hydraulic fracturing will be permitted in Newfoundland and Labrador. This is primarily a mandate based in social responsibility and assurance of human rights. There are many factors to be kept in balance. There is uncertainty connected to this unconventional oil and gas production process. There is a lack of reliable evidence about the long term health effects of its implementation. This process will undeniably cause damage to the environment. A sophisticated process at significant expense will need to be put in place to enforce the regulatory framework for public health protection and environmental monitoring.

Ultimately, the question which the Panel must be able to satisfactorily and definitively answer is "Are we confident that the financial benefit to be gained from the introduction of hydraulic fracturing in Newfoundland and Labrador outweighs the costs to the health of persons and the environment?" If the answer is "No" or "We are not entirely sure," the Panel cannot risk the health of this province by giving support for such an endeavour. The people of Newfoundland and Labrador living today and generations to come as well as the land, sea and air which are entrusted to the people deserve no less than an accountable response which is transparent, participatory, independent and holistic.

SIGNATORIES

+Martin W. Currie
Archbishop of the Roman Catholic Archdiocese of St. John's

+R. Anthony Daniels
Bishop of the Roman Catholic Diocese of Grand Falls

+Peter J. Hundt
Bishop of the Roman Catholic Diocese of Corner Brook and Labrador

Elizabeth M. Davis, rsm
Congregational Leader, Leadership Team of the Sisters of Mercy of Newfoundland

Sheila O'Dea, rsm
Member, Leadership Team of the Sisters of Mercy of Newfoundland

Elizabeth Marrie, rsm
Member, Leadership Team of the Sisters of Mercy of Newfoundland

Diane Smyth, rsm
Member, Leadership Team of the Sisters of Mercy of Newfoundland

Sharon Fagan, pbvm
Provincial Leader, Leadership Team of the Sisters of the Presentation of Newfoundland and Labrador

Lois Greene, pbvm
Member, Leadership Team of the Sisters of the Presentation of Newfoundland and Labrador

Frances Molloy, pbvm
Member, Leadership Team of the Sisters of the Presentation of Newfoundland and Labrador

Angela McGrath, pbvm
Member, Leadership Team of the Sisters of the Presentation of Newfoundland and Labrador

Sandy Butler, pbvm
Member, Leadership Team of the Sisters of the Presentation of Newfoundland and Labrador

Reverend Leo English, C.Ss.R.
Leader of the Redemptorists at St. Teresa's Parish in St. John's

Reverend William Browne, S.J.
Local Leader of the Jesuits of Eastern Canada at St. Pius X Parish in St. John's

W.R. Fowler, CFC
Local Leader of the Edmund Rice Christian Brothers at Mount St. Francis Monastery in St. John's

LIST OF REFERENCES IN THE ORDER IN WHICH THEY COME IN THE TEXT

The Pontifical Academy of Sciences and the Pontifical Academy of Social Sciences, *Climate Change and the Common Good: A Statement of the Problem and the Demand for Transformative Solutions*, Vatican City State, 29 April 2015.

Thomas Spencer, Oliver Sartor and Mathilde Mathieu, *Unconventional wisdom: an economic analysis of US shale gas and implications for the EU*, Studies N°02/14, February 2014, Institute for Sustainable Development and International Relations (IDDRI), Paris, France.

Rio Declaration on Environment and Development, The United Nations Conference on Environment and Development, Rio de Janeiro, Brazil, 14 June 1992.

Chief Medical Officer of Health's Recommendations Concerning Shale Gas Development in New Brunswick, Office of the Chief Medical Officer of Health (OCMOH), Department of Health, Fredericton, New Brunswick, September 2012.

PRESENTATION TO HYDRAULIC FRACTURING REVIEW PANEL
APPOINTED BY THE GOVERNMENT OF NEWFOUNDLAND AND LABRADOR
From
THE ROMAN CATHOLIC RELIGIOUS LEADERS
OF NEWFOUNDLAND AND LABRADOR

Hydraulic Fracturing and Well-Being in Newfoundland and Labrador

Power point Presentation Made at Panel Hearing
in Port au Port East on 15 October 2015

PRESENTATION TO NLHFRP
FROM
ROMAN CATHOLIC
RELIGIOUS LEADERS OF
NEWFOUNDLAND & LABRADOR

HYDRAULIC FRACTURING AND WELL-BEING
IN NEWFOUNDLAND AND LABRADOR

15 OCTOBER 2015

Roman Catholic Religious Leaders of Newfoundland & Labrador

- Archbishop – Roman Catholic Archdiocese, St. John's
- Bishop – Roman Catholic Diocese, Grand Falls
- Bishop – Roman Catholic Diocese, Corner Brook and Labrador
- Congregational Leadership Team – Sisters of Mercy
- Local leader – Christian Brothers, St. John's
- Local leader – Jesuits of Eastern Canada, St. John's
- Local leader – Redemptorists, St. John's
- Provincial Leadership Team – Presentation Sisters

2

OUR ASSUMPTION

The Newfoundland and Labrador
Hydraulic Fracturing Review Panel's mandate, *to advise on the socio-economic and environmental implications of the hydraulic fracturing process*,
is based
in social responsibility
and assurance of human rights.

3

OUR PRIMARY CONCERN

The impacts of hydraulic fracturing on the health of humans and human communities, environmental integrity and ecological sustainability are not yet known with certainty.

Our province does not have the sophisticated systems and processes to monitor and manage this uncertainty, the finances to create such systems and processes, or the capacity to sustain them while hydraulic fracturing is being carried out and after the wells are shut down.

4

GUIDING PRINCIPLES

* Ecological Sustainability
* Stewardship
* Voices of Vulnerable Persons
* Collective Action
* Intergenerational Equity
* Precautionary Principle

5

INTERGENERATIONAL EQUITY

We do not inherit the earth from our fathers, we borrow it from our children. *Inuit saying*

Justice between Generations – We can no longer speak of sustainable development apart from intergenerational solidarity. Once we start to think about the kind of world we are leaving to future generations, we look at things differently; we realize that the world is a gift which we have freely received and must share with others.

Pope Francis, *Laudato Si'*, 159

6

PRECAUTIONARY PRINCIPLE

First used to guide the prevention of environmental degradation at the *United Nations Earth Summit* held in 1992 and noted in the *Rio Declaration,* Principle 15:

> In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

7

PRECAUTIONARY PRINCIPLE

This precautionary principle makes it possible to protect those who are most vulnerable and whose ability to defend their interests and to assemble incontrovertible evidence is limited.

If objective information suggests that serious and irreversible damage may result, a project should be halted or modified, even in the absence of indisputable proof.

Laudato Si', 165

8

KNOWN RISKS OF HYDRAULIC FRACTURING

- ✓ Depletion of fresh water
- ✓ Contamination of water (ground and surface)
- ✓ Degradation of air quality
- ✓ Pollution of water, land and air
- ✓ Handling, testing, transportation, treatment and disposal of wastewater
- ✓ Deforestation
- ✓ Danger for flora, fauna & fish
- ✓ Contaminated food chain
- ✓ Loss of habitat for plants and animals
- ✓ Rock cliff degradation and falling rock
- ✓ Earthquakes
- ✓ Escape of natural gas, especially methane
- ✓ Pollutants from equipment
- ✓ Carbon emissions

9

KNOWN RISKS OF INTRODUCTION OF ANY LARGE INDUSTRY

* Impact of large industry on existing industries and businesses (e.g., fishing, hunting, tourism)
* Understated impacts on road management systems, emergency preparedness services and health services
* Most vulnerable populations, including children and older persons, generally ignored in the planning processes
* "Boomtown effect" more intense in rural areas than in larger urban areas

10

KNOWN RISKS: BOOMTOWN EFFECT

Rapid change leading to social ills

* Increased rates of crime, drug and alcohol abuse, sexually-transmitted infections, and domestic violence
* Inadequate supply and quality of housing
* Increased cost of living
* Increased community dissatisfaction
* Increased mental health & social services caseloads
* Increased hospital admissions
* Insufficient infrastructure
* Insufficient capacity in public services, including policing, local government, social services, and health care

11

UNKNOWN RISKS: HIGH LEVELS OF UNCERTAINTY

* Quality of rock in this area – ?shale rock along the west coast of Newfoundland several times thicker than rest of North America, broken up by moving tectonic plates, more difficult to fracture and to contain subsequent unintended extension of fracturing
* Impact of wastewater on geological formations for next 20 years
* Difficulty in monitoring rural vs. urban water supplies
* Lack of research on social determinants of health (more than clean water and healthy air)

12

UNKNOWN RISKS

* Assessment of health status and health risks from an industry which has insufficient long-term health-related data (see next slide)
* Monitoring completeness and transparency of incomplete and complex information
* Identification of true economic benefit = immediate financial advantage balanced with costs of related services during and after lifetime of the wells
* Capacity to ensure transparent community participation before, during and after the wells are in operation

13

CHIEF MEDICAL OFFICER'S REPORT [New Brunswick]

Seven areas of public health knowledge gaps related to hydraulic fracturing processes:

1. Planning for social impacts
2. Health status studies
3. Health impact assessments
4. Chemical toxicity information on products used by the industry
5. Chemical toxicity information on wastes
6. Exposure data
7. Extent, location and rates of development

14

LEARNINGS FROM SHOAL POINT LEAKAGE

* Reports of leakage in 2013 and in 2014 with no immediate action taken
* Complexities of divided responsibilities between two levels of government
* Suggested cause: natural fracturing of the rock
* "Strong potential that the oil is originating from, or near, a fourth well casing that has broken off, or was terminated at the time of drilling, below the surface at this location" (Report completed in August 2015 for Government)
* No assessment of potential impacts on humans, fish, etc.

15

LEARNINGS FROM OTHERS

Diverse jurisdictions who have made decisions to suspend or prohibit hydraulic fracturing:

* St. Lawrence Lowlands (environmental sensitivity similar to ours)
* Canadian provinces = Nova Scotia, New Brunswick and Quebec
* American states = Vermont, New York and Maryland
* Countries = France, Bulgaria, Germany, Scotland and Wales

16

FACTORS TO BE KEPT IN BALANCE

* A process known to cause damage to the environment
* Uncertainty connected to this unconventional oil and gas production process
* Lack of reliable evidence about the long term health effects of its implementation
* A sophisticated, expensive process needed to enforce the regulatory framework for public health protection and environmental monitoring

17

CRITICAL QUESTIONS

* Do we have the capacity and financial resources to monitor, assess and manage the environmental consequences?
* Do we have the capacity and financial resources in our health care system to monitor, assess and manage the health consequences?
* Do we have the capacity and financial resources to monitor, assess and manage the social consequences in an area in which traditional industries are fishing, farming, hunting and tourism?

18

CRITICAL QUESTIONS

* Are the voices and concerns of the most vulnerable people affected by hydraulic fracturing being heard?
* Do we have the capacity and financial resources to provide the level of independent research needed about the environmental, social, health, economic and policy issues today and into the future?
* Do we have the capacity and financial resources to hold the companies accountable before, during and after the hydraulic fracturing process?

19

ULTIMATE QUESTION

Will the financial benefit to be gained from hydraulic fracturing in Newfoundland and Labrador outweigh the costs to the health of persons and the environment?

20

GOING FORWARD

What approach can be taken to create space for the ongoing dialogue needed among the public, government and industry about

* the results of your assessment
* the ongoing dialogue during the development, implementation and continuous evaluation of the process if approved

21

The natural environment is a collective good, the patrimony of all humanity and the responsibility of everyone. If we make something our own, it is only to administer it for the good of all.

Laudato Si', 95

22