MERCY CENTRE FOR ECOLOGY AND JUSTICE:

PRESENTATION TO THE PERMANENT PEOPLE'S TRIBUNAL ON HUMAN RIGHTS, FRACKING AND CLIMATE CHANGE

March 16, 2018

INTRODUCTION

The Mercy Centre for Ecology and Justice presentation is all encompassing in that we view the concept of hydraulic fracturing as a component part of a broader concept where all is connected. Our presentation relates to our mission statement that all humanity holds in trust the sacredness of all creation, that evolutionary process from which we evolved. We work in solidarity with other likeminded organizations for the restoration of peace and justice in the world and in all creation. In the context that all is connected, we recognize that the environment in all its component parts, human culture as represented by society and the ever evolving economy are interconnected, interrelated and interwoven. Within this logic we make our presentation in our belief that we as a society can create a sustainable world where "self" and "the other" including all life can coexist and live in harmony now and into the future. Our presentation addresses:

- Who is the Mercy Centre for Ecology and Justice? (MCEJ)
- Who are we as a people and a province?
- What is Hydraulic Fracturing?
- What are the issues with the Environment and Hydraulic Fracturing?
- What are the Hydraulic Fracturing effects on Humanity and our Health?
- How has Hydraulic Fracturing been viewed in other jurisdictions?
- What is the relationship between Hydraulic Fracturing, Sustainability and the Economy?

We conclude by highlighting our concerns about hydraulic fracturing and offer recommendations related to hydraulic fracturing within our province.

WHO IS THE MERCY CENTRE FOR ECOLOGY AND JUSTICE (MCEJ)?

The Mercy Centre for Ecology and Justice, founded in 2003, furthers the mission of the Congregation of the Sisters of Mercy to hold in trust the sacredness of all creation and to work in solidarity with others for the restoration of peace and justice in the world and in all creation. We believe that the care and protection of Earth's resources are a sacred trust and that the availability of these resources must not ever be put at risk. Aware of the human capacity to erode Earth's life support system the Mercy Centre for Ecology and Justice recognizes the moral obligation to care for creation and promote environment-friendly choices for the sustainability of Planet Earth.

The Mercy Centre for Ecology and Justice, along with other like-minded groups and organizations locally, nationally and internationally with which we are involved, examines and questions how the realities of human progress often contribute to the loss of a sense of interconnectedness and interrelatedness to Earth's invaluable life sources of water, soil and air. We challenge the mindset which views Earth as merely a collection of raw materials or natural resources to be exploited solely for the use and benefit of humanity with a more holistic vision which promotes greater sustainability in order that all life, human and non-human, may flourish. Thus future generations can be assured of a more just quality of life. In this work the Mercy Centre for Ecology and Justice directs its attention toward the security of healthy ecosystems and environments that are deemed necessary for the health and welfare of humans and other organisms. From this viewpoint we question the controversial practice of hydraulic fracturing (fracking) with its potential for negative consequences for the health of the planet and its human and nonhuman inhabitants.

In 2013 the Mercy Sisters through their NGO submitted to the UN an Urgent Letter of Appeal, copied to our federal and provincial governments, to convey our serious concerns for the threat to human rights and the environment posed by the potential authorization of hydraulic fracturing (fracking) for oil and gas exploration and development on the West Coast of Newfoundland and

Labrador. Representatives of a number of international, national and local faith groups and other organizations signed this letter in support of our concerns regarding fracking in this province.

WHO ARE WE AS A PEOPLE AND A PROVINCE?

As a people, Newfoundlanders and Labradoreans have been shaped by the sea and the land. We have been greatly influenced by the fact that our ancestors settled isolated areas of an island situated on the most easterly coast of North America. Living mainly as fisher people in these isolated communities encouraged the growth of unique ways of working together and supporting one another in often bleak times. Our forefathers and mothers in the midst of great difficulties persevered to establish themselves as sustainable communities in this new found land with shared values and great pride, and a genuine sense of responsibility, respecting and caring for the integrity of the land, the sea and for one another. These people knew what it meant to care for the environment, fishing in their small boats taking only what they needed from the sea, carefully rotating their crops and even being vigilant not to clear-cut for firewood. They knew that if they cared for the land and its resources the land would take care of them. They toiled together not only to sustain their own families but also helped care for and sustain others in the community who were elderly, sick or in need.

Today, because environmental degradation is placing tremendous stresses on planet Earth and is a major issue facing humanity, there is a movement whereby people are becoming increasingly aware of their responsibility for the protection and health of the planet and are realizing that to ignore this is to put in jeopardy the health and well being of humankind and that of all life forms.

To follow the same tradition of the early settlers of striving for what is best for our people and our province and of not harming "the other" seems to be the wish of our government. Former Premier Kathy Dunderdale when speaking of the environment in her closing letter to the people of Newfoundland and Labrador stated, "The scale of the challenge is considerable. Success will depend on everyone playing their part to work together towards a common end. Our government is committed to pursuing a pathway that is both environmentally sound and economically prudent and providing leadership as we chart our course together." [i]

Speaking in the same vein, Natural Resources Minister Derrick Dalley in announcing the moratorium on fracking in the House of Assembly stated, "Our first consideration is the health and safety of our people. In making this decision, our government is acting responsibly and respecting the balance between economic development and environmental protection." He further promised that the government would take the time needed to assess the geology of western Newfoundland, to give residents a chance to comment, and to compare its own regulations to other jurisdictions. [ii]

We appreciate government's commitment to protection and care of people and the environment. Nevertheless, we believe that given the potential negative consequences of this hydraulic fracturing process and the serious apprehension and unresolved questions of people in many parts of the world, among them scientists, environmentalists and experts in this field, hydraulic fracturing should not take place in this province until it is indisputably determined through sound scientific investigation that the process, if used, will not in any way negatively impact people or the environment.

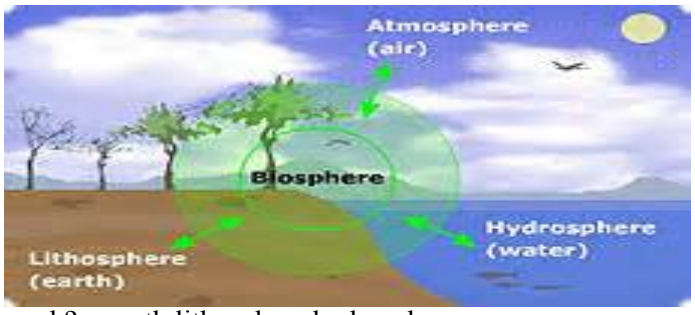
WHAT IS HYDRAULIC FRACTURING?

Hydraulic fracturing is the unlocking of the natural gas or oil found in rock formation by injecting deep into the underground, at high pressure, a mixture of thousands of gallons of water mixed with sand and a

cocktail of approximately seven hundred chemicals. The process brings with it major ecological concerns to people living in the area and to Earth's other than human inhabitants. In Newfoundland and Labrador, the areas under consideration for onshore and offshore hydraulic fracking include the Gulf of St. Lawrence in the Port au Port/St. George's Bay area, Lark Harbour, Sally's Cove and other coastal communities including areas in close proximity to Gros Morne National Park, a UNESCO World Heritage Centre.

WHAT ARE THE ISSUES WITH THE ENVIRONMENT AND HYDRAULIC FRACTURING?

Evidence obtained from various scientific and environmental studies indicate that hydraulic fracturing has the potential to cause irreversible damage to the life of the planet. Because of possible water depletion and contamination, air contamination, greenhouse gas emissions and induced seismic activity there is much apprehension and anxiety with regard to the use of fracking, especially for people living on an island. Island people living in a caring relationship with Earth recognize how dependent their lives are on all parts of Earth's biosphere - the atmosphere, the hydrosphere and the lithosphere.



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HYDRAULIC FRACTURING EFFECT ON THE HYDROSPHERE

A major source of unease with fracking is the possible impacts of hydraulic fracturing on water availability and water contamination. Studies show that fracking can lower groundwater levels and reduce water pressure in aquifers near fracking pads. Where there are low levels of groundwater, methane gas can accumulate and surface in household pipes. One of the first scientific studies, conducted by four scientists at Duke University, the results of which were posted in May 2011, linked natural gas drilling and hydraulic fracturing with a pattern of drinking water contamination so severe that water from the faucets could be lit on fire. [iii]

In addition these scientists found that the levels of flammable methane gas in the water increased to dangerous levels exceeding the United States Safe Drinking Water Act in water supplies closer to natural gas wells. The research also showed that the type of gas detected in the water was the same type as that which mining companies were extracting from depths underground. From this information there was sufficient evidence to suggest that gas could be seeping underground through fractures or faults or more likely coming from the well structure itself due to leaking casings or connections. This study identified several ways in which fluid or gas contamination could move underground, for example, there was the possibility that the substance was being displaced by the pressure underground, it could travel through new fractures, or it could leak from a well casing which was nearer to the surface. In 2010, the Pennsylvania Department of Environmental Protection (DEP) issued a list of 90 violations for faulty casings and cementing on 64 Marcellus shale gas wells; 119 similar violations were issued in 2011. [iv]

The huge amount of water needed to frack shale rock in particular can bring life to a dangerous level. Shale gas resources using multi-stage hydraulic fracturing could require approximately 20, 000 to 60, 000 cubic metres of water per well depending on geology. The quantities of water required vary according to the depth of the well, the horizontal length of the well within the shale formation, and the permeability of the shale.[v] Ben Parfitt, Canadian Centre for Policy Alternatives analyst, writes, "Shale gas industry records are being set for water usage and fracking at individual well pads in northeast BC, with up to 600 Olympic swimming pools worth of water used at some sites. Thousands of such sites could be developed in the decades ahead, in regions of the province where little meaningful data on water resources exists." [vi]

The examples cited above indicate the vast quantity of water required for fracking. This is a significant cause for alarm especially in terms of droughts and water shortage. The fact that water once used for fracking is contaminated beyond remediation and thus can never be recycled as drinking water is a further major concern especially since only 3percent of all water on the planet is fresh water. In the closed system in which we live the only water available to us is that which was present on the planet at the time Earth was created. No new sources of water have ever been added. The fresh water in use today is the same water which flowed from groundwater, from streams, and along the way became tears, blood plasma and other body fluids. It is the same water from which the dinosaurs drank and which was used by the earliest people on Earth. For the first time in the history of the planet, water is being removed forever from the water cycle by fracking. This will definitely have dire consequences for all life in the future. According to a recent study from the World Resources Institute 40% of the areas around the world where shale gas is located face significant freshwater shortage.[vii]

Contamination of water by fracking as well as disposal of fracked fluids are contentious issues. By some estimates between 55, 000 and 220, 000 litres of chemicals are required for a typical fracked well. Considering that not all the water used in the fracking process is recovered, that some of the toxic fluids remain trapped underground, and that some of the flow back can be injected again into the well thereby possibly causing an upward migration of contaminated liquids underground, it is clear that the fracking process holds within it many possible dangers for the water supply. In Ohio, a total of 413, 031, 696 gallons of toxic and radioactive fracked waste from Ohio itself and from other states was disposed of by injecting it into the underground soil. The possibility that toxins from this fluid will eventually contaminate groundwater and result in devastation to the health of the environment and its inhabitants has been documented by the Pennsylvania Department of Environmental Protection (DEP) which identified 243 cases of water well contamination from fracking with others still to be investigated. [viii] This would appear to be confirmation for a clear link between fracking and water contamination.

The United States Congress commissioned the US Environmental Protection Agency (EPA) in 2010 to study the impact of fracking on drinking water. The final report of this study disproved its own 2004 study that fracking for oil and gas created no threat to drinking water and concluded that fracking could contaminate drinking water in particular situations such as when fluids used in fracking leaked into the water table.[ix] These conflicting results present evidence that a much greater length of time and more study are required before any definite and long-lasting decisions can be taken regarding the use of fracking.

In the midst of increasing public concern about fracking, the Canadian Federal Minister of the Environment requested the Council of Canadian Academies, an independent organization which provides science-based assessment on public policy issues, to assess research on the impact of shale gas. The Council released its comprehensive study in May 2014 and concluded that fracking could not be declared safe because insufficient information is available regarding its impacts. The report stated that key elements of the provinces' regulatory systems are not based on strong science and also remain untested.

The report further declares, "There is reason to believe that shale gas development poses a risk to water resources." (p.96). The study also asserted "…the greatest threat to groundwater is gas leakage from wells for which even existing best practices cannot assure long term prevention."[x]

In the 2014 Newfoundland and Labrador Annual Government Report on Drinking Water Safety 219 active boil water advisories were reported in this province as of March 31, 2014.[xi] It is important to note that this is happening in areas of the province where fracking has not occurred. Hence, we believe that government should refrain from imposing any further strain on potable water in the province and that it should be mandatory to protect all drinking water in this province from any potential danger posed by fracking.

We have already acknowledged our government's promise to protect the rights of people and prevent environmental harm detrimental to the health and well being of all life. Nevertheless, in view of the studies referred to from Duke University, the study by the Council of Canadian Academies and others including those cited above, government must, in the interest of the people and the environment, follow the Precautionary Principle as stated in the 1998 Wingspread Statement: "When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically".[xii]

HYDRAULIC FRACTURING EFFECT ON THE LITHOSPHERE

The long-term implications of drilling a mile down vertically through shale rock and then drilling horizontally for another mile through the same rock is becoming a concern for geologists. Once the gas and liquid is withdrawn from the bedrock there are unknowns with regard to what ensues for the integrity of the bedrock. Some evidence now suggests that there is a loss of stability reaching its way up to the water table. In examining earthquakes which occurred in the area of Youngstown, Ohio, in proximity to deep-well fracking a U.S. Geological Survey found "…the seismic activity was most certainly manmade—and there was no manmade activity in the area except fracking." [xiii]

An article published in *The Christian Science Monitor* in June 2015 reported that from 1973 to 2008 the United States experienced an average of 21 earthquakes per year with a magnitude of 3.0 or higher. From 2009 to 2013 this number increased to 99 a year and in 2014 the number jumped to 653. The same article reported on two studies released by teams at the University of Colorado and Stanford University on the possible cause of this increase in earthquakes over the last 40 years. Both studies concluded that the possible cause of earthquakes is associated with wastewater disposal wells. The study conducted by the University of Colorado, Boulder and led by head researcher Matthew Weingarten, found the enormous increase in the number of earthquakes to be associated with injection wells. The study further concluded that the high-rate injection wells, injecting more than 300,000 barrels per month into the ground, were more likely to be associated with earthquakes than lower-rate wells. The researchers think there is convincing evidence to conclude that the earthquakes occurring near injection sites are induced by oil and gas activity. **[xiv]**

Shale rock on the West Coast of Newfoundland is several times thicker than that of the rest of North America [xv] and all assessments including those done by Shoal Point Energy suggest that this makes drilling much more difficult. Considering the results of the two studies quoted above, we question what adverse effects in terms of the hardness of the shale rock fracking might have in this province. A representative of the consulting firm, Shoal Point Energy Ltd. hired by Shoal Point to evaluate the potential at Green Point stated that fracking this type of shale rock is like pioneering something new. With this information one would wonder whether or not a higher volume of pressure would be required for the process and/or

stronger chemicals injected to break through the hard shale. [xvi] Could this have the potential to cause seismic activity in Newfoundland?

HYDRAULIC FRACTURING EFFECTS ON THE ATMOSPHERE

With regard to the atmosphere, there does not seem to be agreement on the effect of air pollution from both the high toxicity of the chemicals used and the high rate at which these chemicals (some unknown) pollute the air where fracking occurs. Affected air quality from emissions traced to the storage of waste water in open pits and from leakage from trucks carrying toxic chemicals to and from the fracking sites has been a cause of worry in areas where this occurs. While it is true that natural gas when burned may be cleaner than coal, the problem arises with methane that has not been burned. Fumes from methane, the main component of natural gas, are a very potent greenhouse gas which contributes to ground level ozone (smog). This gas can trap 20 to 25 times more heat in the atmosphere than carbon dioxide. [xvii] Considerable amounts of methane can leak into the atmosphere during and after the fracking process. Because of its power to trap heat, these fumes once they are released into the air can be a greater cause for the increase of green house gasses in the atmosphere than that of carbon dioxide fumes coming from coal.

A health problem attributed to ozone pollution is underdeveloped lungs in younger children resulting in asthma and chronic pulmonary disorders. BBC'S Science Editor reported "...the only detailed peer reviewed study of the impact of air emissions was published last year [2013] by the Colorado School of Public Health." This study found that 39 percent of residents in southern Pennsylvania who lived within one kilometre of a fracking site developed upper-respiratory problems compared with 18 percent developing such problems who lived more than two kilometres away. A current rural Colorado study also examined 124,842 births between 1996 and 2009 and discovered that those who lived closest to natural gas development sites had a 30 percent increase in congenital heart condition.[xviii] In addition there are other peer reviewed studies in this online website that shows a growing list of people continually harmed.[xix]
Conclusion of the multiple studies across the country draw attention to respiratory health issues linked to asthma and other such problems due to methane emissions from fracking.

HYDRAULIC FRACTURING EFFECTS ON THE BIOSPHERE

A current visible effect on the biosphere is oil seepage into Port au Port Bay at Shoal Point. The Port au Port Fishery Committee said in a prepared release it is concerned about the lack of prompt action to stop the flow of oil polluting Port au Port Bay. The oil is believed to be seeping from abandoned oil wells that were drilled at Shoal Point in the 1960s and the late 1800s. The committee was formed in November 2013 in reaction to the collapse of the scallop fishery in Port au Port Bay. Fish harvesters reported never experiencing such a widespread collapse of the scallop fishery in the bay, and some believe environmental pollutants may be contributing to the drastic scallop decline. For about a year and a half, members of the committee reported to the provincial Department of Environment and Conservation, Environment Canada, Fisheries and Oceans Canada and the Canadian Coast Guard about the leaks.

In 2014, Environment and Conservation Minister Dan Crummell said the department will bring in experts to determine the cause of oil seepage into Port au Port Bay at Shoal Point in the spring of 2014. Crummell said in a newspaper interview in *The Telegram* that despite this (oil seepage) happening offshore, his department is taking a lead on the issue. Crummell said the consulting company that gets the contract will not only be investigating Shoal Point, but also other wellhead casings in the area. [xx]

HYDRAULIC FRACTURING EFFECTS ON HUMANITY AND HEALTH

The latest health study published July 18, 2015 in the journal *PLOS ONE* by researchers from the University of Pennsylvania as well as Columbia University showed that people living areas near to where hydraulic fracturing was taking place were at a higher risk of being hospitalized for neurological disorders cardiovascular disease, respiratory problems and cancer. [xxi]

After an extensive public health review of hydraulic fracturing, New York, which had imposed a fracking moratorium in 2008, this year, seven years later, has placed a complete ban on fracking. [xxii] This report carried out by the New York State Department of Health reported potential environmental impacts and health hazards as reasons for the ban. With regard to drinking water the New York Public Health Review of High Volume Hydraulic Fracturing for Shale Gas Developmental Report found methane was found to be in 82 percent of drinking water samples, and concentrations of the chemical were six times higher in homes close to natural gas wells in the Appalachian Plateau. Ethane was 23 times higher in homes close to fracking sites as well. This and other similar evidence demonstrated for Howard Zucker, New York Acting State Health Commissioner, "…significant uncertainties about the kinds of adverse health outcomes that may be associated with high volume hydraulic fracturing, (HVHF)." Zucker stated that there are still many uncertainties about fracking and until the science provided sufficient information to determine the level of risk to public health from high volume hydraulic fracking the Department of Health recommended that HVHF should not proceed. [xxiii]

There is a critical need in our province to insure that health care studies and assessments are completed prior to any decisions around fracking because, as Zucker has stated, the potential health risks reported are too many to proceed without the same. According to the Council of Canadians Academies the health and social impacts of shale gas development have not been well studied. If shale gas development expands, the Council states, there may be significant risks to health as well as quality of life and well being in some communities due to the combination of diverse factors related to land use, water quality and loss of rural serenity.[xxiv]

Preserving a healthy and sustainable planet is the most important challenge faced by humanity in today's world. At the Mercy Centre for Ecology and Justice we believe that humanity carries a memory of strength from the past and thereby has the ability to rediscover the true meaning and purpose of life, a holistic life that is more inclusive and sustainable for all. We encourage society to shift its minds and hearts, change deep-rooted attitudes and we encourage a simpler life style within society.

In his newly published Encyclical, *Laudato Si (Praised Be),* Pope Francis reiterates this hope when he says, "Creation is not a property, which we can rule over at will; or even less, is the property of only a few: Creation is a gift, it is a wonderful gift that God has given us, so that we care for it and we use it for the benefit of all, always with great respect and gratitude." [xxv]

At the Mercy Centre for Ecology and Justice we work to protect the gifts of water, air and soil as our most valued resources because these resources are indispensable for all life and their availability to all must not be put at risk at any cost. A further and equally significant consideration is that in addition to and flowing from the negative impact on the physical resources of our province there is also the psychological, social and emotional impact resulting from the loss of people's right to their land and their traditional means of livelihood. In our work at the Mercy Centre we strongly maintain the belief that humanity work to maintain our connection to the Earth that we inherited from the evolutionary processes which has formed us.

HOW HAS HYDRAULIC FRACTURING BEEN VIEWED IN OTHER JURISTICTIONS?

Multiple other jurisdictions have placed bans and moratoriums on hydraulic fracturing because of concerns already referenced. The following are just some examples of jurisdictions which have gone this route. Many others may be found on the following website:[xxvi]

- **France** placed a ban on fracking in 2011. This ban was again upheld in 2012. President Sarkozy explained that France will maintain a ban on fracking until there is proof that shale gas exploration will not harm the environment or "massacre" the landscape.
- **Bulgaria** banned fracking in 2012 and also revoked a shale gas permit granted to the U.S. fossil fuel giant, Chevron.
- In the **Netherlands**, over 200 wells have so far been hydraulically fractured between 2007 and 2011 but a temporary moratorium on fracking was enacted in September 2013.
- **Germany** first enacted a ban on fracking in 2012 which was upheld in 2014.
- **Scotland** banned fracking in January, 2015. The Scottish Energy Minister, Fergus Ewing, announced the ban in order to allow a full public consultation on the issue.
- **Wales:** The Welsh Parliament voted against the use of shale gas fracking in Wales in November, 2015.
- In the **United States** the following are some of the cities and states which oppose fracking or have placed a ban on the process: Hawaii, Maryland, Pittsburgh, Philadelphia, Washington, D.C., Texas, Vermont, Colorado, Los Angeles, California, and State of New York.
- In **Canada** the provinces of Quebec, New Brunswick, and Nova Scotia have banned fracking.

WHAT IS THE RELATIONSHIP BETWEEN HYDRAULIC FRACKING AND ITS EFFECT ON THE CONCEPT OF SUSTAINABILITY?

Economists can postulate and assume that the exploitation of the natural resources such as the gases of hydraulic fracturing from the lithosphere will have a direct positive impact on the economies of a nation or a province such as Newfoundland and Labrador. This logic may be convincing if the economics is taken within the context of pure and probably pragmatic economics. However, we need to analyse the logic within the context of:

- the effects of Hydraulic Fracturing on the spheres of water, air and life (plants and animals);
- the health hazards on humanity;
- global warming as a result of carbonization of the atmosphere; and
- the evolution of a new economic paradigm where carbon is not required for our energy needs.

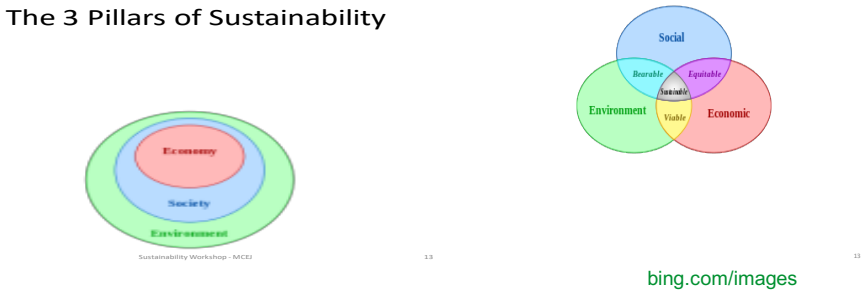
Then the economics of hydraulic fracturing will be less attractive than alternate energy sources. We accept the notion that there are not enough alternate energy resources today to replace the carbon energy economy and that this will continue for some time into the future. We propose instead to look to the concept of sustainability through other sources than the carbon resources of hydraulic fracturing.

SUSTAINABILITY

Beginning in the 1980's *sustainability* has been used in the context of human sustainability on planet earth. The most widely quoted definition of sustainability as a part of the concept of sustainable development is that of the Brundland Commission of the United Nations on March 20 1987: "sustainable

development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs." [xxvii] This is the context of "sustainability" inherent in our presentation.

The 2005 World Summit on Social Development identified sustainable development goals, such as economic development, social development and environmental protection. This first view has been expressed as an illustration using three overlapping ellipses indicating that the three pillars of sustainability are not mutually exclusive and can be mutually reinforcing.



However the three pillars can be mutually referenced as illustrated by the second diagram , showing the confluence of the three pillars.

Our presentation is based upon this concept where we see that there is a common relationship of the three pillars with the harmonization of the three pillars as one of sustainability and thus the most common definition as presented previously. It is our proposition that **sustainability** of this earth and humanity is one of balance and harmony.

As noted the three pillars of sustainability are interrelated, interconnected and interwoven. If the environment is not protected then society and the economy will falter. The environment and the ecology that encompass the earth including all the spheres of the environment are under pressure and we can no longer allow the spheres to be threatened any further. Allowing new industrial processes such as hydraulic fracturing to unfold within this province will cause irrevocable damage to all of the spheres that nourish our existence:

- the **Biosphere:** all that support a life - - plant and animal;
- the **Hydrosphere:** both inland and ocean waters that sustain us;
- the **Atmosphere:** the air that we breath and that provides our life;
- the **Lithosphere:** the earth's crust that nourishes us and that sustains us through its resources ;
- the **Noosphere:** our people, our culture, our communities and our way of life.

These interrelated, interconnected and interwoven spheres must be nourished in a sustainable manner. Hydraulic fracturing is one industrial process that has and continues to hold numerous unknowns. As we have pointed out, these unknowns and our human frailties have caused great harm to the spheres.

CONCLUSION:

Hydraulic fracturing raises significant justice issues with respect to the ecological dangers it poses and the rights of people. We at the Mercy Centre for Ecology and Justice ask if the very source of life - water, soil and air - gifted for the common good of all, can be altered by human activity, put at risk, or depleted to enhance economic gain of the few. All life is embedded and embodied in Earth, stretching back not only to Earth but out into the universe back to the beginning of time and into an unknown future. We go

forward with the conviction that respect for the intrinsic value inherent in Planet Earth and in all creation is essential for the sustainability of all life. Hydraulic fracking with so many applied scientific uncertainties and with the potential for serious threats to the health and welfare of the life support systems of the planet and its inhabitants should not be considered for implementation in this province without definite proof and full assurance that it will cause no harm. This precautionary principle is essential. The people of this province with their legacy of respect and care which they inherited from their ancestors deserve the maximum level of accountability from government for the protection and respectful care of all life including soil, water and air. The more we come to understand the impact of fracking and the concerns of so many countries the more certain we become that there should be an outright ban on fracking in this province.

RECOMMENDATIONS:

Considering the vast amount of evidence indicating the potential dangers associated with hydraulic fracturing and the many unidentified consequences regarding this process we make the following recommendations to the Permanent People's Tribunal on Human Rights, Fracking and Climate Change:

1. That a ban be placed on all activities related to onshore-offshore fracking (but more specifically onshore related to this panel's mandate) until it is scientifically proven that this unconventional method of hydraulic fracturing is a safe and reliable process;

2. That the human right to information should take precedence over a fracking company's right to secrecy with regard to the disclosure of exact chemicals used in the fracking process; that before any fracking occurs a listing of all chemicals to be used in the process be supplied and specific information provided regarding all possible risks from the use of these chemicals to all life, human and non-human, including water, air and soil;

3. That priority be given to preventative action so that any environmental damage will be rectified at its source, and that the polluter be responsible for payment of any cost involved;

4. That before fracking takes place on this island with its high cliffs and extra hard rock formations extensive scientific investigation into the implications of seismic activity as a result of fracking through extra hard rock be conducted.

SIGNATORIES

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Rita Janes
Chairperson of Board of Directors of Mercy Centre for Ecology and Justice

Mary Tee, rsm
Director of Mercy Centre for Ecology and Justice

Sandy Gibbons
Vice-chairperson of Board of Directors of Mercy Centre for Ecology and Justice

Carmel Doyle
Member of Board of Directors of Mercy Centre for Ecology and Justice

Gordon Holden
Member of Board of Directors of Mercy Centre for Ecology and Justice

Elizabeth Marrie, rsm
Member of Board of Directors of Mercy Centre for Ecology and Justice

Susan Ryan
Member of Board of Directors of Mercy Centre for Ecology and Justice

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