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# Written submission from Paula Tippett

# Mémoire de Paula Tippett

In the Matter of the

À l'égard de la

**New Brunswick Power Corporation, Point Lepreau Nuclear Generating Station**

**Société d'Énergie du Nouveau-Brunswick, centrale nucléaire de Point Lepreau**

Application for the renewal of NB Power's licence for the Point Lepreau Nuclear Generating Station

Demande de renouvellement du permis d'Énergie NB pour la centrale nucléaire de Point Lepreau

**Commission Public Hearing**
**Part 2**

**Audience publique de la Commission**
**Partie 2**

**May 11 and 12, 2022**

**11 et 12 mai 2022**

Canada

Senior Tribunal Officer, Secretariat

Canadian Nuclear Safety Commission

280 Slater Street, P.O. Box 1046, Station B

Ottawa, Ontario K1P 5S9

From: Paula Tippett

Saint John, NB

March 22, 2022

Re: Intervention by Paula Tippett for the NB Power Licence Renewal Application (Hearing Ref.2022-H-02)

To whom it may concern:

I, Paula Tippett, request to intervene in the hearing in the above-referenced matter. Please consider these attached comments submitted to the Canadian Nuclear Safety Commission regarding the licence renewal of the NB Power Point Lepreau Nuclear Generating Station.

Introduction: I am a retired Saint John family doctor who, for a brief period after I came back to New Brunswick from out west, served as District Medical Health Officer for the 4 counties in southern New Brunswick. As part of my job I served as a medical advisor to the Atomic Energy Control Board, attended meetings in Ontario, and accompanied the NB radiation health inspector and the AECB inspector to inspections at the Point Lepreau Nuclear Power Plant as well as the nuclear fuel manufacturing plant in Moncton, and was aware of problems at both places, which we tried to have corrected.

I am concerned that issuing a licence for 20 or 25 years for operation of the Point Lepreau Nuclear Power Station would be a very bad idea. Previously licenses were issued for only 2-5 years, even when the reactor was new, and it is now near the end of its "lifespan". Some problems pointed out in the past have not been properly corrected. The concrete buildings themselves have had problems for years, partly due to being near the Bay of Fundy, with its salty, corrosive air. Concrete around here tends to deteriorate faster than in other places I have lived. It is disturbing to think about the increasing amounts of radioactive wastes, especially the used radioactive fuel rods piling up in concrete "silos"at the Point Lepreau site. The recent attacks on nuclear reactors and nuclear waste storage in Ukraine by Russian military forces show how dangerous these nuclear facilities can be to all of us. A few paragraphs from my old "Harrison's" medical textbook[1] give food for thought:

"Long Term Effects: Radiation alters the 'information system' of proliferating…cells. Thus the perpetuating cells of the blood, gastrointestinal tract, skin, gonads, and other areas pass on either 'bad or inadequate information' presumably in altered DNA, to their progeny, resulting in …disease e.g.:

[1] Harrison's Principles ofInternal Medicine, Seventh Edition,copyright 1974, McGraw Hill. Page 716.

cancer…degenerative disorders…or non-specific shortening of life…It is asserted, but not proved, that there is no threshold, and that the yield of leukemia increases with dose. Radiation can produce mutation of genes, the information and transmission centres for heredity…Not all mutations are harmful, but the chances are overwhelming that a change will be detrimental to the species. Not all mutations produce visible, immediately detectable effects…It is the less obvious changes that are of the greatest importance…The more subtle changes.. are propagated longer and affect a very large number of persons…If the mutation rate were increased by a single exposure of the population to radiation, the effects would be spread through many generations. Half the total damage produced would not be observed until…30-50 generations had been born."

As a young person in the 1950's and 60's I was concerned about nuclear weapons and the atmospheric nuclear tests that caused radioactive fallout. In NB it caused radioactive Strontium-90 to fall on the Sussex area, where the dairy cows ate it along with the grass, and high levels of Strontium-90 were found in our milk. By the time I was in medical school, I saw the results of this in young people who developed bone cancers (osteogenic sarcomas) in their legs, requiring amputation. It was shocking to see young men who had lost a leg due to cancer from radioactive fallout..

The Bay of Fundy has many species of fish and other marine creatures and plants. Some of these are important to our economy, and some are important food items for maritimers, for example: cod, haddock, lobster, scallops and dulse. Studies have shown that the large power plants here (Coleson Cove and the Point Lepreau Power Plant) kill small fish and other marine creatures in their water intake systems.[2] We can live without fossil fuel and nuclear power plants, but we can't live without our local food. In addition, the Point Lepreau Nuclear Plant releases radioactive Tritium into the air and water, which has been found to build up in our dulse, and other marine plants. The sooner the nuclear plant can be closed, the better for our health and the health of the marine environment.

It should be noted that the Bay of Fundy is home to a number of federally protected species under the Species at Risk Act, including the North Atlantic right whale, blue whale and fin whale. **The Bay of Fundy is globally recognized for its significance and biodiversity, and needs to be protected from radioactive contamination, preferably by closing the aging Point Lepreau nuclear plant as soon as possible, before a serious accident occurs.**

I am concerned that there is still no safe option for permanent "disposal" of the increasing amount of radioactive waste from the Point Lepreau Nuclear Plant. As well, the proposal to transport all the accumulated radioactive waste to a proposed Deep Geological Repository (DGR) in Ontario increases the risks of serious transportation accidents resulting in radioactive releases that would adversely affect human health and the environment. (The proposed Canadian DGR seems to be less safe than some of the permanent nuclear waste facilities proposed for the European countries**.) The CNSC must consider the impact of radioactive wastes within this licensing hearing. The CNSC should not continue to license nuclear power plants when no permanent solution exists for protecting people and the environment from the hazards of nuclear wastes.**

[2] The Negative Impact of the Point Lepreau Nuclear Plant on Marine Plankton and Larval Fishes of the Bay of Fundy, by Art MacKay.

Nuclear power plants are particularly vulnerable to climate change effects, including extreme weather events. A recent study showed extreme weather events have become the leading cause of nuclear power plant outages in North America. **The CNSC must consider climate impacts and vulnerabilities when considering issuing a license. As climate change impacts become more frequent and pronounced, the risks to operation, safety and environment and health will increase. Under the precautionary principal, the CNSC should only consider 5 year relicensing periods, not longer.**

**The CNSC must require an adequate emergency response plan for a nuclear accident at Point Lepreau which includes expected climate impacts before considering relicensing of the plant.[3]**

NB Power supports the development of a reprocessing plant that will extract plutonium from the irradiated fuel at Lepreau. This could lead to nuclear weapons proliferation. **The CNSC must ban the extraction of plutonium from the spent fuel at Lepreau.**

**The Canadian government has agreed to the United Nations Declaration on the Rights of Indigenous People, requiring free, prior and informed consent of indigenous people for activities occurring in their territory.** The indigenous people in NB have not been adequately consulted by NB Power, the NB government or the CNSC about Point Lepreau. They will be making interventions with recommendations. **The CNSC should follow the recommendations of the aboriginal people of this area.[4]**

**Please acknowledge receipt of this email and attachments**.

Yours truly,

Paula Tippett, BSc., MD, MPH

Saint John, NB

[3]History of Lepreau Emergency Plan…by P. Tippett Sept. 18, 2016 (attached)

[4] The Brief, Vol. 13, No. 3, Dec./2021/Jan./2022, nbmediacoop.org "We know whose land it is, and so does government", by Luke Beirne.

Sept. 18/2016

Comments on Point Lepreau relicensing by CNSC

1.History of Lepreau Emergency Plan and where we are today

Prior to the commissioning of the Pt. Lepreau Nuclear plant, the public questioned what would be done in the event of a nuclear accident. At that time, it was decided to warn the public of an accident by activating civil defence sirens which had been installed throughout Canada after the second world war to warn of a nuclear weapons attack by Russia. The public was advised that these sirens would be the means to advise them of a nuclear accident.These sirens became old, and in some areas tended to sound for no reason. They were eventually removed from the power poles and discarded. The general public here in New Brunswick is not aware today of how they are to be informed of a nuclear accident or other disaster.

Prior to the commissioning of Point Lepreau an emergency plan for an accident at Lepreau was developed, which included the purchase and central storage of large quantities of potassium iodate and later potassium iodide by the Department of Health, Public Health Services, and the distribution of potassium iodide tablets to households in the Point Lepreau area near the nuclear plant. A mock disaster and evacuation exercise was held. This was interdepartmental, involving Departments of Environment, and Health, including the man in charge of radiation protection for public health in New Brunswick, and the DMHO for Saint John,( who also served as a medical advisor to the Atomic Energy Control Board, the agency that preceded the CNSC), the public health inspectors and public health nurses in Saint John and Charlotte county, as well as Social Services. NB Power and EMO also participated. Inspection personnel in Public Health were provided with used Geiger counters from the military base at Camp Gagetown, and instructed in their use to check for radioactive contamination of areas, vehicles, and people. The Geiger counters were old, and some were found to bedamaged and defective, but there were enough still usable for the mock disaster exercise. (The functional equipment was also used by health inspectors to check the public's Fiesta dishes for radiation, due to a notice that old Fiestaware had used a uranium glaze.) Hospital medical staff were given cards issued by EMO telling them where to report in a disaster.

For the 1st nuclear accident mock disaster exercise, volunteers from the Point Lepreau area were evacuated to the Pocologan School, not far from the nuclear plant; vehicles and people were checked for radiation by public health inspectors with the Geiger counters; people were given instruction sheets telling them what procedures to follow in the event of an accident, and when and how to take their potassium iodide medication after an accident. Nurses were available at the evacuation site to assess and triage mock patients, the Point Lepreau area ambulance was used for transfer of mock patients to hospital. The Dept. of Health's Radiation Protection Officer, based in Fredericton, was involved in planning, training for, and critique of the mock disaster, but most of the health and social services personnel who participated were from the Saint John and Charlotte county areas, and most of the people trained would be retired by now.

In recent years CNSC staff have pointed out the lack of an adequate emergency response plan for Point Lepreau and the lack of capacity to carry it out. Just before the CNSC Board's arrival in Saint John last time we noticed signs that said"E" with an arrow put up around the City of Saint John without explanation. These are apparently supposed to direct people in the event of an emergency evacuation, somehow. It does not appear that the paper plan provided to the CNSC Board during the previous Board hearings has the human resources behind it to function in a manner that would protect the public health and safety in the event of a nuclear accident.

With cutbacks in Health and other public services in recent years, the civil service seems to lack the person-power to deal with disasters. During the oil refinery explosion and fire in East Saint John, the church-sponsored day care in the area evacuated their children to West Saint John, and a small business across the street closed and sent its employees home out of harm's way, while the nearby public elementary school did not seem to have an organized plan for what to do, and the local nursing home was only instructed to close doors and windows. Like others in the area, we stood watching the smoke rising, listening to the radio for some instruction from the authorities on what we should do, but no instructions were provided.

The flood in St. George was a more recent example of inadequate preparation and response to sudden disaster. If the Red Cross person had not been looking out the window at the evacuation centre after dark and seen two people floating by on top of their sinking car, and got help to them right away by boat, they would have drowned. Why was the flooded road/bridge not closed? With more frequent floods in Saint John we have at times found ourselves without warning on flooded streets and roads that were not safe to travel on, with no signs or barriers directing traffic away.

With climate change worsening there will be more disasters, not fewer. We need more people in positions of responsibility in government to act; more police, fire, health personnel, and more equipment available for them to use in case of disaster. Most of all, we need our elected and appointed officials to face reality and prepare for and try to prevent the disasters they have set us up for, to change course to a less risky future and put the people and the public health and welfare first.

For Lepreau we need a plan that is communicated to the public with:

1. Instructions to the public on what emergency supplies to have on hand.
2. A Notification system that covers everyone in Health Region 2.
3. Sheltering Instructions for areas both inside and outside the evacuation area.
4. Instructions on preventing radioactive contamination and what to do if affected.
5. Evacuation instructions, clear signs and a plan that includes the City of Saint John.
6. Designation of hospital facilities to be used, with route directions for the public.
7. A Potassium Iodide (KI) administration plan and logistics that includes the whole population.
8. A Plan for safe water, safe food, and safe milk that includes everyone and lasts as long as the contamination persists. Monitoring of soil and water contamination, as well as the monitoring of radiation levels in food, water and milk, with clear signage for the public indicating the amount of contamination, and acceptable and forbidden activities in the area, will be needed for a long period of time after the catastrophic accident.

   Ontario and Quebec seem to have more in place for emergency response to a nuclear accident than New Brunswick today. CNSC must require that NB Power and the New Brunswick Government, as well as Saint John City Council, put equivalent plans in place for nuclear accident response to those existing in Ontario and Quebec.

Recommendations:

**CCNB recommends that lessons from the Chernobyl and Fukushima accidents, and the recommendations from the Japanese parliamentary report on the Fukushima Accident and the 2011 CNSC Fukushima Task Force that apply to the Lepreau Nuclear Plant be fully implemented.** CNSC staff previously found the Lepreau emergency plan defective. It was not demonstrated in the last CNSC hearings in

Saint John that the paper plan presented at the hearings had the necessary resources behind it to be carried out. The notification and evacuation plan presented at the hearings applied only to the area around the plant, and did not include any municipalities at risk. If a sheltering, evacuation and potassium iodide administration plan has been developed for the City of Saint John since the CNSC hearings in Saint John, the population of Saint John is not aware of it.

**CCNB recommends that resources of the Saint John fire department be increased to more adequately meet the additional roles that have been assigned to them for emergency measures by the nuclear industry and other existing and proposed city industries.**

CNSC may be aware of the City of Saint John's commitment to assist with provision of fire services at Lepreau in the event of an accident to make up for the local deficiency noted by CNSC. This may be a hollow commitment.

In the event of an extreme natural hazard event resulting from worsening climate change (effects of which we are already seeing here on the coast, with increased wind speeds, more severe coastal storms, and increased frequency of disruptive flooding in the city's low-lying areas,) , an extreme natural event could so overwhelm the city fire department that it would have no resources to send down to an accident at Lepreau, even if a route there were accessible.

This is due to the recent addition of extreme man-made hazards to the Saint John area, which could be affected by an extreme weather event like: the expansion of the oil refinery, tank farms and an oil-by-rail storage facility, all on or near the coast, as well as huge numbers of rail tank cars, many containing volatile fuels stored on mainly low-lying tracks around the city, as well as an LNG import-export facility, partially converted to accommodate oil tankers as well, with the LNG tanks not far from the oil storage tanks, and an LNG pipeline snaking around the oil refinery through the railyard and city residential areas, and to be added to all this a proposed bitumen pipeline, tank farm and marine terminal, in the same part of the city, containing a substance that releases the asphyxiant gas hydrogen sulphide when heated and, once ignited, burns uncontrollably for days.

**CCNB supports CELA's previous recommendation #4[1] "that the CNSC should require the licensees to demonstrate that there are, in place, properly resourced, sufficiently detailed emergency planning and preparedness plans that would address Chernobyl-size or Fukushima-size accidents. The basis for this recommendation includes world-wide experience with these catastrophic accidents.** This recommendation is independent of particular event sequences and rather takes account of the myriad ways things can go wrong resulting in an accident and resulting in a serious breach of containment, regardless of how caused. It also includes consideration of the fact that among the events that may initiate a catastrophe at a CANDU are those that are beyond the control of the operator such as hostile action or unforeseen external weather events or unforeseen combinations of failures including human error."

[1]Emergency Planning at Pickering NGS-Submission to the CNSC by Canadian Environmental Law Association, May 3, 2013.

**CCNB agrees with CELA that the primary nuclear planning zone should be at least 30 kms. and the secondary zone 100 kms[2]. This would require a notification system for Saint John as well as testing of food, water and milk and provision of potassium iodide prophylaxis, as well as evacuation of some additional people.**

P. Tippett, MD, MPH

[2]Emergency Planning at Pickering NGS-Submission to the CNSC by Canadian Environmental Law Association, May 3, 2013, Recommendation 14.