

# THE PROVINCIAL COUNCIL OF WOMEN OF ONTARIO (PCWO)

Established 1923

**To : The Toronto Board of Health**

**From: The Provincial Council of Women of Ontario  
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**Regarding: Comments on Item 2018. HL26.1 Reaffirming City of Toronto as a  
Nuclear-Weapons-Free Zone**

**April 15, 2018**

The Provincial Council of Women of Ontario (PCWO) is pleased that the City of Toronto, has reaffirmed its status as a Nuclear Weapons- Free Zone, and although we are unable to make a presentation at the April 16, 2018 Board of Health meeting re. item 2018.HL26, we feel our knowledge of nuclear issues and long history of interventions in a wide spectrum of nuclear applications, the most recent being our attached comments on the deficiencies of the (Draft) Provincial Nuclear Emergency Response Plan (2), may give the Board of Health members some sense of the general public's concerns and expectations in this crucial matter.

The key environmental principle for PCWO, is that elected officials, their staff, and advisory Boards who are responsible for the wellbeing of the public, should make decisions based on the *'precautionary principle'* and act on them promptly.

As a first step, given the many dangers posed by the Pickering nuclear station and its current request for another life extension, PCWO would ask that the Board of Health immediately urge the City of Toronto to follow-through on the actions proposed by Dr. Gordon Edwards. The most important and immediate one should be, to *"take steps to hasten the shut-down of the Pickering nuclear generating station (NGS)"* as it is well past its projected lifetime, contains over 400,000 irradiated fuel bundles in its spent fuel pools, and provides a potential target for any planned hostile attack.

The Provincial Council of Women of Ontario (PCWO), a member-funded non-governmental, non-partisan, non-sectarian volunteer organization, has been working for 95 years to advance the status of women, and to improve and enhance the lives of their families and of their communities in Ontario.

PCWO considers a healthy and safe environment for all Ontario citizens and their families to be of the utmost importance, and we, along with the National Council of

Women of Canada (NCWC), have raised societal and scientific concerns about nuclear power for many years, beginning with a 1955 resolution warning of the potential dangers of “*atomic energy*”.

Since then, PCWO has kept a vigilant eye on the seemingly unchecked expansion of the nuclear industry in Ontario and presented many briefs to the provincial government, and to a wide variety of Boards, Agencies and Commissions (2).

Of all these potentially disastrous nuclear initiatives, those executed and planned for the aging and poorly designed Pickering nuclear reactors pose the greatest immediate danger should a critical accident happen, due to mechanical breakdown, human error or nefarious action. And, it is clear, as nuclear experts such as Dr. Gordon Edwards, have attested, that the people of Toronto, particularly those within a 40 km radius, are the most critically at risk and stand the most to lose.

Our thanks for the opportunity to comment on this important City of Toronto “reaffirmation of its status as a Nuclear Weapons –Free Zone “ and if the Board members have any questions please feel free to contact either me at [edeltraud.neal@gmail.com](mailto:edeltraud.neal@gmail.com) Tel 613-731-2739 or Gracia Janes, PCWO Environmental Advisor, [gracia.janes@bellnet.ca](mailto:gracia.janes@bellnet.ca) or 905 468 2841.

Background:

1. (Draft) Provincial Nuclear Emergency Response Plan, July 28, 2017 EBR 1113-1500
2. 2013 brief regarding a Pickering life-extension application.

# Provincial Council of Women of Ontario

Established 1923

Comments on EBR # 013-1560 - July 28<sup>th</sup>, 2017

Attention: (Office of the Fire Marshal and Emergency Management and  
Ministry of Community Safety and Corrections Services )

[pnerpconsultation@ontario.ca](mailto:pnerpconsultation@ontario.ca)

DISCUSSION PAPER

## PROVINCIAL NUCLEAR EMERGENCY RESPONSE PLAN (PNERP)

### PLANNING REVIEW & RECOMMENDATIONS

From Edeltraud Neal, President, Provincial Council of Women of Ontario  
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## Introduction and Recommendations

The Provincial Council of Women of Ontario (PCWO), welcomes this opportunity to comment on the '*Provincial Nuclear Emergency Response Plan (PNERP) Planning Review and Recommendations*' as they relate to our well established policies supporting the development of strong, comprehensive disaster planning and for the phase out of nuclear power.<sup>1</sup>

Our brief reflects issues of grave public concern that we, as a long- established non-partisan, non-sectarian, member-funded public interest organization have raised with the Provincial government over the last several years in letters and briefs, and in Provincial and National nuclear proceedings.<sup>2</sup> We strive to improve the health and wellbeing of women, their families and their communities. Our 14 diverse Federated group members represent many thousands of Ontarians.

In these communications and presentations, PCWO has often warned of the potential for a nuclear disaster, caused by human error, nefarious action, reactor failures, or natural events such as earthquakes. For instance, Pickering nuclear reactors have been of considerable concern, as they are well past their planned lifespan, are situated on an active earthquake fault line<sup>3</sup>, and are contiguous to an extremely heavily populated area, which the government through its '*Places to Grow Plan*' intends to intensify further.

Concurrently, our worries have been greatly exacerbated by the growing chances of the of an International "*major event*" such as Three Mile Island, (1979) Chernobyl (1986) and Fukushima (2011), an awareness of weaknesses in nuclear plant safety systems and operational culture<sup>4</sup>, and very recently, information that countries such as Switzerland have taken Post-Fukushima warnings very seriously and strengthened disaster plans accordingly.

PCWO concerns are not limited to the disastrous impacts a nuclear accident would have for those living near the Pickering, Darlington or Bruce reactors and further out in the surrounding communities, but also to those near the poorly-protected nuclear reactor at McMaster University in Hamilton<sup>5</sup>; in the Windsor and Essex County area across the Lake from the US Fernie and David-Besse nuclear plants; near the Chalk River 'Near- Surface' Disposal facility for nuclear waste containing significant amounts of plutonium and other alpha –emitting radioactive material; and, in communities such as the Niagara Region along the potential route of transport trucks carrying extremely dangerous high level fissionable liquid nuclear wastes from Chalk River to South Carolina <sup>6</sup>.

In summary, PCWO is most alarmed that the PNERP fails to admit the huge risks that the plethora of nuclear installations and life-cycle activities, such as waste management, pose to the health, safety, environment and social and economic wellbeing of millions of Ontarians living near the Great Lakes Ontario and Huron and to respond strongly and comprehensively.

PCWO supports the over 40 civic groups and many other experts and individual Ontarians in their view that it is imperative for the Government of Ontario to ensure that the PNERP takes an extra-precautionary approach to disaster planning, which recognizes the potential for a “*worst case, unimaginable*” accident, in this case an INES 7 event, and the necessity for the most rigorous institutional, independent expert and public scrutiny and involvement in provincial nuclear disaster planning. Only in this way can the Government fulfill its mandate to protect the “*public*”.

The following are PCWO recommendations for essential improvements to the PREMP along with our rationale and references.

## Overall Recommendations

### The PNERP should:

- recognize that the Ontario public has reason to be extremely concerned about nuclear risks, and expects the Province to ensure the development of a Nuclear Emergency Response Plan that covers all possible risks and uses the most stringent application of the “*precautionary*” principle to ensure that international best practices are met, or even exceeded, if possible.
- acknowledge that there could be a Fukushima -scale nuclear accident at any of Ontario’s reactor sites <sup>7</sup>, and go beyond PNERP’s delayed post-Fukushima addition of “*multi-unit*” and Level 5 “*severe*” accidents, and its ill-founded trust in the “*containment*” of radioactive releases, to, as Canadian Nuclear Safety Commission Chair Mr. Binder termed at the 2013 Pickering life-extension hearing, plan for an “*unimaginable worst case scenario*”. <sup>8</sup>
- (That is) plan for an INES 7 accident, which will “*require measures to address large-scale and long lived contamination.*” It would involve an “*expansion of the detailed evacuation zone (Primary Zone) to 20km*” and “*ensure capacity to implement emergency plans well beyond this zone to address localized hot spots*”. If a “*secondary Zone is deemed necessary, it should be expanded from 50 to 100 km*” <sup>9</sup>
- emulate the open, transparent, and thorough Swiss planning and public education process. <sup>10</sup>
- give first responders, local communities and officials accurate information and cease giving out crucial misinformation, such as that found in the Provincial Emergency Measures Handbook for first responders.

- cease relying almost solely on CNSC and the nuclear industry for information and advice, and ensure that independent non- nuclear industry experts are consulted in the planning process, particularly in the choice of selected accident scenarios, e.g. the PNERP “*incident*” reference case.<sup>11</sup>
- recognise the risks to students, residents of Hamilton, and persons seeking medical treatment at the world renowned Juravinski Hospital and Juravinski Cancer Centre, and include this nuclear facility in its final emergency plan, with more detailed plans and a broader distribution of the K1 pills.
- involve the whole community in extensive, detailed pre-planning, with an emphasis on those knowledgeable about the special needs of residents e.g. the frail and vulnerable, hospitals, such as Hamilton developed after the 1980 Hagersville tire fire. (ibid ref.1)
- include the municipalities of southwestern Ontario which are at risk from nuclear accidents at the US nuclear plants bordering the Great Lakes in its disaster planning.
- recommend the fulfillment of a Provincial Minister of Community Safety promise to study the impact of a severe nuclear accident and release of radionuclides on the Great Lakes drinking water.<sup>12</sup>
- recommend the extension of PNERP’s planning time-frame and that the Ministerial “*review*” of the public and other comments be opened up to an independent review by arms-length experts, practitioners from a variety of disciplines e.g. the medical, social service, environmental science, other ‘*first responders*’ e.g. nurses, fire departments ambulance personnel, and municipal planners.

## **PCWO Rationale for Recommendations:**

### **Failure to Plan for an International Nuclear Event Scale Level 7 Accident**

The underlying flaw in the PNERP is its reliance on outdated, biased and risky nuclear industry data, guidance and recommendations, rather than on independent scientific expertise and public concerns and expectations. PCWO notes, that the public is well aware that in our post-Fukushima era international regulatory bodies are dramatically revising their warnings on what safety plans should be in place, and countries such as Switzerland have taken a very aggressive approach to emergency planning- raising its standard to an International Level 7 event.

In stark contrast, the PNERP echoes the failure of the federal and provincial governments, CNSC and the nuclear industry over many years, to publicly admit there are extremely serious nuclear risks, and to use a “*precautionary*” approach when planning to address the public’s legitimate concerns.

The clearest evidence of this approach is the PNERP recommendation against changes in the outdated 2009 Emergency Measures Plan, and its authors’ reliance on the nuclear industry and its regulator CNSC for expertise and advice. For instance, the PNERP adopts their false rationale that a catastrophic accident is so unlikely to happen, it doesn’t need serious detailed planning, despite the fact that accident sequences leading to Fukushima-scale radioactive releases exist at all Ontario nuclear stations.<sup>13</sup>

This has led to PNERP’s use of Ontario Power Generation’s chosen selected accident plan (SARP) and a very weak planning response for a Level 5 International Nuclear Event Scale (INES) accident. That is, “*detailed planning*” is limited to a constrained Primary Zone of 6kms and “*conceptual*” planning for a 20km Secondary Zone, with the vague option to enlarge the zone if necessary in the event of an accident. This contrasts starkly with Switzerland’s INES 7 Level realistic and very much stronger public–safety - first approach of a 20km detailed planning evacuation zone, with the flexibility to capture a much larger area should evacuation be needed and also to handle local “*hot spots*.” (ibid ref. 9)

The PNERP therefore fails to plan for a worst-case “*most fearful event*,” as mentioned by CNSC Commissioners at the 2013 Pickering life-extension hearing, such as a plane crash or a terrorist action and, the realistic potential of large scale releases from the ageing Pickering and Bruce multi-unit reactors. (ibid ref. 8)

### **Lack of Trust in CNSC and the Nuclear Industry to Inform the PNERP Accurately**

PCWO has a very long involvement in nuclear regulatory processes, and over this time we have found significant informational gaps, inaccuracies and outdated information in the background provided by OPG, Bruce Power and CNSC. For instance, as already noted in our introduction, at the CNSC 2013 Pickering Life Extension hearing, CNSC accepted the evidence of OPG’s scientist that the Pickering area was “*seismically stable*” over that of a multi-year study by Dr. Arsalan Mohajer, despite the fact that the OPG evidence was based on a day-and-a half study by Natural Resources Canada, and a 1937 Finnish academic paper. (ibid ref. 3)

Similarly, at the EAA Joint Panel Review hearings regarding OPGs plans for a deep geological repository near the shores of Lake Huron, OPG and CNSC disputed the warning of the Panel’s advisory scientists that “*previous breaches in the Upper Ordovician rock facies by hot fluids, which they noted have moved through the area possibly along the as yet unmapped deep-rooted faults and fractures.*”<sup>14</sup>

## **PNERP Fails to Plan for Nuclear Accidents Elsewhere in Ontario**

### **\*Niagara**

PCWO draws to the attention of the Fire Marshall and the Ministry of Community Safety and Correctional Services, that early in 2017 CNSC approved the transport by truck of very dangerous liquid nuclear waste containing Highly Enriched Uranium (HEU) from Chalk River approximately 1,800 kms to South Carolina over a period of 2-4 years. PCWO has taken an active role to support the Niagara District Council of Women in its efforts to ensure environmental protection of the unique fruit lands, other prime farmlands, community safety and emergency responders. We cannot speak strongly enough about the potential for a sudden, disastrous accident, which is not admitted by CNSC, nor planned for properly by the province through the PNERP.

All safety testing has been theoretical, and premised on a fallacy that liquid nuclear waste is the same as solid. This inaccuracy is carried forward in the instruction manual given to Provincial *'first responders'*, which states proper tests have been carried out to assure the cargo is carried safely, and instructs them to contact CHALK river for direction if there happens to be an accident.<sup>15</sup> However, not only will this dangerous liquid waste go rapidly into the ground and any nearby water, but should there be a fire it would burn at extremely high temperatures and be very difficult to extinguish. As well, first responders would be at considerable risk. Most importantly, these are fissionable liquid materials, and an accident could lead to a nuclear chain reaction .<sup>16</sup> Although attention is currently focused on Niagara, these shipments could be travelling elsewhere in Ontario. Regardless, it is essential that the PNERP be more fully aware; require the Ministry of ensure its safety handbook properly warns first responders of the potential risks to health and safety.

### **\*The Hamilton McMaster University Reactor**

In contrast to the well-publicised Chalk River to South Carolina liquid nuclear waste shipments, and other prominent nuclear reactor dangers elsewhere, the McMaster University reactor is hidden away near the University library, out of public sight and interest. PCWO was unaware of this until recently, when Siegfried Kleinau, the Co-founder and Outreach Director Bruce Peninsula Environment notified the Ministry of Public Safety and the Fire Marshall, that. *"This old pool type reactor is licensed to operate up to 5MW thermal power ...and is right in the center of a huge university in Hamilton Ontario."* ..*"In a 2011 intervention on the Mid-Term Performance Report of the MNR, there was an urgent push to have this facility upgraded to higher standards because of dangerous experiments being undertaken there. It was also urgently recommended that K1 pills should be distributed to the different departments, but all of these recommendations were consequently disregarded."* Given the risks to students, residents of Hamilton, and persons seeking medical treatment at the world renowned Juravinski Hospital and Juravinski Cancer Centre, PCWO requests that the PNERP



include this nuclear facility in its final emergency plan, with more detailed plans and a broader distribution of the K1 pills.

### **\*Windsor and Essex County**

Residents in Windsor and Essex County have asked the province to include their cities in the PNERP as they feel they are at risk from a potential nuclear accident at the nearby US Fermi and David-Besse nuclear stations. PCWO notes that the PNERB defers to US safety standards, but we would presume that Ontario cities, should be protected by Ontario nuclear safety plans and actions, and would recommend that the Province require this to be part of a new and stronger PNERP.

### **The PNERP should help Protect Ontario's Drinking Water**

PCWO has commented to the Provincial Government several times on the lax standard for releases of tritiated water into the Great Lakes from Ontario's nuclear reactors, which, despite the recommendations of the 2008 Ontario Drinking Water Advisory to reduce the release levels to 20 Bq/L,<sup>17</sup> still allows 7,000 BQLs per litre. Even more important, given there are 25 reactors around the Great Lakes, most of them near the end of their life spans, with Ontario determined to keep the Darlington, Bruce plants operational past their planned lifespan, and badly- deteriorating Pickering already operating well past its due retirement date, *there is* certainly a strong likelihood of releases well past this level should there be major accident at any of these plants. This makes it imperative for the Ministry of Community Safety Correctional Services to fulfill an earlier government promise to study the impact of a severe nuclear accident and release of radionuclides on the Great Lakes drinking water. (ibid. ref.12)

### **Limited Involvement of Public in Emergency Planning**

A CNSC Commissioner at the 2013 Pickering life extension hearing worried that there will be a huge amount of confusion and chaos regarding communications in a severe nuclear emergency. <sup>18</sup> This dire situation will require complex and well thought out pre-emptive planning. We would add to the Commissioner's concerns, that many important questions need to be addressed well ahead of time. For instance, where will people be housed and for how long? How will businesses stand the commercial losses over even the 5 to 9 days or more? What about farmers and farmland? This issue is not just about a 3-9 day temporary move for those in a 6 to 20 km containment area, but one that even within these small areas would be a potential economic catastrophe

We also remember the disastrous Hagersville tire fire of the 80s, with its pollution and dwindling food supplies and other material necessities, due to the current 'just-in-time-delivery' pattern whereby very large storage warehouses have become a thing of the past. An after-the-fact result was the Hamilton emergency plan with subsequent plans to involve the community e.g. the frail and the elderly, children, the physically challenged more closely and pro-actively.

The public has a right, a need and an expectation to be involved in nuclear emergency planning, and as the City of Hamilton discovered when they developed a detailed emergency plan after the Hagersville fire they have a great deal to offer. Subsequently, PCWO enlisted the expertise of a Hamilton Local Council of Women member, a public health nurse, who knew the strengths of the agencies servicing the frail and elderly, children, and others within the community. She had served on Hamilton's Emergency Plan Committee and was well able to help us develop a strong policy to present to the government which emphasised first and foremost, the involvement of the community. (ibid.ref.1)

## **Conclusion**

PCWO supports the over 40 civic groups and many other experts and individual Ontarians in their view that it is imperative for the Government of Ontario to ensure that the PNERP takes an extra-precautionary approach to disaster planning, which recognizes the potential for a "*worst case, unimaginable*" accident, in this case an INES 7 event, and the necessity for the most rigorous institutional, independent expert and public scrutiny and involvement in provincial nuclear disaster planning. Only in this way can the Government fulfill its mandate to protect the "*public*".

## **Background:**

1.Planning after Hamilton/Hagersville 1990Tire Fire: Hagersville Tire Fire: 25 years later | Simcoe Reformer[www.simcoereformer.ca/2015/02/11/tire-fire-disaster-waiting-to-happen](http://www.simcoereformer.ca/2015/02/11/tire-fire-disaster-waiting-to-happen) Feb 12, 2015 - VILLA NOVA - Ontario learned a hard lesson in 1990 about the consequences of sitting on your hands in the face of looming disaster.

PCWO 2005 Policy : That PCWO urge the Government of Ontario to:a) Initiate regular emergency plan practices in order that they become tested and refined and citizens gain experience and familiarity with the procedures regarding emergencies/emergency Planning and Public Safety b) strengthen Ontario Emergency Planning Act to encourage/enforce emergency planning, audits and practices in community c)Involve providers of home care, the disabled, seniors and other vulnerable groups in disaster planning d) involve women's anti-violence network in disaster planning and in disasters e) investigate and provide safeguards against internet terrorism f) improve emergency training and information for the public.

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## **2. Selected List of Policy Briefs, Hearings, Letters :**

- 1998 Seaborne Hearings Deep Geologic Repository Management of High Level Nuclear Fuel Waste

- 2007-2008 Intervenor Ontario Energy Board: Ontario Power Authority IPSP 0007; Board designated responsibility life cycle nuclear waste management and refurbishments; Witness Dr. Marvin Resnikoff
- April 26<sup>th</sup>, 2013 Intervention re: Pickering Nuclear Generating Station Licence Renewal Ontario Power Generation
- October 9<sup>th</sup>, 2014 Bruce Deep Geologic Repository for Low and Intermediate Level Nuclear Waste
- March 29, 2017 Presentation to the International Joint Commission Tri-Annual Review Radioactive nuclides as a Chemical of Concern

**3. 2013 Pickering Hearing . PCWO Brief** “We also noted ‘a 1993 article by Dr. Arsalan Mohajer, of the University of Toronto, (who did early seismic work for OPG ) which, was written as a result his study of the Rouge Valley and Lake Ontario over several years , and showed that the faults near Pickering, including under Lake Ontario, were active’ (Neotectonic faulting in metropolitan Toronto: Implications for earthquake hazard assessment in Lake Ontario region. GEOLOGY. The Geological Society of America. 1993.)” .....

“One further 2003 article by Dr. Mohajer and N. Eyles , clearly shows the lack of depth of the studies relied on by CNSC staff the nuclear community . In an article ‘Analysis and reinterpretation of deformation features in the Rouge River Valley, Scarborough, Ontario,’ Dr. Mohajer and N. Eyles note that ‘PNGS (Pickering Nuclear Generating Site) was constructed adjacent to a major population centre (now more than 5 million people) in the late 1960s, largely in ignorance of local and regional geological conditions and well before the plate tectonic paradigm provided a model for basement evolution. The presence and significance of major bedrock lineaments, such as the Central Metasedimentary Belt Boundary Zone (CMBBZ) that passes **directly under PNGS**, together with several other structures that intersect below Pickering, was not then known..... **Today such structures are recognized as being defined by persistent earthquake activity** (Mohajer 1991,1993,1995 Wallach et al 1998) and a magnitude 3.1 earthquake occurred within 3 kms of PNGS on May 24<sup>th</sup> 2000. Ten smaller magnitude earthquakes have been recorded in the last decade along the structure between Niagara and Pickering by the seismic networks of the Geological survey of Canada and the United States Geological survey. The more recently constructed Perry nuclear plant in the USA was temporarily closed in 1986 by a magnitude 5 temblor along the same CMBBZ structure. **The local community has every right to be concerned about the presence of an aging nuclear reactor in their midst.**’ (emphasis added) **3. (ibid )**

#### **4. Communications and Reports re Safety**

**a) 1997 Andognini Report and recent personal communication with Frank Greening who worked at Pickering at that time showed significant safety infractions e.g. fires**

**b) Personal communication with Dr. Gordon Edwards .** “*During the refurbishment of the Bruce A nuclear reactors in 2009, over 500 contract workers – not regular employees of Bruce Power – inhaled alpha-emitting dust on the job for several weeks before the authorities detected the hazard. Those alpha-emitting radioactive materials are now lodged inside the worker’s lungs and other internal organs, and will be there for years to come. Long after the job has ended, their bodies will continue to be irradiated from the inside.*”

**5. Personal Communication Siegfried Kleinau**, Co-founder and Outreach Director Bruce Peninsula Environment Group 2017-07-18 . re McMaster University reactor. *“This old pool type reactor is licensed to operate up to 5MW thermal power ...and is right in the center of a huge university in Hamilton Ontario.”* *“In a 2011 intervention on the Mid-Term Performance Report of the MNR, there was an urgent push to have this facility upgraded to higher standards because of dangerous experiments being undertaken there. It was also urgently recommended that K1 pills should be distributed to the different departments, but all of these recommendations were consequently disregarded..”*

## **6. Gordon Edwards presentation at May 26<sup>th</sup> Public Forum in Niagara**

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**7. Greenpeace Comments on PNERP: Site-Wise Risks and Multi-Unit Accidents Section 1.5 page 13.**

## **8. April 26th 2013 Pickering Life Extension Hearing Selected Commission Comments on “worst-case scenarios “**

“MEMBER HARVEY:

That choice that you (staff) or OPG made about the nature of the accident is such that there will never be large-scale releases? I mean, it's the impression that we have and that the public also. (ibid , page 280)

...MEMBER BINDER ...what's your view -- the dilemma we always having here is because it's such a low probability of event, you guys are ignoring it. Everybody is ignoring it. Yet for the citizen, even though it's a low probability event, that's the most fearful event. So you've got to bridge those two conflicting issues. Low, low frequency, but maybe high impact, and you've got to deal with it in all your brochures. That would be my view. ... make sure that all the citizen of this community are aware of what to do with emergency plan. (ibid)”

9. Greenpeace comments on the PNERP Draft Discussion Paper page 6

10. ibid. Section 1.8 Example of Best practices Switzerland page 22

11. Greenpeace comments on the PNERP Draft Discussion Paper Section 1.5 pg 15

12. Minister of Community Safety Madeleine Meilleur to CELA October 21st, 2013

13. Greenpeace comments on the PNERP Draft Discussion Paper July 28, 2017 pg 3

14. PCWO Brief OPG Deep Geologic Nuclear Waste Repository at the Bruce.

15. Ministry of Community Safety & Correctional Services  
Information Package to First Responders and Energy Management. March/17.

16. Public Forum in Niagara Slide Presentation Dr. Gordon Edwards. May 26<sup>th</sup> /17

17. The Ontario Drinking Water Advisory Report : Ontario Drinking Water Standard May 2009 *"Based on these two documents, the Council concluded that an Ontario Drinking Water Quality Standard for tritium of 20 Bq/L, applied as a running annual average, would meet the requirements for an appropriate level of risk and public safety, while remaining practicable and achievable by the nuclear power industry."*

18. Pickering Life Extension Hearing 2013 " PCWO supports the over 40 civic groups and many other experts and individual Ontarians in their view that it is imperative for the Government of Ontario to ensure that the PNERP takes an extra-precautionary approach to disaster planning, which recognizes the potential for a "worst case, *unimaginable*" accident , in this case an INES 7 event ,and the necessity for the most rigorous institutional, independent expert and public scrutiny and involvement in provincial nuclear disaster planning . Only in this way can the Government fulfill its mandate to protect the "*public*".

MEMBER MCDILL: So if there's any kind of emergency in the area, it doesn't have to be nuclear, as you say it could be chemical; if there is no power, the communication centre will be struggling to manage on backups, backup power, backup communications. At that point, it's unlikely that your website will be accessible in the community. At that point, this is when the community will need the most to be able to communicate with you. And many of us in Ontario have gone through a number of things like the grid failure, a number of summers ago when cell towers couldn't accommodate the load from the community trying - - just families trying to reach each other and I was one of those. All the traffic lights went on four-way red flash, which has a methodology if people follow it to get through. ..."

# THE PROVINCIAL COUNCIL OF WOMEN OF ONTARIO

## Established in 1923

The Canadian Nuclear Safety Commission  
[interventions@cnscccsn.gc.ca](mailto:interventions@cnscccsn.gc.ca)

Intervention re: Pickering Nuclear Generating Station Licence Renewal to 2020 ,

– Gracia Janes VP Environment, April 26<sup>th</sup>, 2013

### Introduction

The Provincial Council of Women of Ontario (PCWO) opposes the Ontario Power Generation application to extend the operational life of the Pickering B nuclear reactors. PCWO fails to see any over-riding rationale for OPG to bring this life extension application forward at this time , nor, in the absence of required safety studies to date, any convincing evidence that the reactors can continue to be operated safely without undue risk to public health, safety and the environment .

PCWO asks that the Canadian Nuclear Safety Commission (CNSC) use its power under the Nuclear Safety Control Act to refuse this life extension in order to protect the public and the environment from unreasonable risk caused by the operation of these aging and troubled reactors which , up until this application was presented, were considered to be at the end of their operational life spans by the end of 2014 .

To make our case we will deal with :

- the huge risks to millions of people and the economy of this part of Ontario should there be , as the CNSC Chair Binder put it *“the doomsday” “most fearful event”* accident .
- the location of the Pickering Station directly above an active fault line which exhibits persistent seismic activity and the excellent independent counter-views to those of CNSC staff regarding the potential dangers .
- the findings of the Federal Ministry of Environment (30 years ago), the 1994 ACES report and the 2008 Ontario Drinking Water Advisory Committee report regarding the dangers to public health from tritium releases and the need for stricter standards, versus the contrary views of the CNSC staff views.

## Concerns Regarding a Potential Doomsday Event

Given the Pickering B nuclear reactors' location on the edge of Lake Ontario in the heartland of urban Ontario, where most of its industrial and commercial activities are located and millions of Ontarians (and Americans) live around and in close proximity PCWO's most significant concern with a life extension of these reactors is the possibility of a single or multiple reactor melt down caused by earthquake, malevolent act, human error, or other at this aging and troubled nuclear plant.

We note that similar concerns have been raised by many groups across the province and by other regulatory bodies and Environmental panels. For instance at the December 3<sup>rd</sup> hearing on the Darlington Station Refurbishment and Continued Operation, the Durham Nuclear Awareness representative raised the very worrisome issue of possible multiple reactor failures as follows :

But to us the most important thing that you missed or ignored was recommendation 63. "The(JRP) panel recommends that prior to construction, the Nuclear Safety Commission -- Canadian Nuclear Safety Commission require OPG to evaluate the cumulative effect of common cause severe accident involving all of the nuclear reactors in the site study area to determine if further emergency planning measures are required." ... "And I don't see how the public or communities can have any confidence in the CNSC, as an independent watchdog, when you ignore recommendations from a body such as this. And so our request again is that multi-unit accidental radiation releases must be considered before this environmental review is approved ..... And it gets worse again with the recent revelation that Emergency Management Ontario has made a request that the CNSC review larger radiation releases in the current review in light of Fukushima and the JRP recommendation. {Transcript page 309}

PCWO also note that at the same hearing, CNSC Members and the Chairman had some doubts about accidents and some precautionary advice to staff.

MEMBER HARVEY:

That choice that you (staff) or OPG made about the nature of the accident is such that there will never be large-scale releases? I mean, it's the impression that we have and that the public also. (ibid, page 280)

MEMBER HARVEY:

I think we're going to have with the -- maybe in a year and half, some indication of the crash of a commercial accident on the plant. I mean we have -- there has been studies on a small

craft crash but, is that -- is my thinking good, that we're going to have some indication of a larger plane crash and could that be over the accident that has been chosen for the 10 minus 6? ....{ibid}

...MEMBER BINDER ...what's your view -- the dilemma we always having here is because it's such a low probability of event, you guys are ignoring it. Everybody is ignoring it. Yet for the citizen, even though it's a low probability event, that's the most fearful event. So you've got to bridge those two conflicting issues. Low, low frequency, but maybe high impact, and you've got to deal with it in all your brochures. That would be my view. ... make sure that all the citizen of this community are aware of what to do with emergency plan. {ibid}

This last comment related to the circulation to Durham residents of a brochure on what to do in case of an emergency, but failed to mention a nuclear accident. As well, one of the presenters that day mentioned that the use of warning sirens was opposed by businesses in that area.

It is interesting that in this current Pickering application CNSC staff noted the fact that all necessary warning measures were finally in place for the 3 km containment area and that the 10 km area had yet to be dealt with. Which is not to mention, that it will take between 5 and 9 hours according to staff to evacuate the 3km area and far more time one would imagine to clear 10 kms or more out. Neither staff nor OPG make mention of the possibility that if the wind is strong or a system fails, winter weather is extreme etc. that there could be chaos, although Member McDill brought this kind of issue up on December 3<sup>rd</sup>, as follows .

MEMBER MCDILL: So if there's any kind of emergency in the area, it doesn't have to be nuclear, as you say it could be chemical; if there is no power, the communication centre will be struggling to manage on backups, backup power, backup communications. At that point, it's unlikely that your website will be accessible in the community. At that point, this is when the community will need the most to be able to communicate with you. And many of us in Ontario have gone through a number of things like the grid failure, a number of summers ago when cell towers couldn't accommodate the load from the community trying -- just families trying to reach each other and I was one of those. All the traffic lights went on four-way red flash, which has a methodology if people follow it to get through. ..."



We would add to this, where will people be housed and for how long should the perimeter be larger than 10 kms? How will businesses stand the commercial losses over even the 5 to 9 days or more? What about farmers and farmland?

Regarding the Nuclear Liability Act of insurance of \$75 million per incident for home, business and institutional owners, through OPG, as mentioned in the Darlington transcripts of December 5<sup>th</sup>, and the admission that it should be far higher, this is just the tip of the iceberg. Not only are the people of Ontario ultimately paying for this, but we will all suffer huge, inter-related and cumulative costs from the interference with industry and commerce, environmental, health and social impacts.

This issue is not just about 3-9 day temporary move for those in the 3km to 10 km containment area, but one that even within these small areas would be a potential economic catastrophe. We note also, that although plans are unfolding – albeit in a rather disjointed way- through multiple levels of government, due to the recognition of the potential for an extreme and unexpected event post Fukushima- this is not a Mississauga train derailment of well over 30 years ago, where luck and a quick witted Mayor helped avert disaster and evacuated thousands of residents. Even this event could have been a significant disaster had the wind been up and/or the wrong human decision made. There really wasn't much planned about it!

We also remember the Hamilton Plastco fire of the 80s, where there was a very close call, what with the risks of pollution and dwindling food supplies and other material necessities, due to the current 'just-in-time-delivery' pattern whereby very large storage warehouses have become a thing of the past. An after-the-fact result was the Hamilton emergency plan with subsequent plans to involve the community, e.g. the frail and the elderly, children, the physically challenged more closely and pro-actively.

### **Staff and the Hearing Process as Possible Barriers to the Commission Acting on our Recommendation to Refuse OPG's Proposal for Pickering Life-Extension**

Any independent observer, or reader of the December 2012 Darlington transcripts, would understand PCWO's considerable concern that CNSC staff is failing to take a far more precautionary approach. This is particularly important given the extremely serious nature of the current Pickering nuclear life extension proposal, should things go awry. The pattern of staff deflecting and putting off important environmental issues until further down the road for instance, was reflected clearly in the following query of Commission Member Velshi at the Darlington refurbishment and life extension hearing:

MEMBER VELSHI:

Or four separate times in a year. Okay. But you got my question. The second one, really, is more fundamental on what really is the value of the EA as a planning tool when there could be something fairly substantive that would come out from the Integrated Improvement Plan once the ISR and all the other stuff

is done. So where you look at a local probability incident and, you know, now there's a whole lot scope of work that needs to be done with fairly significant environmental impacts as a result of that. So we've heard repeatedly that when the licensing process evolves, if this project goes ahead, that's when they'll get the full picture on exactly what the implications are. And **I'm just wondering would it not be more prudent to have a look at that as part of the EA process to make sure that there is a good handle on the full likely impact, as opposed to waiting for another piece to come down the road?** (emphasis added)

Member Velshi's precautionary query reflects very well what PCWO feels is necessary i.e. a clear look at all the possibilities up front rather than some undefined point down the road, which indeed may be after the fact of a possible "*local probability incident*".

As we noted at our December 4<sup>th</sup> CNSC hearing presentation regarding Ontario Power Generation's Darlington refurbishment and continued operation, PCWO has participated in a number of CNSC hearings over the past several years, to no avail. And, it has become obvious, as Dr. Gordon Edwards has so plainly pointed out at the same hearing, that CNSC staff appear to work in tandem with nuclear project proponents to move things along apace.

Examples of note are Darlington's site preparation for new build, (despite the lack of a final type of reactor- the 2<sup>nd</sup> generation not being off the drawing board), the Bruce nuclear steam generator proposal shipments on the Great Lakes, and the recent CNSC plan to ship highly radioactive liquid waste containing Highly enriched uranium 1,900 kms from near Chalk River to South Carolina which just got the go-ahead.

To our knowledge, with the exception of the Chalk River operation and Maple reactor shut-downs a few years back, staff now almost invariably give the go-ahead to the large, more potentially dangerous and difficult projects.

Given that CNSC's mandate is to protect the public, it would seem that the staff should act in that public interest by taking the most precautionary stance possible, exploring every option and variable, listening to outside independent witnesses and working with them and the public.

This method was encouraged and practiced by the Seaborn Commission in the 1990s at its lengthy public hearings on the burial of high level nuclear waste –where transcripts were concurrently available during the hearings, independent groups of experts and other individuals and groups were solicited, and the views and queries of an Independent Scientific Review Panel, the Royal Geographic Society and other experts, as well as public presentations, were heard and considered seriously by the Commission Panel. And, rather uniquely, the public were able to question other presenters.

In stark contrast, while CNSC Commissioners and the Chair ask important questions during the hearings, the staff appears to be always on the defensive about their support for going ahead with nuclear projects and on the offensive towards differing views

### Pickering's Geology and the Risk Factors

An excellent example of this defensive attitude, and lack of due attention to other scientific views, was exhibited in Staff's responses to questions of geology and what they call "a stable seismic" area near and under the Darlington and Pickering areas. Their reference points are found in provincial, local and federal studies that barely touch on the eons of geologic history – only those of the past 180 years- and run counter the geologic knowledge of qualified independent experts.

For instance, as PCWO noted in our presentation on December 4<sup>th</sup> re Darlington Life Extension and Retrofit, *"It is very important to consider the periodicity, clustering and magnitude of earthquakes, but foolish to give assurances based on data that goes back only one hundred and eighty years, and to only 1 earthquake of magnitude 5, which is severe enough to give warning. ... the magnitudes have increased over the years and the clustering, repetitive nature of the activity is even more critically important."* (J. Robert Janes, author *Geology and the New Global Tectonics* pers.com.10/10/12.)

We went on to say, *"In this regard, we note that on May 24<sup>th</sup> 2000 a mild earthquake shook the Pickering region and neighboring areas -the fourth in 18 months."* (Federal Standing Committee on Energy, Environment and Natural Resources report: *Canada's Reactors, How Much Safety is Enough?* 2000 pg.12.)

We also noted *"a 1993 article by Dr. Arsalan Mohajer, of the University of Toronto, (who did early seismic work for OPG) which, was written as a result his study of the Rouge Valley and Lake Ontario over several years, and showed that the faults near Pickering, including under Lake Ontario, were active (Neotectonic faulting in metropolitan Toronto: Implications for earthquake hazard assessment in Lake Ontario region. GEOLOGY. The Geological Society of America. 1993.)"*

One further 2003 article by Dr. Mohajer and N. Eyles, clearly shows the lack of depth of the studies relied on by CNSC staff the nuclear community. In an article *"Analysis and reinterpretation of deformation features in the Rouge River Valley, Scarborough, Ontario,* { which critiqued work, recommended by the 1997 Andognini NPAG, Nuclear Advisory Group, and done for OPG by Godin et al}, Dr. Mohajer and N. Eyles note that *"PNGS (Pickering Nuclear Generating Site) was constructed adjacent to a major population centre (now more than 5 million people) in the late 1960s, largely in ignorance of local and regional geological conditions and well before the plate tectonic paradigm provided a model for basement evolution. The presence and significance of major bedrock linaments, such as the Central Metasedimentary Belt Boundary Zone (CMBBZ) that passes directly under PNGS, together with several other structures that intersect below Pickering, was not then known."*

**Today such structures are recognized as being defined by persistent earthquake activity** (Mohajer 1991, 1993, 1995 Wallach et al 1998) and a magnitude 3.1 earthquake occurred within 3 kms of PNGS on May 24<sup>th</sup> 2000. Ten smaller magnitude earthquakes have been recorded in the last decade along the structure between Niagara and Pickering by the seismic networks of the Geological survey of Canada and the United States Geological survey. The more recently constructed Perry nuclear plant in the USA was temporarily closed in 1986 by a magnitude 5 temblor along the same CMBBZ structure. **The local community has every right to be concerned about the presence of an aging nuclear reactor in their midst.** (emphasis added) 3. (ibid )

The article goes on to say that “**Unfortunately, Godin et al (2002) miss much of the current literature on the subject and their interpretations are not in accord with present understanding.**”, . National Research Council on its May 2003 Research Web site and further notes that Godin et al could have used much more relevant and extensive materials coming out of provincial waste management exercises during the 1990s . (emphasis added)

This latter statement by Mohajer and Eyles, most clearly shows that it is not just “*independent*” experts that are needed, but also that work done for a nuclear organization such as OPG, NWMO and Bruce Power by what they term “*independent*” scientists, needs to be critiqued by other arms-length “*independent*” scientists.

### **Precautionary Principle re Tritium Standards – Another Area of Expert Differences**

It is the view of PCWO that in responding to presentations at the Darlington hearing regarding the need for stronger tritium release into water standards, staff clearly reflected the nuclear industry viewpoint , which sees no problem the pollution of our waterways with tritium ( tritiated water ) . In this case, staff member Dr. Thompson stressed the point that the much tighter standards in Europe and the USA, and the 2009 Ontario Drinking Water Advisory Committee (ODWAC ) recommended standards of 20 BQ/L were “*just guidelines*”.

This is avoidance in the extreme. The recommendations for the development of proper precautionary standards in Ontario has been a very lengthy process, with the nuclear industry being dragged to the edge of the cliff but not pushed over it by the political actors.

As PCWO wrote in its 2008 brief to the Ontario Drinking Water Advisory Committee, the alarms were sounded in the early 1980s, when Environment Canada noted “*large and growing discharges of tritium*” and their studies showed that there would be ever increasing amounts if reduction strategies weren’t introduced e.g. storage in heavy water to permit gradual decay of tritium, and a tritium reduction facility (TRF.)

The resultant Environment Canada 1984 “*Draft Code of Practice*” proposals were opposed by the nuclear industry and nothing was attempted until 1990, when a tritium reduction facility (TRF) was established at Darlington. Since then though, the TRF mainly just helps keep Darlington, Bruce and Pickering below the discharge limits most of the time.

By 1994 public concerns had continued to grow, as evidence showed that radioactive tritium releases of a very large magnitude were occurring too often e.g. the August 1992 tube break at Pickering caused the release of 2300 Tbq. Into Lake Ontario, and most specifically Ajax residents were worried about a water intake expansion nearby. After significant public hearings, which pointed to a very serious problem and the importance of stronger standards, the Ontario Advisory Committee on Environmental Standards (ACES) recommended an immediate reduction of the Ontario Drinking Water Objective from 7,000 Bq/L to 100 Bq/L and a five year phase in to the lower limit of 20Bq/L over 5 years.

The ACES report also drew attention to the fact that stronger recommendations than those of the government were needed as up to that point the standard of 7,000 Bq/L , which was consistent with the “ *international radiation protection community’s risk assessment practices*” was not adequate protection as these were “*based the lifetime risk level on only one year’s exposure.*” The report also noted that “*Extending this exposure over a 70 year life-span would add to the lifetime cancer risk, especially if the exposure occurred in one’s early years.*”

Later, more alarming warnings regarding the dangers of tritium releases came from the 2005 BEIR V11 , that there is “*no safe dose*” for radiation, the International Joint Commission which added tritium to its list of persistent toxins.

All of these factors and other scientific information were considered by the Ontario Drinking Water Advisory Committee (ODWAC) in 2008 and helped form their 2009 recommendation that the drinking water regulation for tritium be tightened so as to allow only 20Bq/L per year . And recently, on December 3rd it was mentioned by interveners that there were good recommendations regarding a precautionary role for CNSC re tritium from the Joint Review Panel on the Darlington New build .

Accordingly, it is quite startling that CNSC staff’s position still stands in stark contrast to this body of expertise, information and recommendations over the past 30 years .

PCWO considers it most unfortunate that the Provincial government has not acted since then to follow through with the ODWAC recommendations and we recognize that it is not the Commission’s, nor CNSC staff’s, task to make these political decisions. However we feel strongly that it is incumbent on CNSC and staff to heed the warnings from so many sources, starting in 1983 right up to this hearing , and to use the information that has been available for so many years, rather than evading it with no

greater reference than to obviously outdated International Standards, which they help to set, often taking a leadership role.

## **Conclusion**

To conclude, PCWO draws attention to the CNSC April staff report regarding the Pickering life extension application with theirs and OPG's proposed safety improvements. Again, there is the usual go-ahead and just a cautionary note regarding the build up of *"black deposits on Unit #1"* which *"CNSC is monitoring very closely to resolve this issue"* and has *"imposed a 3% reduction from full power to preserve the safety margins and until there is a better understanding of the cause and effect of the deposits Unit 1 is presently in guaranteed shut down state as its planned outage has been extended until February."*

While this latter action is meant to be reassuring, it is also a disturbing indication of the Staff's determination to press forward with the life extension of Pickering to 2020 regardless of the signals, and their avoidance of fully using the precautionary principle to avoid undue risk to the public when making recommendations.

Even the average person with any sense would see, in the case of Pickering life extension, this is like dealing with an old car where the brakes are giving out, the tires are on their last tread, the transmission is faltering, and the body is rusting through in places i.e. One is courting disaster- in this case the "worst case" scenario of a nuclear melt down !

Therefore PCWO asks that this Committee use its power under the Nuclear Safety Control Act to refuse OPG's application for a Pickering B licence renewal , in order to better protect the public and the environment from further unreasonable risk due to the continued operation of this aging and troubled plant, located in the urban heartland of southern Ontario, next to Lake Ontario, close to many millions of people on both sides of the border and over an active geologic fault line.

## **Background:**

1. Provincial Council of Women of Ontario (PCWO) was formed in 1923 with a mandate to work together towards the betterment of women, families and society . Currently our membership includes thousands of Ontarians, through our 12 Provincially Organized Society 5 Local Councils and 1 Study Group Affiliated Members. PCWO develops its many policies through their broad circulation to members, voting in these groups and then adoption by majority vote at the PCWO Annual General Meeting. Subsequently policies are taken to the Government at Queens Park each year at the Semi-Annual Meeting. PCWO is one of six Provincial Councils of Women, who are members of the National Council of Women of Canada

2. (Estb. 1893), the others being Ontario, Quebec, Manitoba, Saskatchewan, Alberta and British Columbia.

## 2. Selected PCWO Involvement to Date with Nuclear issues

In 1996 and 1997 PCWO presented to the 'Seaborn Commission, and as noted in the Panel's final report (February 1998 page 52) PCWO stated "*The public at the end of phase 11 {technical hearings} was left with a feeling of grave unease. The best that could be said in favor of AECL's concept was stated by SRG- that it could, might, should be doable.*" The Seaborn Commission reflected our societal concerns by ruling that while it was scientifically doable it was not societally acceptable, and that AECL should correct the many flaws ( 127); redo the consultation process ; and most importantly set up an arms-length ( from the nuclear industry) panel to help develop a new plan.

PCWO has also been involved in the Nuclear Waste Management Organization's '300 Year Adaptive Phased Management Approach' consultations, and between 2007 and 2008 we had intervener status at the *Ontario Energy Board (OEB) Hearing on Ontario Power Authority's (OPA) Integrated Power System Plan (IPSP)* with the Board - delegated responsibility to deal with the life-cycle costs and risks of nuclear waste management.

In 2008 PCWO commented to the Ontario Drinking Water Advisory Committee (ODWA) on the need for Ontario to update its regulatory standard for releases of tritiated water, to reflect the 1994 recommendations of the Advisory Committee on Environmental Standards (ACES) that these be reduced from 7,000 Bq/L to 20 Bq/L by 1999.

3

In 2010 both PCWO commented to CNSC regarding the Bruce Power licence application to transport radioactive steam generators from the Bruce site to Sweden, and on April 5<sup>th</sup> 2011 PCWO, supported by NCWC, urged the CNSC Joint Review Panel Commission re: the Darlington Environmental Assessment Site Preparation "*to declare that the application is premature as there is not enough evidence to prove its merits*"

On April 5<sup>th</sup> 2011 PCWO commented to CNSC on the Darlington Environmental Assessment Site Preparation

On December 4<sup>th</sup> 2012 PCWO presented a submission to CNSC regarding the Darlington life-extension and rebuild.