

**Canadian Nuclear
Safety Commission**

**Commission canadienne de
sûreté nucléaire**

Public hearing

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Le 2 mars 2020

**Casa Do Alentejo
Community Centre
1130 Dupont Street
Toronto, Ontario**

**Centre Communautaire
Casa Do Alentejo
1130, rue Dupont
Toronto (Ontario)**

Commission Members present

Commissaires présents

**Ms Rumina Velshi
Dr. Sandor Demeter
Dr. Timothy Berube
Dr. Marcel Lacroix
Dr. Stephen McKinnon**

**M^{me} Rumina Velshi
D^r Sandor Demeter
M. Timothy Berube
M. Marcel Lacroix
M. Stephen McKinnon**

Secretary:

Secrétaire:

Mr. Marc Leblanc

M^e Marc Leblanc

Senior General Counsel:

Avocate-générale principale :

Ms. Lisa Thiele

M^e Lisa Thiele

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Toronto, Ontario / Toronto (Ontario)

--- Upon commencing on Monday, March 2, 2020
at 8:30 a.m. / L'audience débute le
lundi 2 mars 2020 à 8 h 30

Opening Remarks

THE PRESIDENT: Good morning, everyone,
and welcome to the public hearing of the Canadian Nuclear
Safety Commission.

Mon nom est Rumina Velshi. Je suis la
présidente de la Commission canadienne de sûreté nucléaire.

I would like to begin by recognizing that
the land we are gathered on is the traditional territory of
many nations, including the Mississaugas of the Credit, the
Anishnabeg, the Chippewa, the Haudenosaunee and the Wendat
peoples, and is now home to many diverse First Nations,
Inuit and Métis peoples. We also acknowledge that Toronto
is covered by Treaty 13 with the Mississaugas of the
Credit.

Je vous souhaite la bienvenue, and welcome
to all those joining us via webcast.

First of all, let me, on behalf of the

Commission, tell you how delighted we are to be here for the next two days. We enjoy the opportunity to hold hearings in the community and provide citizens with the chance to participate by intervening or observing the hearing.

Thank you very much to all of those who have made our presence here possible and to the staff of the Casa Do Alentejo Community Centre for helping us in terms of accommodating our needs.

I would like to introduce the Members of the Commission that are with us today.

On my right is Dr. Sandor Demeter; to my left are Dr. Stephen McKinnon, Dr. Marcel Lacroix and Dr. Timothy Berube.

Ms Lisa Thiele, Senior General Counsel to the Commission, and Mr. Marc Leblanc, Secretary of the Commission, are also joining us on the podium today.

As we are conducting our Commission proceedings in a facility and environment that is new for many of us, I would like to take a moment to discuss a few safety considerations.

Please take note that in the event of an emergency there are exit doors at the main entrance as well

as fire exit doors at the two corners of hall on my left-hand side.

In the event of a medical emergency, I would like to know by a show of hands if there are any medical doctors in the room? We have one. First responders? We have a couple. Holders of up-to-date first aid certification? Perfect. I think we are well covered and hopefully we won't need your services.

So I will now turn the floor to Mr. Leblanc for a few opening remarks.

Marc...?

M. LEBLANC : Merci, Madame la Présidente. Bonjour, Mesdames et Messieurs.

The Canadian Nuclear Safety Commission is about to start the public hearing on the application by BWXT Nuclear Energy Canada Inc., which we will refer to as BWXT, for the renewal of the licence for the Toronto and Peterborough facilities.

During today's business we have simultaneous interpretation. La version française est au poste 2 and the English version is on channel 1. Headsets are available at the reception.

I would ask that you please keep the pace

of your speech relatively slow so that the interpreters have a chance to keep up.

The hearing is recorded in the language that people speak and to make these transcripts as meaningful as possible we would ask everyone to identify themselves before speaking.

I would also like to note that this proceeding is being video webcast live and that the proceeding is also archived on our website for a three-month period after the closure of the hearing.

As a courtesy to others in the room, please silence your cell phones and other electronic devices.

Madame Velshi, présidente et première dirigeante de la CCSN, présidera cette audience.

Ms Velshi...?

CMD 20-H1.A

Adoption of Agenda

THE PRESIDENT: With this information, I would now like to call for the adoption of the agenda by the Commission Members as outlined in Commission Member

Document 20-H1.A.

Do I have concurrence?

For the record, the agenda is adopted.

MR. LEBLANC: The first Notice of Public Hearing and Participant Funding on this matter was published on June 3rd, 2019. Subsequent versions were published to announce changes in the deadline for filing by members of the public and changes regarding the location and the schedule of the hearing.

The public was invited to participate in writing and by making oral presentations. January 27th was the deadline set for filing by intervenors. The Commission received 248 requests for intervention.

Supplementary submissions and presentations have been filed by CNSC staff, BWXT and several intervenors.

Participant funding was available to intervenors to prepare for and participate in this public hearing. Four groups are receiving funding. The funding decision is available on the CNSC website.

We will first hear the presentations by BWXT and CNSC staff.

After that, we will probably take a health

break and reconvene for the presentations by the intervenors, following the order that is listed on the agenda.

After the oral presentations scheduled for today, we will proceed with the written interventions listed on the agenda for the hearing in Toronto.

To support the CNSC's efforts in being an environmentally responsible organization, paper copies of the submissions are no longer distributed as they are available electronically on our website.

I should indicate that this is a single hearing that is conducted with respect to a single licence in both Toronto and Peterborough. Evidence gathered in Toronto about the Peterborough facility and vice versa will all be part of the record.

Your key contact persons will be Ms Louise Levert and Ms Julie Bouchard. They are at the reception desk and you will see them going around the back of the room trying to coordinate the interventions and the timing of these proceedings.

Ms Velshi...?

THE PRESIDENT: I would like to start the hearing with the presentation from BWXT Nuclear Energy

Canada Inc., as outlined in CMDs 20-H2.1 and 20-H2.1A.

I will turn the floor to you,
Mr. MacQuarrie, for the presentation.

CMD 20-H2.1/H2.1A

Oral presentation by

BWXT Nuclear Energy Canada Inc.

MR. MacQUARRIE: Thank you and good morning.

My name is John MacQuarrie and I am President of BWXT Nuclear Energy Canada.

With me today, my colleagues from BWXT. To my left is Natalie Cutler, who is Director of Communications and Government Relations; to my right is David Snopek, who is Director of Environmental Health and Safety and Regulatory; behind me, to my left, is Min Lee, who is Director of Quality and Operational Excellence; directly behind me is Ted Richardson, who is Director of Fuel Operations; and behind me, to my right, is Doug Chambers who is a consultant to BWXT with Arcadis. He is a Vice President for Arcadis.

Thank you for the opportunity to present

about our business.

First off I would like to talk a little bit about our company and give you a brief overview of BWXT as a corporation.

In this graphic you can see a little bit about the entire operations of BWXT Corporation. We are a publicly traded company, traded on the York Stock Exchange. There is a great deal of information available about our company on our website.

As you can see, we are about 6,300 employees, all North-American-based, divided between the United States and Canada. In 2018 we are about \$1.8 billion U.S. in revenue; in 2019 we are just under \$2 billion.

We have 12 major manufacturing facilities in North America. About half of those are in Canada. And we have been in the nuclear business for many years, about six decades. In fact, we are entirely a nuclear-energy-focused company.

You can see here on the right part of this chart that we manufacture a lot of steam generators, a critical component in a nuclear power plant. Over 300 made in our facility in Cambridge, Ontario, which is significant

for the nuclear industry.

We have also made over 1.5 million fuel bundles for the Canadian nuclear industry.

In the United States we operate typically as a joint venture on various government-owned sites where we are a contractor to manage those sites. You can see that there are about 14 sites that we are currently on.

We also make all of the fuel for the United States Navy and you can see we have made over 8,000 fuel elements for the Navy.

So we report our business in three segments. These are the three segments that are shown on this chart in front of you. The names of these segments are perhaps not so meaningful, but if you refer to the points made underneath each segment you can get a sense of what we do.

So first, our Nuclear Operations Group. We make all of the components essentially and fuel for naval nuclear reactors, for aircraft carriers and submarines. We make a couple of reactors a year equivalently. We also make research and test reactor fuel for research reactors around the world, many of which are involved in isotope production.

The centre of this chart is the Nuclear Power Group. This is the group that I am President of. It includes a variety of legal entities. We make specialized products and services for commercial nuclear power plants and medical isotopes, and I will provide more detail about the Nuclear Power Group.

The third is what we call the Nuclear Services Group and this is the group that manages and operates nuclear sites primarily for the United States government.

So focusing in on the Nuclear Power Group, which all of us here today from BWXT are part of, we have three significant entities in Canada. I am President of all three.

First is BWXT Canada Limited. It is headquartered in Cambridge, Ontario. We are a designer and manufacturer of nuclear components, a variety of nuclear components, and we also provide field services for those components.

The centre, BWXT Nuclear Energy Canada, which is the subject of the licence hearing today, headquartered in Peterborough, Ontario, but also operates in Toronto and Arnprior. Obviously, we manufacture fuel

but also are the designer of the fuel handling systems and provide a variety of engineering services.

And then finally, BWXT ITG Canada, which stands for Isotope Technology Group, headquartered in Ottawa, actually in Kanata, make medical isotopes, a variety of medical isotopes at that location as well as in Vancouver. And we also provide contract radiochemical manufacturing services.

So just to summarize our business, this chart shows the variety of products and services that we offer to the Canadian nuclear industry. I won't go through all of this, but you can see a range of products, from steam generators, waste containers, components for the reactor, including things like end fittings for fuel channels, heat exchangers, fuel obviously, and then services that essentially are associated with the products that we design and supply.

So that is a little bit about our company. Now I would like to talk about our licensed operations for fuel manufacture.

So first, here in Toronto, not very far from where we are today, we have our fuel nuclear pellet facility located in the Davenport neighbourhood. There is

an overview photograph here which shows a building in the forefront is where we actually produce the pellets. It is a four-storey building. And the building in the background is a warehouse on that site.

So at this facility, this is an overview of our operations.

So, first of all, UO_2 powder, uranium dioxide powder, arrives in the drums that you can see pictured there. It's labelled as receiving. Inside that drum is a bag that contains the UO_2 material.

The first operation is to mix that with a compound called zinc stearate, which facilitates the subsequent operation of compacting and pressing that powdered material into pellet form.

Once it's in pellet form, it is put into a furnace, and you can see in that picture that is labelled "sintering". That is the process of putting pellets into the furnace and essentially baking them at high temperature. The boats that you see there, or what we refer to as a boat, it is a molybdenum boat that holds the pellets.

After they are completed sintering, we put them through a grinding operation which is used to control

the diameter of these pellets very carefully.

Once that grinding is complete, there is an inspection or a series of inspection operations. Essentially they are visually inspected. All pellets are visually inspected to look for damage or inconsistencies, and anything that is not acceptable is removed and recycled.

Most of the product is then placed on skids, as you can see, and they are stacked and wrapped and then loaded onto a specialized truck, which is then delivered to our other facility in Peterborough.

So that's the operations in Toronto.

In Peterborough of course you can see there where we are located, roughly in the centre of the city of Peterborough. We operate on a site that is owned by General Electric and we lease it. In the bottom part of this figure you can see a red circle around our part of the complex. It is quite a large complex in the central part of Peterborough.

In the expanded figure you can see our operations there. There is a red dot located on the building where we actually produce the fuel bundles. The other facilities are related to either storing bundles or

our operation to support fuel handling for our customers.

So just to explain a little bit more about how we actually make fuel bundles in Peterborough. You can see in this simplified graphic essentially what we do there.

We receive tubes from our Arnprior facility that are already cut to length, close to their final length. We attach appendages to these tubes that are related to how they are needed to be configured in the final form.

These appendages are zirconium. All of the materials that are not uranium are zirconium in this image. There is a very thin layer of beryllium that's put on the appendages and that is used as a bonding agent to essentially form a eutectic between the zirconium material of the appendage and the zirconium material of the tube.

Once the tubes are prepared and ready and they are coated inside with a graphite coating, we install the pellets, which are shown there in the cylindrical grey form, and then we weld on end caps to seal it, seal the tubes.

All of those tubes then, which are unique, are placed into a fuel bundle configuration and they are

joined together by an end support, again made of zirconium, to form the fuel bundle, which are then inspected and packaged and stored temporarily and then delivered to our customer.

So that's the Peterborough operation.

Now, I would like to move on to our licence renewal.

So our current licence began January 1st, 2011 and expires at the end of this year. It authorizes us to produce natural and depleted uranium pellets in Toronto and produce fuel bundles in Peterborough. We are able to process up to 150 megagrams of uranium at each facility in any calendar month and possess up to 1500 megagrams in Peterborough and 700 megagrams in Toronto.

We receive, repair, modify and return contaminated equipment in our facility in Peterborough.

With regard to our renewal application, we have submitted our application seeking a 10-year licence renewal. That was submitted in November of 2018. We are not requesting any changes to possession or processing limits. We have requested a 10-year licence and we have also requested authorization to produce pellets in Peterborough.

I just wanted to explain why we are seeking a 10-year licence, why it's important to us, and talk a bit about why authorizing us to produce pellets in Peterborough is important.

So first of all, a 10-year licence provides us with the regulatory certainty that we need to operate our business and that our customers are also in need of. As you can imagine, it is a capital-intensive business to produce our fuel and it requires significant investments. Those investments require longer-term payback.

Our operations are very stable. We have been making fuel essentially the same way for many, many years, so I am not expecting any changes during that 10-year period of time, but it does allow our customers to enter into longer-term contracts for us for supply, which are important to them and us.

In terms of authorization to produce fuel pellets in Peterborough, the market as we see it today is fairly stable, but we expect there are changes coming.

Obviously there are going to be changes to Pickering plant in terms of reaching its end of life, as expected. We make all the fuel for Pickering. That is

something that we are factoring into our business plans. Although we seek to make fuel for others, other customers, there is a possibility that we will be only making fuel for Darlington and in order to address that situation it could be important for us to consolidate to a single facility. A decision has not been made, but that is on our minds as we think about the next 10-year period and so it could be important to our business to be able to have that option.

I wanted to spend a few minutes and talk about our operational performance during the tenure of our licence.

So first of all, we have a robust management system that fully addresses all of the 14 safety and control areas as defined in our licence and licence conditions. We have consistently been rated as satisfactory across all of those safety and control areas, and of course during the period of our licence there have been various changes to licence conditions and we have successfully adapted to all of those changes in the regulatory environment.

The subsequent charts that I'm going to present essentially address our performance in the three areas that you see depicted there in the circles: so

radiation safety, environmental safety and industrial safety.

First, radiation protection of our people in Toronto, at the Toronto pellet plant.

So what you see on this chart is the radiation exposures depicted in the vertical axis as millisieverts. This is across the period of our licence, as you can see. In the bar form we have the maximum total effective equivalent dose for our people and then the green line is the average total effective dose. You can see that on average we are about 2 mSv per year and then for maximum we are on the order of just under 10.

The red line that is depicted here is our action level. So we have action levels that if we were to approach would trigger us to indicate that we have a change of control or an issue in our process. So that is the purpose of that.

And then, what is not shown on the chart because it would be difficult to show, it would make the data too small to present, is the annual limit for nuclear energy workers, which you can see in the textbox there is 50 mSv per year, so that would be off this chart.

The next chart is similar data for our

people in Peterborough. And so, as you can see here, the average doses for workers in the green line are similar to what we see in Toronto and the maximums are a little bit less actually and there is a good trend over time. Again, we have a control internal action level there of 12 mSv and we have the same annual limit for nuclear energy workers, which is not shown on this chart.

Now, moving to radiation protection for the public, first in Toronto. So a similar chart here in terms of millisieverts over the period of the licence. Again, you can see in the bar form what the estimated dose to members of the public would be. It is difficult to show this on the chart, they are very small numbers, so we labelled each bar there so you can see in millisieverts. Again, we have a regulatory limit here which is at 1 mSv. You can see that we are well below that regulatory limit.

The next chart is for radiation protection of the public in Peterborough. The same format as the previous chart. In this case it is difficult to show the estimated dose by year on the chart in bar form because it's so low, but you can see the actual measurements there by year. Again, well below the 1 mSv regulatory limit across all of the licence period.

Moving on to environmental protection, first in Toronto. So in this chart we are depicting our emissions of uranium to air. The measurement here is in grams of uranium. One thing I would like to point out about this chart, if you look at the vertical axis that is a logarithmic axis, and so again by year you can see the annual uranium emissions to air from the plant and they are trending downward nicely. The last few years have been 6 or 7 grams emitted to air. The licence release limit is 760 grams. It's the red line at the top of the chart. So we are well below that limit.

The next chart is again for the Toronto facility and now this is uranium emissions to water. So the units have changed here, these are in kilograms. Again, it's a logarithmic scale and the blue bars are the emissions that we have measured each year in kilograms. You can see that for example in 2018 we are just under a kilogram and the licence limit was 9000 kg, which is depicted by the red line.

Moving on to Peterborough, environmental protection in Peterborough. First, this chart is uranium emissions to air in Peterborough. This is in grams. Again, note the scale here, it is not a linear scale, and

you can see that our annual emissions have been a very small fraction of a gram and trending downward nicely. The release limit is shown in red on this chart, which is 550 grams. So we are well below that.

Also in Peterborough, but now looking at uranium release to water, again the scale is in grams logarithmic and you can see that in the last few years we have been a very small fraction, less than a gram that we are releasing into the municipal water system and our licence limit allows us a substantially higher release into that system.

And then in Peterborough I mentioned earlier that we use beryllium, a thin layer of beryllium on the appendages that are joined onto the tubes and so we monitor beryllium emissions, particularly beryllium to air first. So you can see what these have been over the licence period. Now, these are in micrograms per cubic metre in a linear scale.

We have a variety of data on this chart. The blue bars are maximum concentrations measured at our stack, so right in our stack. The green is average concentration in the stack, so we have maximum average on this chart. And then the red line that you see near the

top right part of this chart is an action level that was started in 2018, that is why it doesn't run across the entire chart. You can see very low emissions, well below our action level.

Then moving on to industrial health and safety. Here in this chart we are measuring the number of lost time injuries to our people over the licence period. You can see that during the period there have been two lost time events, one in 2012, one in 2014. Both of them were fewer than 10 days of lost time. And for the last five years we have had no lost time.

What is not shown here is we of course measure medically treated events and first aids and all of those have been significantly low and on target, so highly safe facilities for our staff.

We have made a number of improvements over the licence period, which are mentioned here.

So we have made updates to the facility safety analysis, decommissioning plans. The environmental risk assessment for each facility has been developed and maintained. We have also worked significantly on the emergency plan in Toronto and we are upgrading the same plan for Peterborough. Fully implemented a systematic

approach to training program and then made improvements to our change management program. And all these programs are updated regularly and modified as necessary to address the changes in standards and regulatory environment.

So what we thought that we would focus on for the remainder of our presentation here are community concerns that we have noted through our various interactions with our community members.

This is just a summary page that identifies the concerns that we have noted in various forums from the community members and I am going to speak to each one of these in turn.

So first, transportation. Various community members have asked questions about the safety of our transportation of both uranium dioxide pellets and powder, and so I wanted to explain some aspects of the transportation of our product.

So we do have two forms of shipment of uranium: first, uranium powder coming into our facility in Toronto here and then, once they are processed in Toronto, pellets that are shipped from Toronto to our facility in Peterborough. All of these transportations occur by truck on road.

Some community members have asked about the radiation exposure from these shipments. The dose, radiation dose from these shipments is essentially insignificant. It is very, very low.

We do have Emergency Response Assistance Plan with Transport Canada. It is used to assist emergency responders in effectively responding to a potential event or an accident.

In our view, the worst case transport event would be a very significant collision resulting in a severe fire and a spill. In our 50 years of operation of the business there has never been anything like that, nothing that has even come close to that, but when we analyzed that event we find that it would not result in any significant health consequences for a member of the public or the environment.

There have been a number of questions about decommissioning and what are our plans and how are we prepared for decommissioning, so I wanted to highlight that both the Toronto and Peterborough facilities are to be decommissioned when we cease operations.

We lease both of these facilities from General Electric and we are required to decommission,

decontaminate and return them to General Electric for their use.

Decommissioning involves removal of equipment and any hazardous materials, in particular uranium, so we've got preliminary decommissioning plans prepared by a third party for each facility. The effort has been cost estimated and we have a fully-funded and secure -- fully-funded amount of money for these decommissioning activities, and that's all secured by financial instruments with the CNSC.

Our objective is to bring these properties back to an unlicensed state for whatever future use, and after decommissioning the facility control would return to our landlord, who is General Electric, in both cases.

There's been a number of questions about our insurance.

So due to the nature of operations processing natural uranium, we're not required to maintain any type of nuclear liability insurance. But I would point out that we are a large, financially stable and capable organization. BDXT and our predecessor companies have operated in Canada for over 175 years successfully.

In the case of the fuel manufacturing

business, we've had over 50 years of significant and event-free fuel manufacturing, so successful operations.

We do maintain a diversified portfolio of insurance like any large company which is appropriate for the operations that we -- that we have, and our insurance does include public liability for off-site injuries or damages.

Another concern area that we've noted, of course, is emergency preparedness, and so I have a bit of information here specific to our preparedness.

We've -- in our view, we're well prepared for any emergency. We have safety analysis reports updated for both facilities.

There -- we analyze for a wide variety of potential both internal and external events, things like, as noted on this page, severe weather, fire, airplane crash or train derailment, for example. There are others.

And of course, we analyze for the significant hazards that we have such as uranium, powder or pellet form, beryllium, hydrogen which is used at the pellet plant here in Toronto.

All hazards have been analyzed and screened and quantitatively analysis has been performed.

And in all cases, the safety analysis has concluded that radiological facility risks are low. And there's no scenarios that require evacuation or sheltering the public due to radiological risk.

I wanted to expand on this a little bit.

So on this chart, we're looking at the Toronto hazards that we have analyzed. There are two here.

The first, as you can see, is catastrophic fire, so this would be a large portion of the facility impacted by a very large fire.

And in that case, we analyzed for the frequency. You see that it would -- it's unlikely that perhaps once in 1,400 years that you would see something like that and that, in this case, the maximum concentration of uranium dioxide that we would expect to see off site would be about six milligrams per cubic metre.

When you evaluate that for emergency response plan guidelines, you see that doesn't meet the criteria for any sort of sheltering or evacuation of the public.

I'd note that in the case of fire, which is an event that, of course, we're particularly protecting for, that we have automated fire suppression systems. We

have hose and standpipe systems. We have handheld fire extinguishers. And we have administrative controls to reduce the amount of combustibles that are in the environment, so there are many layers of defence in-depth related to fire.

The other scenario that we wanted to highlight -- there's many others, but the one that we all wanted to highlight is the structural collapse of the entire facility. So this, I suppose, could be something like a very severe earthquake that would cause a collapse.

Based on seismic activity, for example, in the area, something like unlikely frequency of occurrence, maybe once every 100 years, and in this case the concentration of the uranium dioxide that could possibly be emitted off-site in milligrams per cubic metre is about three. And again, this doesn't meet the criteria that -- for international guidelines that would require sheltering or evacuation of the public.

The next page we've got similar events analyzed for our Peterborough facility, so again, the same two events, catastrophic fire where a significant portion of the facility -- all of those defences that we have fail and we have a significant fire or a structural collapsed

caused by some significant external event.

Here you can see that the frequencies are very low.

In terms of the maximum concentrations of UO₂ off-site there, for catastrophic fire is seven milligrams per cubic metre and structural collapse would be 1.2 milligrams per cubic metre in our estimate.

And again, neither of these events meet the criteria for sheltering or evacuation off site.

We also, as noted at the bottom of this page, looked at beryllium releases in these types of emergency events. And due to the small quantities that we have on site, the off-site emissions in these events are essentially negligible.

Okay. Moving on to another concern that has been expressed by various members of our community is hydrogen storage. So I'll refer you to the figure that's shown there, which is an aerial photograph of our facility here in Toronto.

There's a blue arrow there pointing to a small white tank. That is our hydrogen storage tank, which is in the yard in our facility in Toronto.

So we store -- so first of all, hydrogen

is used in the centering of pellets. It's the environment that's inside the furnaces to control how we centre the uranium dioxide.

The hydrogen is stored as a liquid in a 9,000-gallon tank in our yard. Because it's a liquid, it's a lower pressure.

It's stored cryogenically, so very, very low temperature.

There's nothing in the yard around this tank. We don't allow vehicles to park very close to the tank.

And this tank meets all of the applicable safety regulations. It's designed to meet all of those regulations and it is inspected by a third party who supplies us hydrogen, owns the tank and maintains it for us, so they're experts in that field. And it is monitored by the Technical Standards and Safety Authority of Ontario.

We've looked at various accident scenarios here for this tank, including some very low probability events. And at the bottom of this page you can see the potential consequences of what I would consider a worst-case scenario where you have a significant failure of that -- of that tank.

And in all cases, there's no structural damage to any buildings, either our buildings on site or off site. None of these lead to any significant release of uranium and, generally speaking, if there was a significant event, there would be no injury to persons from a pressure wave. The pressure wave is relatively low.

There is the potential for broken windows, both on our facility and adjacent to our property, and there is the potential for injury from just exposure to heat if there's a fire because hydrogen is combustible.

With regard to uranium emissions, we've noted a number of concerns about uranium emissions.

First, we note that uranium's a naturally-occurring element present at low levels in our environment all around us. It's weakly radioactive and not known to be carcinogenic.

I think the primary concern is chemical toxicity, which in people could affect kidney function at their high exposures.

So Peterborough emissions are less than one percent of the regulatory limit and Toronto emissions are approximately one percent of that limit.

And we control uranium using significant

defence in depth approach, which I will describe a little bit on the next chart.

So focusing in on our uranium emissions here in Toronto, you see again how we receive the UO₂ powder in drums, so we have a relatively small storage of that powder in our facility at any given time.

And then there are barriers that prevent the release of that material within our facility or certainly outside our facility.

And the first is that it is processed inside sealed equipment, so it's controlled inside that equipment and not allowed to escape inside of our facility.

All of that equipment is in various rooms in that facility that I showed you an earlier chart, so we control those rooms. They're at negative pressure with specialized ventilation. And then you can see the next period there is that ventilation system, so we'll use high-efficiency particulate air filters that filter -- very, very effective at filtering out small particles.

And of course -- so those are our physical barriers, engineered barriers, but there are significant procedures and training for our staff that are involved in this that help us to ensure that we control emissions very

carefully.

You can see in the blue on the right part of this chart there's various means to verify that we're not having any uncontrolled emissions from our facility, so we have the emission monitoring that's occurring daily within our facility.

We have boundary air monitors around our facility in Toronto. We are always continuously taking samples and we analyze those samples weekly.

And then we have the soil sampling that we perform annually at 49 sites around the facility.

Pellet production in Peterborough. So as I stated earlier, we've asked for authorization to be able to produce pellets in Peterborough.

So I wanted to note that although we don't have a detailed plan to do so and personally hope that we never do that, but in any case, if we would need to do that as a business that the production method would be the same as we currently use in Toronto.

That's a well-understood operation after 50 years of operation and we've managed safely for many years.

It would be conducted within existing

buildings, existing licensed space in Peterborough. We have sufficient space. There's no need to construct any new buildings.

The environmental risk assessment that we have already conducted was conducted considering the possibility of manufacturing pellets in Peterborough. We found from those analysis that there's no adverse environmental or human health impact to making pellets in Peterborough.

Emissions would be expected to be similar to the Toronto operations, which are about one percent of our licence limit, and have been consistently for a long time.

Of course, environmental monitoring would be the same as what we use in Toronto, which we find to be an effective way to ensure that we're not having uncontrolled emissions from the facility due to pelleting.

There's been a number of concerns expressed about beryllium emissions.

So first I wanted to describe how we use beryllium and why we use it. This is only applicable to Peterborough where we manufacture the fuel bundles.

So first, the beryllium, as I mentioned,

is vapour deposited onto sheets of zirconium. These are small strips of zirconium.

And then -- so very, very thin layer of beryllium on those sheets of zirconium.

The zirconium sheets are then converted into appendages. Essentially, the appendages are punched out of those sheets and then those appendages are what we call braised onto the tubes, so essentially they're tacked onto the tubes and then it's heated up and that melts the beryllium and zirconium together to form a strong bond for those appendages.

We utilize about 20 kilograms of beryllium per year in Peterborough, or roughly 50 pounds.

So health concerns. Beryllium is known to be carcinogenic. Primary concern for people is inhalation. And the highest risk posed by our operations is when it's in a vapour form when we're depositing it on those appendages or if it's in a very fine particulate configuration and is in the air.

So first, how we control beryllium emissions. Again, we use a defence in depth approach.

So I mentioned that it's vaporized to deposit it into zirconium strips, and so that's done in a

highly secure part of our facility in Peterborough. It's about a 500 square foot room, very limited access to this part of our facility. And so only specially highly-trained employees are allowed to enter that area. And when they're there during operations, they have respirators that they're wearing.

That facility has specialized ventilation for that room as well as for the rest of our facility, so the air inside our facility in that room and around is sampled frequently for the presence of beryllium.

The ventilation in that facility is a two-stage ventilation, with the second stage being a high efficiency particulate air filter which is known to be capable of trapping almost 100 percent of the particles, very, very fine particles as well.

And then we continuously monitor after the filter, so after the filtration has occurred, we continuously monitor to determine what has passed by that filter.

So emissions from our facility in Peterborough are exceptionally low, about 15 milligrams into the air per year.

Concentrations in the stack are about 50

times lower than what the Ministry of Environment would say is the limit at our fence line.

The CNSC Staff has performed environmental monitoring and samples in air, water and soil were taken in 2014, 2018, 2019. All results were below -- all air results in all years were below laboratory detection limits. Essentially, no beryllium was detected in the water samples that were taken.

With regard to soil samples, concentrations in soil are all below guideline limits.

We note that measurements at the Prince of Wales School, which is close to our facility in Peterborough, increased between 2018 and 2019 from basically 1.3 to 2.3 milligrams per cubic metre. We've looked carefully at these results and our operations, and we find these results to be inconsistent with the monitoring that we do in our business, including air monitoring the stack, roof samples that we've taken because we're presently replacing our roof.

We've confirmed our system is operating as intended, as designed, as engineered, and that emissions from our facility could not account for the apparent increase in these measurements.

Nevertheless, we understand there is concern, significant concern in some cases, and so we are committing to conduct our own soil monitoring using a third party, and we'll start that in the summer of this year. And we'll publish those results.

I wanted to turn to our public information program and describe that program.

We are committed to timely, transparent engagement in our communities. We have a dedicated web site and, for those that visit that site, they can see that there's an increasing amount of information on that site and that we are regularly adding to that based on the questions that we receive in various ways or concerns that have been expressed to us.

We've got toll-free numbers that we monitor. We have emails that we monitor. And we respond to all requests in short order.

We're building relationships in various ways. We give many tours of our facilities. Anybody that asks for a tour, will get a tour, either in Toronto or Peterborough. And during those tours, we describe our business as well as show the operations.

We have newsletters that we send out to

the community. It's difficult to cover the entire community, but we do send out about 4,000 three times a year.

We also post them on our web site, which is easy to visit. We use social media.

We enjoy having barbecues in our communities, both in Toronto and Peterborough. We've had information nights and we sponsor various events and have information booths at those events. For example, the Peterborough air show and other events.

So we are committed to increasing transparency with our community members. We do recognize their concerns. We think we can address those concerns, and we're working hard to do that.

We do maintain relations with various indigenous organizations and nations. We're working to engage and build meaningful relationships with indigenous communities.

We've joined the Canadian Council for Aboriginal Business in 2017, and we're progressing through what's known as their Progressive Aboriginal Relations program.

We have committees of employees that meet.

We go through cultural awareness training, including the leadership team has been through that training. And we continue to diligently work on those relationships.

We're also a company that believes in giving back to our communities, and so we have volunteering activities and various investments that we make in our communities. So our employees are able to volunteer their time for various local causes.

We have committees, and those committees decide where they'll spend their time. And then the company also supports financially a range of community groups with initiatives, things like bursaries, scholarships for STEM, community events and various other things that we do in the community.

We have a community liaison committee in Toronto that's existed since 2013, and we are currently recruiting for a liaison committee in Peterborough.

We've seen increased interest in Peterborough, and so we want to address that with a liaison committee.

The committee in Toronto holds three to four meetings a year, typically at our facility. We'll do the same in Peterborough.

We find it to be a productive exchange with community members who give us advice on what they're hearing in the community and ask questions. We share information about what's going on in our business, provide presentations from -- both from internal members of our company and other third parties.

All members of those committees receive an orientation to our business and a tour of our facilities. And there is turnover of those -- of that committee. We recruit new members annually.

We have conducted public -- a public attitude survey that was done in the October-November timeframe of 2018. This was done by both phone call and web survey to residents near our facilities, both in Toronto and Peterborough.

You can see from this chart that there was 352 surveys completed, 149 in Toronto, 203 in Peterborough. And results are shown here.

So in Toronto, about 30 percent of the people that were surveyed were knowledgeable about our business and recall that, at the time, we had just acquired the GE Hitachi facility, so BWXT was a new name in the community, but they were either familiar with our company

or with the GE Hitachi operations.

So you can see in Toronto, about 17 percent had heard about the business through our newsletters or flyers or direct communication from our company, with the remainder hearing about it in some other way.

We found that the majority who were polled preferred information digitally, and so we're taking that into consideration. And that 40 percent of those in Toronto that were knowledgeable of the business rated as having sort of excellent, very good, good impression of the business.

Peterborough, 40 percent surveyed were knowledgeable about BWXT, 25 percent had heard about us through direct communications that we make to the community.

Again, while different here, in Peterborough majority of those polled preferred information by newsletter versus a digital means. And 50 percent of the respondents were knowledgeable and had an excellent, very good, good impression of the business.

So that's the first survey that we have conducted. We intend to resurvey. We'll do another one

again in 2021. And obviously we'll look to improve our -- the knowledge of the community members about our business over time.

So now I'd like to conclude my presentation, summarize that we have demonstrated safe performance throughout our -- the licence period and prior to that, a very strong safety record and, as I noted earlier, we've been rated satisfactory across all safety control areas by the CNSC staff, compliant with all regulations applicable. We do have a very robust safety culture and human performance management system in our business with very dedicated employees who are committed to operating safely.

We do have I think an excellent continuous improvement environment in our business, and certainly pleased with how employees embrace that. Radiation exposures to workers have remained low, well, well below the limits that we are given on our licence. And emissions to the public also remains very small fractions of limits. And as I noted earlier, there's been no lost-time injuries in the last five years in these two operations in Toronto and Peterborough.

Finally, I'd like to point out the

benefits of our fuel fabrication business and nuclear energy generally in Ontario.

We're proud to be part of keeping the air clean in Ontario. Nuclear energy is essentially emissions-free, carbon emissions-free power that helps avoid about 45 million tonnes of CO² annually, which is equivalent to taking 10 million cars off the roads.

Nuclear power is a low-cost, reliable, and affordable form of electricity. We contribute to about 25 per cent of the low-cost electricity in Ontario with the fuel that we manufacture. It's the second-most affordable form of power in Ontario according to the IESO, after hydroelectric.

We're very pleased to have very highly skilled, highly committed people working for us in good jobs, often some of the highest-paid jobs in our community for the types of jobs that we have, and that boosts the economy. In Peterborough, Arnprior, Toronto we have over 400 workers in good jobs. These are engineering and highly skilled manufacturing jobs in these communities.

And we are a medical isotope company. We produce medical isotopes and we're one of the leading suppliers of medical isotopes in Canada. Right now, we're

working to supply North America with an indigenous supply of technetium-99, which is the most widely used medical isotope in the world for diagnostic purposes. And I won't go into a lot of details about that, but the Peterborough facility would be involved in manufacturing targets for that operation.

And so with that, I'd like to conclude my presentation and thank you for the opportunity to present about our business.

THE PRESIDENT: Thank you, Mr. MacQuarrie.

I'd now like to move to the presentation from CNSC staff, as outlined in CMDs 20-H2, 20-H2.A, and 20-H2.B.

Dr. Ducros, the floor is yours.

CMD 20-H2/H2.A/H2.B

Oral presentation by CNSC staff

MS TADROS: Good morning, President Velshi, Members of the Commission. I'll begin before Dr. Ducros, but I will pass the presentation on to her.

For the record, my name is Haidy Tadros, and I am the director general of the Directorate of Nuclear

Cycle and Facilities Regulation.

With me today for our presentation are my colleagues Dr. Ducros, director of the Nuclear Processing Facilities Division, and Mr. Julian Amalraj, senior project officer from the same division.

We are here to present CNSC staff's assessment of BWXT's application to renew its fuel fabrication operating licence for the Toronto and Peterborough facilities.

Also with us here in the room and in our Ottawa office are CNSC specialists who have been involved with the technical assessment, the environmental protection review, and the compliance oversight of BWXT. They are available to answer any questions the Commission will have for us.

Our presentation identified as CMD 20-H2.A summarizes CNSC staff's written submissions found in CMD 20-H2 and supplemental CMD 20-H2.B. Staff supplemental CMD provides our assessment and responses to the themes found in the interventions received.

At this time, CNSC staff would like to acknowledge the unprecedented number of interventions received on this file. We would like to thank all the

intervenors for expressing their thoughts, ideas, and concerns on this file. We recognize the importance of respecting and not discounting people's thoughts of risk and fear levels. We all have different perspectives and perceptions of risk.

It is clear by the questions and concerns received that we need to bring more awareness and understanding for what we do as staff, how we do it, as well as better explain radiation and its health impacts using science and data.

On this slide, we would like to point out a couple of corrections to the published CMD 20-H2.

In section 3.5.5 on page 28, there is an error in the licence condition numbers. They should read 5.1 and 5.2, not 15.1 and 15.2.

Also in the licence change table on page 97, the wording of licence condition 15.1 should be the same as that provided in the draft proposed licence.

This slide provides an outline of our presentation. We still start by providing what has been requested by BWXT in their licence application, followed by a brief overview of BWXT's operations and CNSC staff's regulatory oversight activities. We will then provide a

summary of CNSC staff's technical assessment of BWXT's application.

In the next section of the presentation where we highlight CNSC staff's public engagement and funding provided under the participant funding program, we will outline the main themes from all the interventions we received.

The presentation will end with CNSC staff's overall conclusions and recommendations to the Commission on BWXT's licence renewal request.

As we've heard, in November 2018, BWXT submitted a licence renewal application for operating its fuel fabrication facilities. In its application, BWXT requested that the Commission renew its current operating licence to allow continued licensed activities for a period of 10 years. BWXT also requested that the Commission allow the production of fuel pellets at the Peterborough facility. This activity is currently licensed at the Toronto facility under the same licence. BWXT indicated that there will not be an increase in the production of fuel bundles at Peterborough if the request to conduct pelleting is authorized by the Commission.

BWXT also requested acceptance by the

Commission of a revised financial guarantee through two new instruments, a surety bond and a letter of credit.

I will now pass the presentation to Dr. Caroline Ducros.

DR. DUCROS: For the record, I'm Dr. Caroline Ducros. I'm the director of the Nuclear Processing Facilities Division.

I will continue the presentation with the facility overview and an overview of CNSC's regulatory oversight.

BWXT is a fuel fabrication facility that operates out of Toronto and Peterborough. The two facilities together manufacture CANDU fuel bundles. The fuel bundles are used in Canada's CANDU power reactors, specifically Pickering and Darlington nuclear power plants.

BWXT processes ceramic-grade natural and depleted uranium dioxide. The processing of uranium at BWXT is an industrial operation. In other words, the uranium is processed just like any other industrial substance, and the facility operations do not include any nuclear reactions. Also, there is no enriched uranium processing carried out, eliminating any possible criticality events.

As an industrial operation, the primary hazards are conventional hazards related to processing, namely fire, occupational injury and potential exposure to hazardous chemicals, and radiological hazards from exposure to natural uranium. All hazards from operations have mitigation measures in place to protect workers, the public, and the environment.

The Toronto facility consists of two buildings within a fenced site, with access control. The building marked 1 on the picture is the main processing plant, and the building marked 2 on the picture is a warehouse that stores, segregates, packages, and ships contaminated waste from BWXT's operations for disposal.

The Toronto facility processes natural and depleted uranium into pellets and is licensed to possess up to 700 megagrams of uranium and to process up to 150 megagrams of uranium per month.

The facility is located in an industrial zone surrounded by residential and commercial buildings, including several high-rise buildings. The site is owned by GE Canada and is leased by BWXT, and the lease requires the licensee to maintain the current industrial zone designation.

The white tank in the middle, identified as number 3 in the picture, is a hydrogen tank that is located at a distance from all surrounding buildings. The hydrogen in this tank is used as part of BWXT's pelleting process.

The facility has operated safely at this location, with no impact to public and the environment, since 1965.

The Peterborough facility manufactures fuel bundles using pellets from Toronto and Zircaloy tubes manufactured in house. The buildings marked 1 on the picture are the main processing buildings. Building marked 2 is the main storage area, and the building marked 3 on the picture, with the long, green glass top, provides conventional reactor services which include handling contaminated equipment received from offsite nuclear facilities.

The Peterborough facility is licensed and capable of storing and handling up to 1,500 megagrams of uranium. Most of the uranium on site is stored uranium powder, for the purpose of ensuring continuity of operations, and finished fuel bundles, to ensure supply security to the nuclear power plants. The actual quantity

of uranium processed on a daily basis into fuel bundles is well below the operational limits the site is licensed to handle.

The facility is located in a designated industrial zone with residential buildings and a school on one side and the GE industrial complex on all other sides. BWXT leases the facilities from GE Canada and the lease requires the licensee to maintain the current industrial zone designation.

The facility has operated safely, with no impacts to the public and the environment, since 1965.

In late December 2010, after a two-part renewal hearing, the Commission issued a single combined licence for both the Toronto and Peterborough facilities. The single licence was issued to provide greater consistency of regulatory oversight and to improve administrative efficiency. And in December 2016, the Commission transferred this single licence to BWXT.

The reasons for which the Commission issued a single combined licence continue to be valid today.

Both facilities operate under a single management system with clear responsibilities for the

licensed activities at both sites.

The CNSC's licence and *Licence Condition Handbook* framework requires the licensee to provide CNSC staff with prior notification of facility modifications in an efficient, documented, and transparent manner and provides common compliance verification.

Annual performance has been reported to the Commission in public meetings since 2012. These Commission proceedings provide information dissemination on operations, identify any changes at the facilities, and allow public participation.

Because of this, staff recommend that the Commission maintain a single licence for these two facilities.

The CNSC has a robust regulatory framework in place and regulatory oversight is provided by CNSC staff to verify that licensees operate in a safe manner and in compliance with the requirements of the *Nuclear Safety Control Act* and associated regulations, the licence, and the *Licence Condition Handbook*.

Regulatory documents include several CSA standards. These standards outline requirements for licensees' operations.

International Atomic Energy Agency safety standards are incorporated in CNSC's regulatory documents and CSA standards to provide clarity on expectations with regard to the design and operation of fuel fabrication facilities like BWXT.

BWXT's performance is reported annually to the Commission through the regulatory oversight report for uranium processing and nuclear substance processing facilities. BWXT's performance for the last reported year, 2012 [sic], was rated as satisfactory.

CNSC compliance verification includes desktop reviews, inspections, event reviews, and the assessment of annual performance reports. The CNSC has a dedicated facility assessment and compliance team for the oversight of all licensed activities at these facilities. CNSC staff direct effort for compliance verification for the BWXT licence has been approximately 350 person days, or the equivalent of 1.5 full-time employees, per year.

This slide provides the breakdown of the compliance oversight activities carried out by CNSC staff, outside of desktop reviews, that were conducted at BWXT during the past licence period. These included 30 on-site inspections.

CNSC inspections assessed all aspects of the facility operations in all 14 safety and control areas. The inspections included planned inspections as part of regular compliance and reactive inspections to address any specific event or issues.

The International Atomic Energy Agency, IAEA, conducted 38 safeguards inspections at the two facilities. The increased number of safeguards inspections in 2017, 2018, and 2019 was due to the revised state-level safeguards approach for bulk handling facilities.

BWXT reported a total of 21 events over this licence period. CNSC staff assessed the corrective actions taken by BWXT and the lessons learned from these events and found them to be satisfactory.

CNSC staff also issued three information requests to BWXT under paragraph 12(2) of the *General Nuclear Safety and Control Regulations*. The 12(2) information requests covered lessons learned from Fukushima in 2011, a review of reporting requirements in 2016, and improvements to beryllium handling as a response to the beryllium event reported by BWXT in 2017.

I will now pass the presentation to Mr. Julian Amalraj, senior project officer at the CNSC.

MR. AMALRAJ: Good morning, President Velshi and Members of the Commission.

My name is Julian Amalraj. I'm a senior project officer and a designated inspector in the Nuclear Processing Facilities Division of the CNSC. I'm responsible for the licensing and compliance oversight of BWXT Nuclear Energy Canada and have been the single point of contact for this facility since 2014. I, along with the technical specialists assigned to this facility, form the facility assessment and compliance team that conducted the various technical assessments of BWXT's licence renewal application.

On this slide is an outline of the licensing process that has been followed by CNSC staff for BWXT's licence renewal.

The process begins with the licensee's submission of an application. CNSC staff review each licence application in the context of the *Nuclear Safety and Control Act* and the regulations that apply to the activities requested in the application. The review includes a sufficiency check, wherein CNSC staff ensure that the application contains all the information needed to meet the regulatory requirements of the Act and the

associated regulations.

CNSC staff also undertake a determination as to whether the proposed activities require an environmental assessment under the applicable federal acts at the time of the application.

A full technical assessment of an application is only carried out by CNSC staff once it is satisfied that all information requirements are met and that the information is sufficient and of good quality.

Following the technical assessment, CNSC staff provide a commission member document with the results of its review of all aspects of the regulatory framework and recommendations to the Commission. The CMD includes a draft proposed licence and any facility-specific conditions for the Commission's consideration.

CNSC staff's assessment is risk informed and based on credible scientific evidence. It also includes other matters of regulatory interest, including Indigenous consultations and engagement, public consultations, financial guarantees, and cost recovery.

CNSC staff conducted an environmental protection review under the *Nuclear Safety and Control Act* and the associated regulations for this application. This

report can be found in staff's Commission Member Document 20-H2, Appendix D.

The environmental protection review report included an assessment of the application, environmental effluent and emissions or releases, a site-specific environmental risk assessment that detailed the human health assessment and the ecological impact of the current operations, as well considers the consolidated impacts of the proposed pelleting operations and fuel bundle manufacturing at Peterborough. The assessment of human health inherently includes the most vulnerable critical receptors, like children.

The report also takes into consideration BWXT's compliance performance over the past licence period and results from CNSC's independent environmental monitoring program and other regional monitoring data in proximity to Toronto and Peterborough facility.

The environmental protection review concluded that BWXT has and will continue to make adequate provision for the protection of the environment and the health of persons.

CNSC staff used a well-established safety and control area framework to evaluate BWXT's licence

application. CNSC staff's written submission CMD 20-H2, Appendix C, contains a description of the safety and control areas and the specific areas assessed for this application.

Appendix B1 of the CMD provides the regulatory basis of what the requirements are for a Class 1 fuel fabrication facility, and Appendix B2 of the CMD provides the technical basis of what standards and regulatory documents were used as references for the assessment itself.

CNSC staff assessed BWXT's implementation of all its programs and procedures against requirements and verified effectiveness through compliance performance over the current licence period. CNSC staff concluded that BWXT's programs in all safety and control areas met regulatory requirements.

CNSC staff will now provide a summary of selected safety and control areas that support the overall conclusions and recommendations of staff.

CNSC staff's assessment confirmed that BWXT has a robust management system that is compliant with the requirements of CSA N286-12: Management Systems of Nuclear Facilities.

CNSC staff verified that BWXT's management periodically reviews facility safety and performance. In addition, CNSC staff verified that internal audits were conducted on the performance of the BWXT management system and concluded that BWXT's management system and audits met CNSC requirements.

CNSC staff confirmed that BWXT maintains a robust change management and records management process that includes all aspects of changes to the facilities and equipment configurations.

CNSC staff concluded that BWXT also met requirements under Regulatory Document 2.1.2: Safety Culture and observed good practices while conducting inspections.

Overall, BWXT's management system meets requirements and governs all aspects of licensed activities.

BWXT's licence renewal application was supported by updated safety analysis reports for the Toronto and Peterborough facilities. These reports identified hazards along with the engineered barriers, administrative controls, and emergency procedures to detect, intercept, and mitigate any abnormal occurrences.

In addition, BWXT analyzed the progression of postulated events, consequences and documented mitigation measures in place.

BWXT also conducted several related assessments and studies for externally initiating events including earthquakes, earthquake risk analysis, assessment for aircraft impacts, flooding risk analysis and potential events due to proximity of the railway line near its Toronto facility.

Accident conditions that have potentially severe consequences have been analyzed using probabilistic approaches to demonstrate safety in very unlikely scenarios, and mitigation measures are in place for adequate protection of the environment and health and safety of persons due to the operation of these facilities.

CNSC staff concluded that BWXT has adequately assessed the hazards associated with licensed activities and has demonstrated safety through defense-in depth.

The facilities' Safety Analysis Reports meet requirements and CNSC staff rated BWXT's safety analysis program performance as satisfactory.

CNSC staff confirm that BWXT's facility

physical design complies with all applicable codes and standards as listed in the CNSC Staff CMD.

These codes and standards ensure that building structures, heating, ventilation and equipment, including pressure bearing components are appropriately constructed, commissioned and operated.

BWXT's fuel fabrication facility design is in line with International Atomic Energy Agency documents, safety standard requirements for Safety of Fuel Cycle Facilities and safety standards guide Safety of Uranium Fuel Fabrication Facilities.

These standards and guides ensure consistency of operation with the latest operating experience gained internationally.

BWXT is required by its licence to notify the CNSC of significant changes to its fire protection program and to submit accompanying third party reviews for compliance with the applicable codes and standards.

CNSC staff confirm that all operational changes are assessed, managed and documented by BWXT through the change control program and procedures under its management system. All changes must remain within the licensing basis.

CNSC Staff concluded that BWXT's physical design program meets requirements under the *Nuclear Safety and Control Act* and the associated *Regulations*.

If the Commission authorizes pelleting operations at the Peterborough facility and when BWXT is ready to proceed with pelleting at the Peterborough facility, BWXT would be required to make facility modifications to account for this.

Pelleting operations involve several sub-operations, for example, grinding, sintering and pellet pressing. The design and safety performance of these operations are well understood and documented.

CNSC staff assessed and concluded that the proposed activity can be conducted safely within the existing operating limits of the Peterborough facility.

CNSC staff recommend a facility specific licence condition 15.2 requiring BWXT to submit a commissioning report prior to conducting pelleting at the BWXT facility. Upon reviewing the commissioning report, CNSC staff would confirm that the safety measures associated with each sub-operation are present and that the pelleting activity remains within the licensing basis as approved by the Commission.

CNSC staff have requested delegation of authority for this facility specific licence condition and would report on BWXT's facility modifications and associated verification to the Commission in the annual Regulatory Oversight Report in a public meeting.

CNSC staff confirm that BWXT has implemented and continues to maintain a radiation protection program that ensures contamination levels inside the licensed facilities and radiation doses received by individuals are monitored, controlled and maintained as low as reasonably achievable.

CNSC staff verified that BWXT's radiation protection program is implemented effectively, action levels are set appropriately with multiple levels of control with quarterly and annual action levels based on the type of exposure.

CNSC confirmed that BWXT has an ALARA Committee which establishes annual radiation protection program goals and initiatives for reducing worker doses.

CNSC staff conclude that the radiation protection program meets CNSC regulatory requirements and is protective of the workers at both facilities.

This graph shows the average and maximum

doses of individuals at the Toronto and Peterborough facilities, along with the annual action levels at each facility against the red line, which is the regulatory dose limit for a nuclear energy worker.

The annual maximum individual doses over the current licence period were between 7.8 and 11.8 millisieverts, which is less than a quarter of the annual dose limits set in the *Radiation Protection Regulations*.

In general, the doses are proportional to the amount of nuclear material processed at any given time, with some variations that account for work activities. Exposure to workers can result from beta and gamma radiation sources outside the body and alpha, beta and gamma radiation taken into the body as a result of inhalation, ingestion or absorption of uranium through the skin.

The primary radiological hazard in BWXT's operations is the radiation dose due to external gamma radiation and dose to the lungs from inhalation of uranium dioxide, which is the insoluble form of uranium.

BWXT's dosimetry program includes assessment and monitoring techniques that account for both external and internal exposures and corresponding dose

assignments. The charts provide the total effective dose assigned to workers, which is the sum of the external whole body dose as measured by dosimeter and the internal dose determined by calculations for exposure.

This slide shows the estimated potential radiation doses received by the public from BWXT's facilities. Both the Toronto and Peterborough facilities have very little annual releases of any radioactive material into the environment. Both facilities monitor for the presence of gamma radiation above natural background by environmental dosimeters placed at the plant boundaries.

The Toronto facility also has receiving environment air samplers to measure releases from the facility. Since the inception of this monitoring program all the measured doses at the Peterborough facility boundary have been below detectable limits, and the Toronto facility measured doses have been very low.

To put the radiation dose to public from BWXT's operations into a broader context, CNSC staff would like to draw attention to a comparative schematic of various activities a member of the public might undertake and the associated radiation doses they might expect from these activities.

The public dose limits prescribed in the *Radiation Protection Regulations* is one millisievert and the average dose from natural background radiation in Canada is 1.8 millisieverts. Comparatively, a member of the public living near a nuclear facility for a full year is predicated to get a radiation dose that is less than the dose received from a dental x-ray or a cross-Canada flight journey.

BWXT's dose to public from operations are typically one-hundredth of the public dose limits and well below natural background.

On this basis CNSC staff concluded that there is no impact nor health risks to public safety from BWXT's continued operations.

CNSC staff confirm that BWXT's conventional health and safety program is effectively implemented and complies with the *Canada Labour Code* and the associated *Canada Occupational Health and Safety Regulations* for hazardous chemical exposure.

CNSC staff confirm that BWXT monitors air concentrations inside its facility to assess occupational exposure to hazardous chemicals and uranium. In addition, workers performing operations with beryllium wear personal

protective equipment and personal air samplers for protection and to assess occupational exposure.

BWXT reported one significant event to the Commission during the current licence period, which involved an operational exposure limit exceedance of two works to beryllium. This event was presented to the Commission through CMD 17-M53.

CNSC staff verified that the BWXT addressed this event satisfactorily and the event was closed.

CNSC staff as part of this licence renewal evaluated and concluded that BWXT's program and performance for conventional health and safety meets requirements.

BWXT has developed, implemented and maintained an effective environmental protection program at the Peterborough and Toronto facilities that protects the environment and the public in accordance with CNSC regulatory requirements.

During the current licence period releases to the environment were well below the release limits specified in the CNSC licence. At Toronto the uranium releases along with ambient air and soil monitoring show that there is no health risk to the public from licensed

activities. At Peterborough uranium and beryllium releases showed that there is no health risk to the public from licensed activities.

Uranium air emissions and liquid effluents from the Toronto and Peterborough facilities are provided on this slide.

Uranium air emission levels at the Peterborough facility are expected to increase to a similar level to those at the Toronto facility if pelleting operations are implemented. The monitoring results demonstrate that the uranium air emissions are effectively controlled and emissions from BWXT's operations have remained consistently low during the current licence period.

CNSC staff confirm that effluent releases from BWXT's operations remain well below licence limits.

It should be noted that water effluent releases have additional restrictions based on best available treatment of liquid effluents.

At BWXT's facilities wastewater is collected, treated, filtered and tested for uranium prior to its release into municipal sanitary sewers. Because of this, irrespective of the licence limits, all liquid

effluent releases are kept as low as technologically possible and the facilities are designed to hold significant water to ensure that no uncontrolled releases happen.

Of note throughout the current licence period beryllium concentrations in air emissions and liquid effluents from the Peterborough facility have been negligible.

CNSC staff have reviewed the monitoring results of all releases from the licensed facilities and have found the levels to be consistently low, acceptable and conclude that the releases have no health risk to the public and the environment.

As part of this licence renewal CNSC required BWXT to propose new licence limits. The new limits, called Exposure Base Release Limits, or EBRL, take into consideration chemical toxicity and protection of aquatic life along with radiotoxicity.

The EBRLs impose the most stringent criteria for all releases. This slide provides the new EBRLs calculated for the two licensed facilities. The EBRLs are concentration based and are set at the point of release. There are no changes to the action levels for

releases from the current licence period and BWXT continues to implement a store, treat, test and release process for uranium liquid effluent. BWXT has sufficient capacity to store wastewater during upset conditions as earlier stated. BWXT only discharges batches when the sample results are below 3 milligrams per litre, significantly less than the Exposure Base Release Limits for uranium liquid effluents.

This slide provides additional information on how the Exposure Based Release Limits were set. BWXT harmonized the air release limits with the provincial air quality standards under Ontario Regulation 419-2005 Air Pollution - Local Air Quality Standards and calculated Exposure Based Release Limits that apply at the stack, based on meeting the applicable air quality standards at the Point-of-Impingement (POI).

As earlier stated, for air emissions BWXT calculated release limits for each stack that are based on concentration per unit cubic meter of air emitted from the facility.

For releases to water, BWXT calculated Exposure Based Release Limits by deriving the release limit based on the Canadian Council of Ministers of the Environment (CCME) Protection of Aquatic Life Guidelines.

The liquid effluent Exposure Based Release Limits also take into consideration the annual flows into the Toronto and Peterborough municipal wastewater treatment plants, as well as the annual average of treated water discharged from the Toronto, where discharges are routine and frequent, and from the Peterborough facility where discharges are infrequent.

The new limits in effect reduce the current limits by approximately one-fifth for liquid effluents and by one-half of the current air emissions release limit.

The Toronto facility measures uranium in ambient air at five locations around the facility to confirm the effectiveness of emissions abatement systems and to monitor the impact of the facility on the environment. The results from these monitoring locations show that uranium in air, as suspended particulates, has consistently remained very low throughout the current licence period.

The highest annual average concentration among the sampling stations of uranium in ambient air during the current licence period was 0.001 micrograms per meter cubed. This is well below the Ministry of Ontario's

Environment, Conservation and Parks' standard for uranium in ambient air of 0.03 micrograms per meter cubed.

BWXT also conducts soil sampling on an annual basis at 49 locations on the BWXT site, on commercial property located at the southern border of the site and in the nearby residential neighbourhoods. The average uranium-in-soil concentrations over the current licence period was well below the applicable Canadian Council of Ministers of the Environment's soil quality guidelines for the Protection of Environmental and Human Health for industrial, commercial and residential/park land use.

This data demonstrates that the Toronto facility's operations do not contribute to the accumulation of uranium in surrounding soil and that no adverse impacts to relevant human and environmental receptors are expected.

The atmospheric emissions discharged from the Peterborough facility already meet the Ministry's annual standard of 0.03 micrograms per meter cubed at the point of release, eliminating the need for additional ambient air and soil monitoring.

CNSC staff require BWXT to implement ambient air and soil monitoring at the Peterborough

facility, similar to the Toronto facility, if the Commission grants authorization for the addition of pelleting operations at the Peterborough facility.

A facility specific licence condition 15.1 has been included in the proposed licence for this purpose. The proposed conditions will ensure environmental monitoring continues to meet CNSC regulatory requirements.

A number of intervenors have raised concerns regarding an apparent trend of beryllium in soil from the CNSC's Independent Environmental Monitoring Program, IEMP, around the Peterborough facility.

The CNSC conducted its Independent Environmental Monitoring Program sampling campaign in 2014, 2018 and 2019 in Peterborough. Sampling included air, soil and water samples that were analyzed for uranium and beryllium content. The IEMP is a program that samples the ambient environment to confirm the effectiveness of existing data monitoring programs and provides a snapshot of air, soil and water quality around nuclear facilities.

CNSC staff review the data collected with established screening levels and take action where appropriate. This slide provides a graph of the data for beryllium in soil collected around Peterborough. The

actual values, the analytical uncertainties associated with each campaign and the range of measured values are provided in the table on the right-hand side.

The CNSC's sampling and analysis techniques have improved continuously over the years. Sampling collection techniques were improved after 2014. Furthermore, at the CNSC laboratory analysis methodologies were improved from a 40 percent uncertainty in 2014 to a 10 percent uncertainty in 2019. We also note that there is natural variation in soil as well potential deposition from BWXT's beryllium air emissions.

All of these factors have likely contributed to the values observed.

BWXT has in stack continuous monitoring for beryllium air emissions that show very little to no releases -- reported concentrations ranging from 0.000 micrograms per meter cubed to 0.009 micrograms per meter cubed -- of beryllium from this facility.

CNSC staff's review of all available data, including stack sampling data, and the IEMP air sampling data, demonstrate that there is no correlation between the air concentrations measured and the perceived increase in soil concentration.

BWXT's facilities are also under negative pressure at all times to ensure there are no fugitive emissions.

Finally, as evident from the graph, all values observed are within background values and generally in the same range as that observed 18 kilometers from the facility. These levels are protective of the environment and human health.

The IEMP data from the previous slide is graphically presented here to show the impact of beryllium in soil concentration values from a perspective of human health. As earlier mentioned, all soil sample results are within background levels and below the CCME environmental health guidelines of 4 milligrams per kilogram that is also used as a conservative screening level by CNSC staff to take any appropriate action with respect to IEMP results.

However, it is important to note that as per the CCME guidelines, the guideline for protection of human health is actually 75 milligram per kilogram. The observed values are at least an order of magnitude lower than this.

CNSC staff, based on this data, concluded that the health of persons at the locations sampled

continue to remain protected and there is no impact to human health or the environment due to beryllium concentrations observed in soil around BWXT's licensed facilities.

CNSC staff recognize and acknowledge the community concern around this issue, especially the single higher value of 2.34 milligrams per kilogram observed at the Prince of Wales School.

CNSC staff propose to take action in response to not only the need for additional environmental monitoring data to address that one point but also public inquiries and concerns regarding beryllium in soil.

To this effect CNSC staff will conduct additional IEMP soil sampling in 2020. Additional details will be finalized once CNSC staff take public feedback on this issue.

CNSC staff will work with BWXT on its commitment to conduct dedicated environmental testing for uranium and beryllium to confirm levels remain within background and are protective of the public and the environment.

As stated in the Peterborough Public Health intervention CMD 20-H139, CNSC staff support BWXT

establishing a Community Liaison Committee in Peterborough to improve public information and provide more active participation of the public towards information dissemination. CNSC staff have been active observers and participate in this mechanism at Toronto and will work with the Community Liaison Committee in Peterborough to improve and address public information needs of the local community.

Continuing with CNSC staff summary of the safety and control areas, CNSC staff assessed and concluded that BWXT's emergency preparedness program is in compliance with CNSC REGDOC-2.10.1: Emergency Response.

BWXT test emergency preparedness periodically as per requirement and has arrangements in place with local fire, Emergency Management Services and the local police for emergency response.

Off-site response organizations receive training and facility familiarization tours to ensure all response staff are familiar with the operations and hazards at the BWXT's facilities.

CNSC staff verified through inspections that BWXT has in place various fire protection systems that include detection, suppression systems and administrative

controls to minimize the likelihood of a fire and its consequences, which is the most significant asset present due to licensed activities.

CNSC staff assessed and concluded that BWXT's fire protection program meets requirements.

CNSC staff conducted two full focused inspections on Emergency Preparedness in 2016 and 2018 on emergency response and verified that BWXT's emergency plan addressed all credible accidents and meets requirements for the type and risk of the facility licensed.

In March 2019 BWXT submitted an updated preliminary decommissioning plan for both the Peterborough and Toronto facilities as part of license renewal.

CNSC staff have assessed the updated submissions and find that it meets the applicable regulatory requirements and provides an acceptable decommissioning cost estimate.

BWXT's present decommissioning plan captures strategies, activities and cost estimates for decommissioning Toronto and Peterborough facilities. A targeted end state for the two facilities is unrestricted release for industrial use. The CNSC requires that BWXT submit a detailed decommissioning plan and obtain

authorizations from the Commission before any actual decommissioning of the two facilities can be conducted.

As part of this license application BWXT has proposed a financial guarantee of approximately \$48.1 million for the decommissioning of both licensed facilities combined.

CNSC staff have assessed the cost estimate against the requirements of CNSC Regulatory Guide G-206. Financial guarantees for the decommissioning of licensed activities and consider the proposed amount to be adequate and credible.

BWXT is proposing to use a combination of a letter of credit and a surety bond to fund its financial guarantee. A letter of credit in the amount of \$2 million payable immediately upon demand covers the cost of initial decommissioning activities as well as disposal costs of waste stored on site. And the remainder of the decommissioning is covered by the surety bond for approximately \$46.1 million.

CNSC staff find BWXT's estimates to be credible and recommend to the Commission that the proposed amounts and the proposed instruments be accepted.

Please note, in this light, there's a

transcription error in the second bullet of the slide which should state Subsection 24(6) and not Section 6.

A number of intervenors have raised concerns regarding accident coverage and liability insurance for off-site events.

BWXT is required to maintain industrial insurance to cover any liabilities from its operations. BWXT is not required to maintain insurance under the *Nuclear Liability and Compensation Act* as it processes natural and depleted uranium that is not capable of self-sustained nuclear reaction.

In a very unlikely scenario of an off-site event, BWXT is responsible under the *Nuclear Safety and Control Act* for any remediation.

The Commission reviewed this topic in detail during the December 2013 Commission Meeting and CNSC staff would like to point to the Minutes from this meeting, specifically paragraphs 100 to 106, which included an action for the licensee to provide confirmation of liability insurance. After the meeting the licensee provided a letter to the Commission confirming accident coverage.

CNSC staff note that accident coverage

should not be confused with the current financial guarantee in place, accepted by the Commission for the purpose of decommissioning the nuclear facilities at Peterborough and Toronto.

To complete our technical assessment portion of the presentation this slide provides a summary of CNSC staff's assessment of BWXT'S request for authorization to conduct pelleting at the Peterborough facility. CNSC staff assessed this request and concluded that the conduct of pelleting operations at the Peterborough facility would remain within the overall safety case for the Peterborough facility.

CNSC staff also assessed the potential effects to the environment from this operation and conclude that BWXT has and will continue to make adequate provisions for the protection of the environment and the health of persons. CNSC staff assessed that BWXT is capable and qualified to safely implement these changes while ensuring the protection of public and the environment.

BWXT's current license allows it to design, modify, commission and operate new and existing equipment, including building structural modifications and supporting systems. BWXT regularly carries out equipment

maintenance and commissioning activities. These modifications and examples are listed in the staff's Commission Number Document 20-H2, including, for example, the addition of sintering furnace controllers for fitness for service and construction of a reactor refurbishment facility at the Peterborough facility. Both were conducted during the current license period.

The two facilities' specific license conditions that CNSC staff recommend for the Commission's consideration is based on the risk of these changes and the administrative aspects of maintaining adequate regulatory oversight. The two conditions will ensure additional environment monitoring as well as provide adequate regulatory oversight for the proposed changes if Peterborough's request is permitted by the Commission.

The conduct of pelleting is an authorized activity under BWXT's current license, and the licensee is capable of making the requisite changes at Peterborough safely.

With that, I will now pass this to Dr. Ducros who will continue with the presentation.

DR. DUCROS: Caroline Ducros, for the record.

We will now detail the public outreach and participant funding that was carried on by CNSC staff as part of this licence renewal.

I will also outline the key themes from the interventions that we received.

A Public Information and Disclosure Program is a regulatory requirement for licensed applicants and licensees of Class 1 nuclear facilities, uranium mines and mills, and certain Class 2 nuclear facilities. These requirements are found in *REGDOC-3.2.1, Public Information and Disclosure*.

CNSC's expectation of a licensee's public information program and disclosure protocol are commensurate with the level of risk of the facility, as well as the level of public interest in the licensed activities. In December 2013 the Commission held a meeting in Toronto where the licensee's operational performance was discussed. A number of intervenors expressed concerns about the safety of the facility and a lack of public information and awareness. Having heard those concerns, the Commission directed the licensee to take action to improve its public information program.

CNSC staff conducted an inspection of the

licensee's public information program in June 2014 with enforcement actions directing the licensee to improve the assessment of target audience needs, improve communication products and their frequency and program improvements related to public feedback.

The licensee took several actions including appointing a dedicated communication manager, creating a new community liaison committee, organized public outrage and facility tours, additional newsletters targeting local community and an updated website with more information on activities.

The improved PIDP has been in place since 2015 and CNSC staff reported on the progress and subsequent closure of all actions to the Commission as part of the Regulatory Oversight Report in subsequent years.

CNSC staff continue to closely monitor the effectiveness of the public information program and the implementation of the action plan as per licensee commitments to the Commission in the December 2013 Commission Meeting.

Given the concerned citizens in the immediate community to operations in Toronto and Peterborough, CNSC staff have an active public engagement

plan including verification of licensees' activities and outreach through the annual compliance reports, participation in most licensee outreach activities including observing community liaison committee meetings, active participation with a dedicated space during licensee community outreach barbeques, visible independent environmental monitoring program campaigns and engagement with local public officials including the Toronto Public Health and the Peterborough Public Health and the MECP to ensure awareness and adequate response to public concerns.

CNSC staff will continue to ensure that BWXT's PIDP meets the change in public information requirements to address safety concerns and information requirements.

CNSC staff, as part of this license renewal, have been conducting regular public outreach throughout the renewal time period in 2019. This included notification of the renewal hearing in June 2019.

CNSC staff participated during licensee summer barbeques in June in Peterborough and Toronto, and again in October during the licensee's open houses in both Peterborough and Toronto.

CNSC staff met several of the intervenors

and concerned citizens during these events and have answered questions and provided information on the operations and regulatory oversight of the two licensed facilities.

CNSC staff conducted a webinar in early January and hosted Meet The Nuclear Regulator sessions both in Toronto and Peterborough in the third week of January 2020.

Staff have also provided a significant volume of information through answering questions addressed directly to CNSC staff and provided information and document requests through the CNSC's information account and the Secretariat.

CNSC staff have been in regular contact with the staff of peer agencies like the Ministry of Environment, Conservation and Parks, and the Peterborough Public Health and Toronto Public Health authorities, providing information on any questions or concerns about BWXT's operations.

CNSC staff have regular communications and interactions with interested indigenous groups who have an interest in CNSC's regulated activities and facilities. The BWXT sites in Toronto and Peterborough are situated on

the traditional and treaty territories of many indigenous groups, including the Williams Treaties First Nations, Mississaugas of the Credit First Nation, Mohawks of the Bay of Quinte, and the Metis Nation of Ontario.

CNSC concluded that the proposed renewal application would not result in any adverse impacts to any potential or established indigenous or treaty rights. However, CNSC staff conducted a number of engagement activities to ensure that interested indigenous groups could participate in a BWXT license renewal process, including the Commission hearings. This included letters sent to indigenous groups in April of 2019, meeting with interested groups and provision of a CMD and independent environmental monitoring program results, when available, to indigenous groups.

The CNSC participant funding program or PFP has been implemented to assist members of the public, indigenous groups and other stakeholders in providing value added information to the Commission, through informed and topic-specific interventions.

The CNSC awarded \$37,000 to the four funding recipients listed on this slide to participate in the BWXT license renewal process. The PSP recipients are

Citizens Against Radioactive Neighbourhoods, Lake Ontario Waterkeeper, Curve Lake First Nation, Canadian Workers' Council.

The secretariat received 248 interventions for this license renewal application. CNSC staff reviewed each intervention carefully and created a supplemental CMD 20-H2A which identifies key themes present in many interventions. In the annex to the CMD CNSC staff provide responses for many of the key themes that were presented. The general themes noted are listed on this slide.

CNSC staff provided a supplemental CMD, CMD 20 H2B which outlines the general themes and specific recommendations by the intervenors and provides CNSC staff's responses.

I will now pass the presentation to Ms Haidy Tadros for CNSC staff conclusions and recommendations.

MS TADROS: For the record, my name is Haidy Tadros.

CNSC staff conclude, based on our technical assessment of BWXT's application and supporting information that BWXT is qualified to carry on the activities requested in its renewal application and that

BWXT's request for authorization to conduct pelleting operations at the Peterborough facility is acceptable.

We are confident this activity is acceptable for the purposes of the NSCA because the requested activities are within this facility's current operating limits. BWXT has the required management system to implement pelleting operations at the Peterborough facility. The hazards associated with the proposed activities are well categorized and controlled. And, BWXT's operations would remain protective of the public and the environment.

In addition, CNSC staff conclude that based on the cost estimates for the decommissioning plans that have been reviewed and accepted by CNSC staff, BWXT's proposed financial guarantee and the financial guarantee instruments are credible and acceptable.

Based on the aforementioned conclusions CNSC staff recommend that the Commission renew BWXT's nuclear fuel facility license for a 10-year period with the proposed license conditions; authorize the conduct of pelleting operations at the Peterborough facility; authorize the delegation of authority as set out in staff CMD 20 H2; as well as accept the proposed financial

guarantee and direct BWXT to provide the original financial instruments within 90 days of the issuance of a decision on this matter.

Thank you for your attention. We are available for any questions you will have.

THE PRESIDENT: Thank you very much for that. We'll now take a 15 minute break and resume at 10:45 with the interventions. Thank you.

--- Upon recessing at 10:28 a.m. /

Suspension à 10 h 28

--- Upon resuming at 10:46 a.m. /

Reprise à 10 h 46

THE PRESIDENT: Thank you for coming back.

Before we move to the interventions I would like to make a few additional remarks and clarify a few things.

I wish to emphasize, the Commission is a quasi-judicial administrative tribunal and that consequently it is independent from any political, governmental or private sector or industry influence. In fact, each Commission Member is independent of one another

and also independent of the CNSC staff.

Submissions filed for this hearing include recommendations to the Commission. CNSC staff also make recommendations to the Commission, but it is the Commission Members who will render a decision based on all the evidence presented in the context of the hearing process.

The Commission Members are appointed by the Governor in Council on the basis of their achievements in their respective fields of endeavour as well as their excellent reputation amongst their peers.

Our mandate is simple: ensure that the use of nuclear is done in a manner that protects the environment as well as the health, safety and security of the workers and the public.

I would also like to emphasize that the CNSC has no economic mandate and will not base its decision on the economic impact of a facility. The mandate of the Commission also does not include a requirement that licensed activities have community support, local buy-in, social licence or social acceptability.

While it can be understandable that certain intervenors would seek to require social licence from the companies who wish to operate in their

communities, the Commission is not mandated to adjudicate social licence considerations. It is solely the health, safety and security of the public and the workers and the protection of the environment that guides the Commission's decisions.

Finally, as I stated earlier, the Commission is an administrative tribunal. We are pleased to conduct this hearing in the communities that host the facilities, where we can listen firsthand to the views and submissions by members of the public and interested persons and probe the issues on the matters we must decide.

The Commission means to conduct a fair, efficient and transparent hearing. To achieve this and in order to hear from everyone who wishes to be heard and to address the issues that the Commission must consider, the Commission will insist on a respectful process. As President of the Commission, I want to set the tone from the outset so that we can all be assured of this.

The Commission will treat all participants with respect and courtesy and expects the same from all hearing participants toward all other participants. Please respect the order of proceedings and the importance of one person speaking at a time. I will expect participants to

address their questions and comments through me and not to address each other.

There is much ground to cover and the Commission will not tolerate clapping, disparaging personal remarks, disruptive or disrespectful behaviour. The Commission will take the measures it considers necessary to maintain order during this hearing, including limiting the participation of, or ejecting from the hearing room, any person who disrupts the hearing. The code of conduct for attendance at Commission proceedings is posted and provides clarity on how we will all conduct ourselves.

The important issues that have brought us all here will be best able to be fully addressed through an orderly and respectful hearing process.

I would like to remind the intervenors appearing before the Commission today that we have allocated 10 minutes for each oral presentation and I would appreciate your assistance in helping us to maintain that schedule. Your more detailed written submissions have already been read by the Members and will be duly considered. There will be time for questions from the Commission after each presentation and there is no time limit for the question period.

To help you in managing your time, a timer system is being used today. The light will turn yellow when there is one minute left and turn red at the 10-minute mark.

The first presentation is from Ms Julie Dzerowicz, MP for Davenport, as outlined in CMD 20-H2.168.

Ms Dzerowicz, the floor is yours. Thank you.

CMD 20-H2.168

Oral presentation by

Julie Dzerowicz, MP, Davenport

MS DZEROWICZ: Thank you so much.

I just want to see, do I start the clock where do you start the clock? Okay, great.

Good morning. Before I begin my verbal presentation I want to thank the Canadian Nuclear Safety Commission, who I will now refer to as CNSC, for moving the location of the BWXT licensing renewal public hearings to the Davenport riding. My team and I worked really hard to make this happen. I just want to say thank you so much for listening to us. I wanted to make sure that this was

accessible to the Davenport community. I am very, very but grateful for the extra efforts that were made by your team.

I also want to thank Casa Do Alentejo for agreeing to host the sessions here over the next two days. Casa Do Alentejo is part of the amazing Portuguese community that is the largest ethnic group in my riding of Davenport and the space is usually meant for big parties, but we are really happy that it is being used today for something far more important -- well, serious and very important, not far more important, but important and serious.

And finally, I want to warmly welcome the Commission and the entire CNSC team here today and thank you for the opportunity to be an intervenor this morning.

I will spend the majority of my next 8 minutes and 56 seconds outlining my recommendation re the BWXT request to renew their licence based on key concerns raised by the Davenport community.

My recommendation is that should CNSC renew BWXT's licence, it is the final renewal of the licence and that BWXT begins thinking about their shift to a different location.

Since I moved into this riding over

15 years ago, this facility has been a source of anxiety for the community and since I was elected over four and a half years ago I have heard over the years a steady stream of concerns about the safety of pollutants by local residents.

I have met with the company, with BWXT, I have met with its leadership, with its representatives. I have inquired about safety standards, about the monitoring of pollutants. I have inquired about the safety of the facility and its operations and asked after any emissions testing being done, whether it's at the federal, provincial and municipal levels.

Any and all testing that has been done, to my knowledge, has shown that any emissions released is miniscule and well below designated safety levels. There have been no major or minor safety incidents and the company has operated safely in this community for over 50 years.

And so why am I recommending that should the licence be renewed by CNSC this be the last renewal?

Due to the nature of the industry, the BWXT plant triggers anxiety in the surrounding community as it is in a dense urban area. Residents do not see it as a

regular manufacturing plant but as a nuclear facility.

They worry about the one time when an accident happens and something that shouldn't be released into the air is released into the air, or they worry about the one major safety mishap and how it will impact themselves, their health, the health of their family, the health of the community.

They worry about the increase of diseases and wonder about the collective impact of pollutants in our community and our city on our health and on our children's health. And just in my lifetime, cancer has moved from being one in a hundred to now being one in two.

These fears are perfectly understandable and no amount of information and placating will alleviate these fears.

I am not challenging the science and believe that there are strong safety standards and procedures in place to protect the public and workers. As mentioned before, every government level I have approached that has done any type of air, soil or emissions testing has indicated that any emissions results were minuscule and well within all and any safety standards.

Secondly, I also believe that where BWXT

is situated it is no longer the best use of the land and that the property is less suited as use as a uranium processing facility. The plant no longer makes the best sense in its current location and as the area continues to densify over time and it becomes less and less appropriate, especially with the new GO station hub coming into the area and greater expected residential density and growth, I believe it is in everyone's interest to search for a better location for this facility.

Also, it is important to plan ahead and give notice to BWXT as it does employ approximately 50 people and it is important for there to be a plan on how to transition workers to other jobs and opportunities.

Regardless of whether CNSC agrees to give just one more term to BWXT, or should BWXT continue to hold their licence in the many years to come, I ask for the following:

- Maximum transparency. BWXT has to be much better than they are right now in terms of information. A lack of information and understanding of what happens at BWXT breeds the anxiety already seen within the community and what I suspect you will largely hear over the course of today and tomorrow, and BWXT must make the

effort to find ways of abating the community's concerns.

- Fight against the misinformation that arises in any information vacuum. All emissions testing and results and any epidemiological testing or results should be accessible and easy for the community to access and read and any other relevant information should be made easy and available to find.

The second thing that needs to be in place should there continue to be a licence is rigorous open discussion and outreach with the community.

I want to acknowledge BWXT's efforts thus far and they have been significant. They put out community newsletters to around 4,000 local residents; they host community barbecues; they have initiated the Toronto Community Liaison Committee with members from the local community, and I know that there is at least one member in the audience today and they have some outstanding members.

This is a great start, but much more needs to be done on an ongoing basis. There are still improvements that could be made to assure the community it is safe, given the unconventional location and nature of the BWXT facility.

CNSC also has a role to play here. It has

begun, as mentioned in the earlier presentation, information sessions in affected communities, which are a good start, but they can be more robust, more community and resident-focused, so not so technical, explanations in plain language and done on a semi-annual or annual basis. The communications and outreach that the information sessions are also occurring could also be improved.

And the third part is accessible emergency planning. I understand that the details of the emergency plan might not be shareable with the general public for security reasons, but surely, BWXT and the CNSC should be able to share high-level details of the emergency plan with the community that will ensure the following:

- that it has been signed off by the CNSC;
- that it has been reviewed and signed off by the fire department, the police department, the Minister of the Environment and any other key bodies that need to be signing off and are part of the creation of these types of plans.

The community should be assured that any type of emergency plan is best in class and is able to deal with any safety incident, big or small, and that they are protected and their homes are protected.

So, in closing, there is no scientific evidence to show that BWXT poses a safety risk to the local community. I'm part of a federal government that believes in evidence-based decision-making and informing the public as clearly and as transparently as possible, but BWXT no longer makes sense in its current location as the area continues to densify and the property is less suited for use as a uranium processing facility.

For whatever period of time it continues to be in Davenport, it is important to ensure maximum transparency from BWXT and CNSC, rigorous open discussion and outreach with the community, and accessible emergency planning.

I want to thank you for the opportunity to present this morning. I want to thank you for your efforts and for the important work that you do and I am now happy to take any questions that you may have.

THE PRESIDENT: Thank you very much. And a special thank you for facilitating our hearing in this particular facility that allows us to be within the community. So thank you.

We will open the floor for questions. Dr. Demeter...?

MEMBER DEMETER: Thank you very much for your intervention.

You raise a point that is threaded throughout all the interventions and I am looking as well for how to deal with that issue or think about it and I think as an MP you may have some unique insight. So you made two statements, one that there is no scientific evidence of significant risk --

MS DZEROWICZ: Yes.

MEMBER DEMETER: -- and then the other time you said there is a huge anxiety issue related to the location.

MS DZEROWICZ: Yes.

MEMBER DEMETER: You may know better than others the jurisdictional issues of the *Nuclear Safety and Control Act*, what our parameters are. How do we deal with -- how would you suggest we deal with the anxiety component, given the parameters of what our mandate is?

MS DZEROWICZ: So to be very fair, I probably don't know -- I think there was a wonderful reading of the scope and the mandate of the Commission today by Ms Velshi at the beginning, so I will confess I am not as clear on all the parameters, but I will answer your

question to the best of my ability.

I think we have to make the results as plainly -- as accessible and as plainly spoken to the community. So I don't know whether it's on the CNSC website, I don't know whether it's on the BWXT website, whether it's on both websites, whether it's something I can even put on my own website. I can say, "Here are all the soil/air testing that's done on an ongoing basis, here is how often it actually happens, here is..."

I'm not saying this correctly, but I grew up in this community, by the way, so I actually grew up at a time where this community was mostly industrial. It was paint factories and chemical companies and there were really bad smells here. My grade school was exactly a kilometre away from BWXT on Franklin Avenue. So I know this area. And it was a time where there was a lot of worry around the pollutants in the air.

I mention all of that because I think generally the public is right to be concerned when they say, "Well, what is the collection of all the pollutants that are in the air and is anyone actually doing a study of all the pollutants in the air and how is it that they make sure that all of these things are taken into consideration

and not individually just looked at?"

So for me it's just full transparency, as clear language as possible and as accessible as possible for the public. I think that's the best answer I can provide right now and I am happy to provide more answers if you have more specific questions.

THE PRESIDENT: Dr. Berube...?

MEMBER BERUBE: I just want to expand on the request for further communication. Is it a problem with the volume of communication? Because what we are hearing is that quite a bit is being communicated by both CNSC and the operator here in this case. What types of communication do you think are suitable for your constituents?

MS DZEROWICZ: So I think I mentioned a few of them. There was an information session that the Canadian Nuclear Safety Commission had here in January, had in the riding -- when I say "here", Casa Da Madeira -- and one of the key questions was the emergency plan. So they said, "Well, why can't we access the emergency plan?"

And so we followed up with that question. I believe we followed up with CNSC on that and the response back to us, "Well, from a security perspective we are not

able to divulge that information." And that's fine, but I do think that the community should be able to say, "Here is everybody that we actually engaged in coming up with an emergency plan for the community, here is everybody that has actually signed off on it. We have -- it is a best in class plan, emergency plan for the community and we have taken into account anything that has to do with fire, possible accidents, anything that might impact your families and anything that might impact your homes." I honestly think that as much information as you can give.

So if we can't give for security reasons the full emergency plan, I think that we should ask ourselves what information can we give to the public that would alleviate their concerns, that would let them know that it has been thought about, it has been fully planned, we have used every possible person that needs to be involved in this type of planning, it is best in class and it is updated on an annual basis, if that is what is actually done.

So that's just an example. I didn't know there was an epidemi... How do you say it, epidemiology? If you say it once, I will say it properly.

THE PRESIDENT: Epidemiological.

MS DZEROWICZ: Epidemiological test. I didn't know that that was happening. I'm glad that is happening, but I think the public would love to know that, that we are actually thinking about that. And we should first define it for the public, which the way I define it is we are looking at the collective amount of pollutants that are in the air and we are looking at what might be the impact on humans sort of in the area. So I didn't know that was happening.

I think that as much as we can make available to the public -- and the questions are the same. The questions that I heard 15 years ago are still the same questions that I heard four years ago, the questions I hear now. You know, are you testing the air, are you testing the soil, what happens if there is a big fire at BWXT, you know, what is the emergency plan that is in place? It is all the same questions.

So to me, if we just have those very plainly put out, again at CNSC, at BWXT, even on my own website, I think as accessible as possible to the community, I think that that would be helpful.

THE PRESIDENT: I think those seem very reasonable requests. Maybe I will start with BWXT on your

response, particularly around emergency plans and what can be made available to the public.

MR. MacQUARRIE: It's John MacQuarrie, for the record.

So we agree that we can do a better job at being more transparent about our operations in general and specifically with regard to emergency planning. We think we can do a better job and I think recently we are doing a better job of adding that information into our information sessions and website. So as long as it doesn't compromise security, we will commit to maximum transparency of that type of information about our operation.

THE PRESIDENT: Can we use the emergency plan as a specific example and what is it that you can have made available. The intervenor has identified some basic elements that would provide reassurance to members of the public and, as I said, to me that sounded pretty reasonable. Is there kind of a summary document that you can provide and put it on your website or the different websites, that can provide that reassurance?

MR. MacQUARRIE: Yes. There is already a summary document on our website that has been recently added to our website, so I think that addresses most of the

points that have been raised, but we will confirm that.

THE PRESIDENT: I'm sorry, how long has that been on your website?

MR. MacQUARRIE: It was just added recently. I can't remember.

THE PRESIDENT: Okay.

MR. MacQUARRIE: Yes, just very recently.

THE PRESIDENT: Okay. So it's in response to the concerns that have been raised then?

MR. MacQUARRIE: It is. It is. And, you know, if that is not sufficient, then we are willing to look at what else we need to do to address any concerns that the community has.

THE PRESIDENT: And staff, any comments from you on the recommendations made about making the CNSC's information more accessible and understandable?

DR. DUCROS: Caroline Ducros, for the record.

Yes, I agree it's a very sound recommendation. It's something that we are always trying to improve upon. There are certain tools that we have on our website. We have videos about radiation and the health of people in very public-friendly language, but evidently

that is not getting out to the people that it needs to get out to in a way that is working. So we will look to this hearing and the feedback that we have received to see how we can get more information.

But in terms of the epidemiological studies, they are all on our website and maybe we can encourage the licensee to have links to our website for that.

And in terms of the accessible documents such as the safety analysis or the emergency plans, we have encouraged BWXT to put versions of those that are not privacy-limited on their website. So we are happy to see that that has been done.

THE PRESIDENT: And is this something that you engage the Community Liaison Committee members on for them to review what has been considered and they provide their feedback in saying, "Yes, I think this will meet the community's needs," or maybe you need to make it simpler or easier to access?

DR. DUCROS: So CNSC staff do attend the Community Liaison Committee meetings. To answer your question, I am not sure whether we have received that specific feedback, but I think that would be an excellent

mechanism for us to accept feedback on what methods would be best used.

THE PRESIDENT: Thank you.

Dr. Lacroix...?

MEMBER LACROIX: Thank you very much, Madam Dzerowicz, for this presentation. I enjoyed it.

My question is for CNSC staff. Is it possible to renew a licence and in the licence renewal to specify that is the last time that you renew the licence for this specific location? And the reason why I am asking this question is that I put myself in the shoes of a local resident and if I hear that this is the last time you renew this licence for this location, well, I may rejoice, I may say, "Well, that's a good thing", but on the other hand I might say -- I might suspect that there is something wrong with this installation and why didn't they shut it down right away? So I'm just curious.

MS TADROS: Haidy Tadros, for the record.

So currently in our licence structure we do not specify if this is the last renewal of the licence. A licence is a permissible instrument, so we give permission to do something, an authorized activity for a period of time, and when that period of time runs out,

depending on an application according to the Act, we would look at that information and assess what further instruments are needed through the licence.

THE PRESIDENT: Dr. McKinnon...?

MEMBER MCKINNON: Yes, thank you.

We hear many times about the general fear of the public of most things nuclear, but on the other hand we will hear some interventions later about people who work at the plant and they don't share those fears and so there probably is common ground about, you know, what kind of information.

So I actually direct my question to the company. When you take on new employees and you show them the safety procedures and everything in the plant, they probably come from a stage of being generally fearful because they don't understand what is happening to one where they understand and a lot of those fears have been alleviated.

So the question is: Do you have any feedback that might be useful in this instance as to the type of information that does help to alleviate some of those fears of nuclear facilities that might be useful to share?

MR. MacQUARRIE: It's John MacQuarrie for BWXT.

Yes, we do find that our employees are quite comfortable with our operations and they have many ways if they are not comfortable to express concerns with our operations, including internal mechanisms that are anonymous and there are external mechanisms. All our employees that are working doing manual operations are unionized and so they have union communication paths if they have concerns. So we feel we have a good environment to hear about any such concerns one way or another and we don't -- with regard to radiological issues or toxicological issues, we don't see those concerns.

It's difficult to say when employees apply and come to our company what they come with, so it's a little bit difficult for me to answer that part of your question, but we do find after we train them and give them the education they are quite comfortable with it. So I think there is, perhaps to your point, something there that we can use to better inform members of our community to give them the same comfort that our employees have. Thank you.

MS DZEROWICZ: Can I make a comment to

that?

THE PRESIDENT: Of course.

MS DZEROWICZ: I think the other point around information is -- and this is something I'm realizing also just in general as a politician, and I mentioned this point, fighting against misinformation that arises in an information vacuum. It is almost -- when there is misinformation that comes out, you almost have to be immediate in terms of tackling it. No longer can you just sit by the wayside and allow it to proliferate. It actually really breeds anxiety and fear, and I think we are just in an era right now.

I think part of my point also, it's not just, "Hi, we've posted some questions and answers on the website." It's also actively being on top of any misinformation or new news that are coming into the facility that needs to be distributed back out to the community. I think there is an active element that also needs to be identified here as well and it is important.

THE PRESIDENT: Thank you.

A question for you, Mr. MacQuarrie. You shared with us your public polling results and I wanted to get your reaction to the fact that I think it was 30

percent for the Toronto area that were even aware of your facilities. What are you doing differently? Because you talked about your public information program, but you didn't say what you are going to do differently as a result of those public polling results. Anything you can share with us on how do you make sure there is greater awareness of your business and its operations?

MR. MacQUARRIE: It's John MacQuarrie, for the record.

So with regard to what we plan to do differently, we see an opportunity to utilize more communication channels better. So things like social media that have been mentioned I think are something that we could do a bit better job with. We think we can use our Community Liaison Committee more effectively in terms of who we can encourage to participate in that and how those individuals can reach broader groups more effectively and perhaps advise us better on how we can go about better informing the community. So those are a few of the things that we are working on to do better.

THE PRESIDENT: Thank you.

Anyone with any more questions?

You have the last word. Anything else?

MS DZEROWICZ: I think that, you know, based on your -- you made a statement at the beginning in terms of what the Commission can address and part of my presentation was around the plant no longer makes the best sense in its current location and my sense is that you are not able to really address that issue.

I just want to say to you as someone who personally grew up here, I went to grade school in this area, I saw it go from largely industrial to now largely urbanized and mostly it's residents. So the BWXT is a very rare case left in our community here, but I do think that is an important point to make. As much as it might not be a consideration of CNSC, I know that if there was a new application of BWXT into this community, it wouldn't even be considered. So I ask myself, if it wouldn't even be considered if it was just new into the community, why is it that we would consider renewing it on an ongoing basis?

So I appreciate you can't consider that, but I think it's important for me to mention. And I just thank you so much for your intelligent questions and everyone for their responses. Thank you.

THE PRESIDENT: Thank you. Thank you for your intervention.

--- Pause

THE PRESIDENT: The next presentation is from Safety Probe International, as outlined in CMDs 20-H2.33 and 20-H2.33A.

Dr. Helmy Ragheb will make this presentation.

The floor is yours, Dr. Ragheb.

CMD 20-H2.33/H2.33A

Oral presentation by

Safety Probe International

DR. RAGHEB: Thank you, Ms Velshi.

Thank you for the opportunity to speak before the Commission. For the record, I am Helmy Ragheb, a nuclear safety consultant with Safety Probe International. I am here to provide comments on the application to renew the licence for the Toronto and Peterborough BWXT facilities.

I have a 40-year career in nuclear safety in Canada, with contributions to nuclear safety research, nuclear safety design, and extensively in nuclear incident and accident investigations. I was also honoured to

represent Canada as a consultant for a period of 20 years in the international forums on operating experience such as the OECD and the IAEA.

In my presentation I will begin with my observations and comments on the information presented in the BWXT application regarding the Toronto facility, followed by observations on the proposed pelleting process at the Peterborough facility. I will then list the issues arising from my review of the submissions, followed by my recommendations for the Commission's consideration.

First, the Toronto facility. My first observation is on page 7 of the application, application of the BWXT, Item 2.2. There is a statement that reads:

"...BWXT NEC also can periodically ship pellets to the United States of America for use in Boiling Water ... reactors"

If indeed BWXT intends to ship pellets for use in BWRs, these pellets need to be enriched since boiling water reactors can only operate using enriched fuel, possibly between 2 and 5 percent.

This raises two questions:

- Will the applicant within the requested

10-year licensing period manufacture enriched pellets and ship them to the U.S.?

- Two, if enrichment is planned, will be renewed licence stipulate explicitly that enriched fuel shall not be manufactured at any of the two facilities in Toronto and Peterborough?

My second observation is that both BWXT and CNSC staff submissions place great emphasis on the normal releases from the facility, but little is mentioned, as we heard earlier from the Honourable MP for Davenport, little is mentioned about the unusual and higher releases that could result from incidents and accidents.

Only the titles of a few accidents are listed in BWXT's application, alluding to two unplanned events involving -- among these events are two events involving potential for fire in 2017 and flooding coincident with prolonged power outage in 2018. The lack of details on the flooding accident, for example, raises questions as to where this contaminated water was released. Has it been released to the city's sewer and storage system? Was the public informed of the methods or techniques of disposing of this contaminated effluent?

I will now move on to comment on the

Peterborough facility.

My first observation is that the proposed pelleting operation at Peterborough is assumed to produce emissions equal to that at the Toronto facility. This assumption is difficult to support since emissions in the new facility will depend on the new design of the combined pelleting and fuel bundling process on the same site. Will this new design have mitigating features to bring releases from accidents to acceptable levels? The applicant has not submitted such design.

My second observation is on the need for safety analysis. Given that the pelleting operation constitutes new construction, the *Class I Nuclear Facilities Regulations* should apply. On the screen I have listed two sections: section 5(f) and section 6(c). They require that the application to construct a Class I nuclear facility include a preliminary safety analysis report. Section 6(c) also requires that an application for a licence to operate include a final safety analysis report. You will note here the timing of submitting the safety analysis report. It should be included with the application.

The IAEA safety standard further explains

that the safety analysis is performed early at the stage of design and is undertaken in an interactive and iterative manner to ensure adequate safety.

You can see here on this diagram I have jotted down here a few notes on -- designed this diagram to show that safety analysis is performed simultaneously with the design and is done at an early stage, well before commissioning and operation, in order to identify any weaknesses in the design before proceeding with construction when design changes become difficult.

My third observation is on the appropriate authorization for establishing the new pelleting process. Should it be treated as a modification or a new design?

The IAEA safety standard says that modifications in some cases are considered separate stages in the authorization process. I am therefore of the view that the proposed pelleting at Peterborough should not be authorized as a modification since there is no existing physical process to be modified, but rather a new line of production.

My fourth observation is that the authorization has been recommended by the CNSC staff before the completion and submission of the safety analysis report

for the proposed new activities at Peterborough.

The issues that arise from these observations -- based on these observations, I listed here issues that I believe need to be looked at.

Briefly, the first issue is that the BWXT application does not include a safety analysis report for the proposed new constructed or modified facility at Peterborough that combines two distinct processes. Instead, the application included updated safety analysis reports for two separate facilities at Toronto and Peterborough.

Secondly, the proposed authorization by the CNSC was not based on the results of a safety analysis for the new facility, but rather on the unsupported assumption that its hazard, emissions and management system programs will remain the same as in the older facility in Toronto.

Third, the quoted text on the screen from section 3.4.2, page 23 of the CNSC staff assessment, indicates that the assessment was based on two old existing design configurations at Toronto and Peterborough and not on the new integrated or combined configuration to be built in Peterborough.

Fourth, the quoted text on the screen from section 3.11, page 18 of the CNSC staff assessment, indicates that the reevaluation of the stacks will be concluded just prior to the operation phase. This does not allow the correction of any design deficiencies that may be identified at that time. So evaluations should be done much earlier at the design stage.

I have listed here a summary of the issues and here are the recommendations I am making to address the issues that I just listed.

I am recommending the following:

- one, modify the proposed licence condition 5.2 to require the applicant to submit two things:

(a) A preliminary safety analysis report for the Peterborough Plant covering the new configuration that includes the pelleting process. The safety analysis report is to be submitted for approval by the CNSC 90 days before the implementation of any modifications to the existing facility at Peterborough.

(b) A final safety analysis report for approval by the CNSC following the commissioning and prior to the operation of the facility.

I also recommend that the CNSC has to expedite the issuing of REGDOC-2.4.4, Safety Analysis for Class 1B Facilities.

Finally, I would like to thank the Commission for the opportunity to comment on the licensing of the BWXT fuel processing facility.

THE PRESIDENT: Thank you very much, Dr. Ragheb.

Let's start with Dr. Berube.

MEMBER BERUBE: Well, first of all, I would like to thank you for your presentation. Very informative, very well put together and I appreciate your input to the process. It is valued, very valued to us.

You raised some very interesting points and I would like to bring that up and let's talk about them between the CNSC and the operator to try and understand and get some clarity on what the intention here of including pelletization in the Peterborough office looks like.

Are you looking to actually transplant your existing process or are you looking at considering a new design for this in the Peterborough facility?

MR. MacQUARRIE: It's John MacQuarrie, for the record.

We are looking to transplant or move our existing process. We are not planning to change or redesign.

MEMBER BERUBE: So just basically you are going to pick up the existing process, move it over, hook it up. So there will be two independent lines then, one is for pelletization, the other one is for fuel; is that correct?

MR. MacQUARRIE: That is correct.

THE PRESIDENT: Dr. Lacroix...?

MEMBER LACROIX: Thank you, Dr. Ragheb, for this presentation.

This question is for CNSC staff. Among the issues raised by Dr. Ragheb, he says that the CNSC staff evaluation of stack is not based on a safety analysis for a specific plant. Could you comment on this?

MS TADROS: Haidy Tadros, for the record.

I would ask Julian Amalraj to answer that question. He looked through the safety analysis report that was submitted by BWXT.

MR. AMALRAJ: Julian Amalraj, for the record.

So CNSC staff evaluate all aspects of

facility emissions. We evaluate the facility emissions during normal operations; we evaluate impact to the public in terms of any accidents or any events. The operator submitted an environmental risk assessment that actually analyzes the consolidated operations of both pelleting and the fuel pelleting operations and what the impact is to the public associated with it. The safety analysis that was submitted as part of the licence renewal studies what the impact to the public and the environment would be under accident conditions for the maximum possible uranium that the facility would process and the maximum uranium that can be stored for all particular hazards and it analyzes individual situations to demonstrate through defence in depth that safety is guaranteed.

THE PRESIDENT: Dr. McKinnon...?

MEMBER MCKINNON: Yes. Thank you for your questions.

I would like to follow up something about the safety analysis report issues, so my question is for BWXT.

There was some concern about the lack of a safety analysis report and I'm wondering if there is just an issue of terminology, because in your own application

you talk about the emergency plan and also the environmental risk assessment, in which areas risks are assessed and you come up with mitigation measures, scenarios and so on. So could you comment on any similarities between those reports and the safety analysis report that has been mentioned?

MR. MacQUARRIE: It's John MacQuarrie, for the record.

So there are safety analysis reports, environmental assessment reports in place for both facilities, Toronto and Peterborough, so for pellet-making and for fuel bundle-making. Those cover the operations as they exist today. The only change that we are requesting authorization for is movement of the pellet operations. So while we would update the safety analysis report for being housed in a single facility in Peterborough, if we were to do that we believe that, you know, the safety analysis report for Peterborough -- for Toronto, rather, for pellet operations is very representative of what the report would be like if we were to make pellets in Peterborough.

MEMBER MCKINNON: I note also you have a physical design change control process. So would risk assessment be part of that process also?

MR. MacQUARRIE: Yes. So whenever we are making a change to our operations, we have a procedure for change management and risk assessment is a fundamental part of that procedure. So in this case, because movement would be considered a change, we would evaluate all of that through our existing change management process.

THE PRESIDENT: Dr. Demeter...?

MEMBER DEMETER: Thank you.

I'm going to drill a little bit more into the safety analysis. So I understand from previous responses that the process will be transferred. What I haven't heard clarity on is the facility configuration and I suspect that you are not going to do a cookie-cutter where the exact same facility configuration, ventilation, emissions are going to be transported to Peterborough. So if you change the physical configuration, irrespective of keeping the process the same, that is going to lead to a different analysis. So just confirm that your facility configuration will be different in Peterborough than it is in Toronto.

MR. MacQUARRIE: This is John MacQuarrie.

Yes, the facility configuration would be somewhat different.

MEMBER DEMETER: Okay.

MR. MacQUARRIE: As you note perhaps from my presentation, we are in a facility that is a four-storey building here in Toronto. The facility that if we were to move we would go into is a single-storey facility and so there would be differences, not in how we execute the processes but perhaps in ventilation layouts and things like that. So absolutely there would be a design that would be done and the safety analysis would take that into account.

MEMBER DEMETER: So a question for CNSC. Have you received documentation on the updated facility configuration to do a safety analysis on because of the differences?

MS TADROS: Haidy Tadros, for the record. I will ask Julian Amalraj to take that question.

MR. AMALRAJ: Julian Amalraj, for the record.

So it is important to note -- and the intervenor makes reference to this too -- the safety aspects are guaranteed by design at the equipment level and the suboperation level. The configuration of the plant in

terms of where -- it's a question of where the equipment is located and what the barriers would look like in terms of the safety systems.

And again, the design aspects or the configuration aspects are extremely prescribed. There is international guidance available associated with this. For example, the room where the negative pressures are created, there are set requirements in terms of how much negative pressure should be there and what is expected out of it. Whether the shape of the room is square or rectangular is something that the licensee can decide during the setup and the differences are actually accounted for because the change control processes have the adequate ability to account for these things.

MS TADROS: Haidy Tadros, for the record.

So to answer your specific question, which I believe was have we received the physical changes analysis that will then lead to a safety analysis report, that is why we have Licence Condition 15.2 in place, so that that assures that when the physical changes occur according to the design that needs to be put in place in Peterborough, CNSC Staff will review the commissioning report of those changes.

Perhaps I could ask our specialist in safety analysis in the Toronto office -- in the Ottawa office to provide some details on that.

MR. BURTON: Director of the Physics and Fuel Division.

Oh, I'm seeing head shakes. Am I being heard?

Okay. There we go. I guess I'm going to assume that everyone in Toronto can hear me.

I'm the Acting Director of the Physics and Fuel Division here at the CNSC, and that is the division that has primary responsibility for the safety analysis, safety and control area.

And I'll just quickly reiterate what Ms Tadros said, that we have not yet received such a report and, when we do receive it, it will be undergoing a thorough assessment by CNSC Staff to make sure that the updated report adequately incorporates the aspects of pelleting operations into the Peterborough site.

And I might ask if Dr. Vladimir Khotylev has anything. Nothing to add to that.

Thank you very much.

THE PRESIDENT: Thank you.

Let me get to the questions the intervenors posed that are not safety analysis report related.

On slide 4 of his presentation, he talks about whether the fuel pellets that are going to -- that are being produced or will be -- may be produced in Peterborough have enriched fuel in them.

BWXT, can you comment on that, please?

MR. MacQUARRIE: It's John MacQuarrie.

So we do, on occasion, make pellets in Toronto for our boiling water reactor fuel manufacturer. I want to clarify that although much of the fuel used in boiling water reactors is enriched, the pellets we make is natural uranium, same natural uranium that goes into our CANDU fuel.

We don't -- do not possess or process enriched uranium, and we have no intention to do so.

So I think I just want to make sure that we understand that that fuel is not enriched.

THE PRESIDENT: Okay. Thank you.

And then on slide number 5, a couple of questions around flooding and release of contaminated water, and was the public informed after the incident that

you had in 2017-2018. Could you please respond to those?

MR. MacQUARRIE: Yes. So the public was informed about both events, so just taking both of them in turn for a moment.

So in the case of the questions related to the water, so contaminated water was contained entirely within the facility. We have a -- essentially a sump that was able to contain all of that water, and we were able to treat it and release it in the way that we treat all water in the facility, which is through a system where we sample before we release any so we know exactly what we're releasing.

That does into the city sewer system, does not go into the storm system. No water was released.

It was a significant storm and power was lost, but we were able to process all water in the way that we normally do during normal operations.

With regard to the first event, the fire, the community was informed or the public were informed.

It was essentially a fitting that failed on a bit of the hydrogen piping to one of the furnaces, and all of the emergency response systems operated as expected and our employees reacted as expected and the fire was

quickly extinguished.

THE PRESIDENT: How was the public informed?

MR. MacQUARRIE: Through our web site.

THE PRESIDENT: Thank you.

Dr. Berube? No.

Dr. Lacroix.

Dr. McKinnon.

MEMBER MCKINNON: My question's related to, again, the differences between the Toronto and the Peterborough site and the environmental monitoring.

So I have a question for, I guess that would be CNSC. In the review of any proposed monitoring, would the differences between the two sites be required to -- for the design of any new instrumentation program, for example, taking into account the different weather systems, wind directions, dispersion modelling and so on, and would you be reviewing the proposal of the company prior to providing any approval for operation?

MS TADROS: Haidy Tadros, for the record.

In short, the answer is yes, but I'll ask our environmental protection specialist to inform you on the details of our review.

MS SAUVÉ: Good morning. I'm Kiza Sauvé. I'm the Director of the Health Science and Environmental Compliance Division.

The environmental monitoring program would be submitted to the CNSC and it would be reviewed under CSA Standard N288.4, so that's for environmental monitoring programs, so it would need to take into account the local environment, as you mention, the weather patterns and whatnot. And so we would expect it to be similar to the Toronto in what was being monitored because the effluent would be similar to Toronto, but of course, Peterborough environment would be taken into consideration.

So yes, it would be submitted to the CNSC first.

THE PRESIDENT: Dr. Demeter.

MEMBER DEMETER: Thank you very much.

This is a question for WXT.

So you've had 10 years of a licence. You're coming to the end of that 10 years, and you've made a decision to perhaps change production at Peterborough facility for pelleting. And that has led to two conditions that, before you do that, the environmental monitoring program will have to be reviewed and the safety analysis

will have to be reviewed.

Given the period of time you had to think about this and consider that, it would have been really helpful to inform decisions for us if you'd done this ahead of time so that when you say we might want to do this and present that so that, at this Commission hearing, we can see the evidence for those two things.

So why -- why make the decision to perhaps do this at this site but not have this information available to get all your ducks in a row?

MR. MacQUARRIE: It's John MacQuarrie, for the record.

So I want to emphasize that there has been no decision made to move any operations and, in fact, it's not our plan to move any operations.

But we do recognize that there are changes in our marketplace and that we may need to do so at some point in time over the next 10-year period, and so that's why we're asking for authorization so that we can know that -- whether that's possible or not and then, at that time, we would do the analyses and engineering that is needed to be able to make that movement if we decide to do that.

And so that's the reason why we haven't done a design, we don't have any details about the layout because we made no decision to do it at this point in time. And therefore, we don't have any of the analysis, either.

THE PRESIDENT: And a quick question for staff. What's the status of RegDoc 2.4.4, Safety Analysis for Class 1B Facilities?

MS TADROS: Haidy Tadros, for the record. I'll ask Julian Amalraj, who was on the committee to write that report, to answer the question.

MR. AMALRAJ: Julian Amalraj, for the record.

The regulatory document currently is available, just finished consultation for public consultations.

THE PRESIDENT: I'm sorry. I didn't hear that.

MR. AMALRAJ: The regulatory document has just finished internal consultations and it is just now being put out for public consultations.

THE PRESIDENT: So when do you expect it to be issued?

MR. AMALRAJ: Yes. So we'd have to get

back to you on that.

THE PRESIDENT: Thank you.

Last word of -- is yours.

DR. RAGHEB: I just have a comment on two or three points from what I heard from both CNSC Staff and the BWXT.

I just wanted to note that the transferring -- the production line or the process from Toronto to Peterborough, this is an undertaking, is significant undertaking, and from what we saw in the nuclear power industry, for example, this is equivalent to saying that I have a single unit in Gentille-2 or in New Brunswick and I'm going to construct the multiple units. And there shouldn't be any problem building eight units the same copy.

Why? Because once you put things together, there are common services to be made.

We know, for example, there are six stacks for emissions in Toronto. There's one stack for beryllium emission in Peterborough.

Once you put things together, you have the choice of making them separate completely or designers sometimes opt for making common services. Once you put

common services, then you can have problems, and you cannot foresee these problems until you have a blueprint, a design, and do a safety analysis for what you have.

Secondly, the second challenge is, nowadays, if you try to copy a technology, you put it in a different place, this is old technology.

We know we have now new technology, and the challenge, then, is to put new technology in Peterborough side by side by old technology, and we try to make common services.

There's a lot of challenges. It's not a simple thing to say that emissions coming from Toronto, it's going to be the same. Just comply with the limits here and the limits here. It's not a simple exercise.

And secondly, about Condition 5.2 of the CNSC had requested the submission of the safety analysis report, and that's fine. And I'm talking here about the timing.

According to the wording in the proposed authorization that it -- this safety analysis report is to be submitted just before commissioning, that is to say, after the construction, after we make everything fault accompli. There will be very little opportunity to make

any changes.

That's why the wisdom is to have the safety analysis done much earlier simultaneously with the design. In fact, I've been part of this 40 years ago when I designed Pickering B, Bruce B and Gentilly. And part of the safety analyst, we break things.

The designer make complete systems. We safety analysts break them. And we see the consequences and we propose design -- changes of design to the system. We feed it back to the designer. They come up in the end with the final design for approval by the regulator.

So the wisdom is to have the safety analysis submitted much, much earlier, not waiting till commissioning -- till the commissioning stage.

I guess that's all I need to say. Thank you very much.

THE PRESIDENT: Thank you. Thank you for your intervention.

Moving on, then, the next presentation is by Mr. Arthur Blomme as outlined in CMD 20-H2.45.

Mr. Blomme, the floor is yours.

CMD 20-H2.45

Oral presentation by Arthur Blomme

MR. BLOMME: Thank you.

I'm presenting this on behalf of my grandchild, who didn't want to come up front here, but he's sitting in the back there in the red shirt.

In this high-priced, inflated real estate market, my son has recently purchased at great expense and a large mortgage a home on Millicent Street, which is less than a kilometre from the BWX facility. This exposes my grandchild to radiation and potential nuclear related accidents in the plant.

Future generations are taking the bulk of the risks associated with the plant because a failure will -- probably a failure will happen in the future. And honestly, the more time that you spend with -- spend waiting for the failure, the more likely it'll happen.

And the baby boomer generation, of which I am a part, has seemed to grab all the benefits from all this industry and the consequences are kind of being passed on into the future.

No consideration is being given to the

next generation as BWXT operates in apparent stealth because -- generating profits while exposing my grandchild and other children in this community to the unreasonable hazards promulgated by the facility.

I was shocked to learn through social media that such a dangerous facility operates so close to the homes of young families. This is indicative of an egregious affront to the well-being of future generations of Canadians.

As I think about my grandchild living in such proximity, it becomes particularly worrying. My understand is that the BWXT facility located at 1025 Lansdowne Avenue is a uranium processing facility where 150 tonnes of uranium dioxide are baked into pellets every month and that 700 tonnes of uranium powder are warehoused on site. I think it's the other way around.

I was further alarmed when I learned that BWXT at their discretion and regulation can dump nine metric tonnes of uranium into the sewer. Even more alarming is that they self-govern their emission levels into the air with an allowable limit of 760 grams each year.

They seem to me to have been given licence

to expose children in the vicinity over prolonged periods of time to toxic uranium dust. This exposure to uranium radiation is compounded by the above-ground 9,000 gallon tank of highly flammable liquid hydrogen. Not only is the hydrogen an incendiary, but so, too, is the uranium dioxide.

Ignition of uranium dioxide can occur even in the event of exposure to air.

These two substances in such proximity to each other heighten the potential for fire, explosion or any sort of nuclear accident at the facility.

Do the Commissioners consider that the possible outcomes that my grandchildren and other children in nearby schools face in the event of an accident? Their futures would likely be terminated because of their proximity to the BWXT facility. Without an accident, they are still at risk to the danger of exposure of high levels of radiation from the plant.

The facility has been in the neighbourhood for many years, yet relatively few people know about the facility. Considering the number of years that they have been in operating this community -- in this community, they have built no relationship with the community.

With the risks that this facility is imposing on the neighbourhood, I expect that there should be greater awareness.

I believe that this lack of transparency could only be achieved through the wilful intent to hide the dangers being risked from the public.

It is this anti-social spirit that BWXT continues to operate. They apparently, like their predecessors, have no empathy for the children in this neighbourhood who they are exposing to these needless dangers.

They prefer to manipulate the public by their deceitful silence on the dangers that they pose to the community. My understanding is that they have lied about their compliance with notification rules for the licence renewal.

They obviously prefer to keep hidden from the public their activities in the plant.

If an accident were to occur, I'm wondering if they would be there to take responsibility for their actions. They have not made a risk assessment on the hazards of their operation available to the public and there's no safety or evacuation plan available to the

public. Finally, they do not inform the public on the adequacy of their insurance obligations.

Does BWXT consider themselves -- I'm going to leave that out.

My children and grandchildren are being held hostages by the callous -- by BWXT. They settled in the area unaware of the dangers they are being exposed to. Now, the high price they paid for their property hinders their capacity facility to move to a safer environment.

The sustained value of their property is suspect. As the public become more aware of the dangers of the facility, the value of their property is jeopardized.

People do not want to buy property that is exposed to radiation.

The time has come to abandon the corporate-led trajectory that disregards the natural environment and the people upon for -- that people depend upon for their continued life on the planet.

And we see this existence with Wet'suwet'en currently. It's a new world.

Whereas our civilization, the 21st century, considered nature at something to dominate for our own ends, many of us now realize that we must live in

harmony with nature and with each other.

We, in like manner -- our neighbours have to band together to fight the dangerous activities of corporations like BWXT to ensure that our grandchildren have a possibility of life in the future.

We must build up our community cognizant of the future of the next seven generations. That is the way of the 21st century.

It is time for BWXT to pack up and move their facility to a venue where they are not endangering our grandchildren.

If this opinion is in error, BWXT should prove to us that it is a conscientious organization. They should let this community know the emergency plans BWXT has in place for when -- for when one of their transportation vehicles is involved in a vehicular accident or another 10, 20 deaths at 1023 Lansdowne, so close to our homes.

Further, what are the insurance requirements for BWXT? How will they be held accountable if there is an accident?

Finally, will the CNSC confirm that the actual radioactive emissions of the plant are and demonstrate the level of risk they pose to my

grandchildren?

Just another little note was, when I asked my grandson, he seems to get the problem here. When I was explaining to him the plant, the dangers of fire in the plant, he says, "Well, what -- what would happen if a train went off the tracks like it did in Quebec?" And the consequence there would be catastrophic, of course.

In conclusion, I do not give consent to BWXT and the Nuclear Safety Commission to allow a renewed licence for BWXT.

THE PRESIDENT: Thank you, Mr. Blomme, for your intervention.

Dr. Lacroix.

MEMBER LACROIX: I appreciate your concern, Mr. Blomme. You've raised a number of issues that are certainly, I would say, legitimate, and we are also concerned about many of these activities.

And I'll pick just one. Let say, for a moment, that there is a serious road accident and uranium dioxide is dispersed into the environment and they catch fire.

And I would like to know from BWXT, how would the emergency plan be deployed? Take us step by

step, who's doing what?

MR. SNOPEK: Good morning. Dave Snopek, for the record.

We have a fully-developed emergency plan for the transport of uranium, which is classified as a dangerous good, so we have an emergency response assistance plan filed with Transport Canada. And that defines the different types of accidents that are considered. It also defines the response plan that BWXT has to support first responders in responding to a motor vehicle accident scene.

So we've looked at all types of potential accidents. There can be minor motor vehicle accidents where containment is maintained. There can be more serious motor vehicle accidents where perhaps there's a tip-over and spilled contents, potentially even spilled, let's say, drums of material.

I just want to correct one thing that I heard. The uranium that we have is not a flammable material. So it itself will not burn. So the dispersal would basically be to go and recover that material. It doesn't burn itself.

So we have, to be able to further assist emergency responders, we have on contract responders

ourselves that can go to accident scenes to recover that material and then safely transport it to an off-site location.

THE PRESIDENT: Dr. McKinnon?

MEMBER MCKINNON: Yes, thank you for your concerns. Your know, we've heard also many times the issue of communication.

So you haven't heard anything prior to seeing on social media about the operations in the plant?

MR. BLOMME: (indiscernible - speaking off mic) my son's purchase. I'm sure he would have considered it, had he known. So it was not something that he was aware of when he purchased the house.

MEMBER MCKINNON: Yeah. And so I have a question for the company in terms of we saw in your presentation the public attitude survey, which was a very interesting result, so it's a very good step to see what the effectiveness is.

Do you have any other means of judging the effectiveness of your outreach programs? And what are your plans to -- how do you plan on responding to that, to make improvements?

MR. MacQUARRIE: It's John MacQuarrie.

Yes, we do have other means for judging effectiveness. So we have a variety of ways of communicating with our community. So our community liaison committee, where we'll ask if the members of the community are hearing about us in some way or another, and they give us feedback and advice on that.

We get calls or emails to our system and usually we'll from that interaction find out what they know about our company.

We have barbecues where people just drop in, and we have displays about what we do and how we do it. And we take that opportunity to ask people what they know about our business, you know, what their concerns are, and try to address those concerns.

So those are the primary ways that we get feedback about our business.

THE PRESIDENT: And clearly that's not adequate, from what we're hearing, and more needs to be done. I think your suggestion of engaging your community liaison committee more, some of the feedback that you've got from your polling on different ways of reaching out to the community -- my sense is you need to do that a lot more aggressively so that people don't use adjectives like

you're operating "in stealth" and so on. But you know, that seems to be a message that we've been hearing with many of these interventions.

Dr. Demeter?

MEMBER DEMETER: Thank you very much for your intervention.

I have a number of questions that deal with emergency planning that I will ask, based on your intervention, when Emergency Planning and Health are here I think this afternoon. So they're not going to be forgotten. I just want to put them in a parking lot.

Thank you for the clarification on flammability for uranium dioxide. I think part of the confusion is that some forms of uranium, like metallic elemental uranium, may actually have an ignition in it's -- you know, so people looking at information might see that and immediately think it's the same. It's different. So I think that's part of the miscommunication is to understand that this particular form of uranium is not flammable.

You know, when I pick up my mail every Thursday, I get all these flyers I don't want, but I get them every Thursday. And I'm kind of wondering how the disconnect is here that other marketers can get me

information on a regular weekly basis. I'm still trying to figure out where the disconnect is.

There's a huge number of intervenors who say that I wasn't notified. I didn't know about it 'til this. And we talked about social media and more complicated ways of communicating. But I'm still not understanding where the disconnect is between giving simple information to the neighbours around you even by a weekly mail-out or flyer. Help me out with the disconnect. For Canadian Tire it's really easy. I get the thing every Thursday. I'm not promoting Canadian Tire, but.

MS CUTLER: Natalie Cutler, for the record.

We engage with our community using a multi-prong approach. The newsletters go out not weekly but three times a year. They include quite a bit of information that's occurred during that period leading up to it.

MEMBER DEMETER: So how do they go out?

MS CUTLER: So those go out using the postal Canada maildrop. And so they would be in that collection of flyers you're referring to. We know that a lot of those are recycled and we can't count on all of

those being read every time.

That's why we do use a multi-prong approach, like having a very comprehensive website, prominent signage on our facility, and you know, if you Google the name of our company, we come up right away, a dedicated website. That dedicated website is just for Toronto and Peterborough, and it's very easy to navigate and full of information. We do that for the purposes of demonstrating transparency.

We also do flyer mail as well for events. For example, we'll send 4,000 newsletters three times a year, and we'll also send to that same 4,000 distribution list flyers to barbecues, invites to sign on to our community liaison committee, and in 2019 we also had an info night that we sent to that same 4,000 distribution list.

We know that 4,000 folks where we operate is not sufficiently notifying everybody that considers themselves a neighbour, and we know that. And that's why we're trying to improve with looking at social media, targeted ads. We have heard that Toronto specifically prefers their information digitally, and so we're looking at ways that we can use social media to get in front of

those digitally and that we think we think we can achieve using social media channels.

THE PRESIDENT: Mr. Blomme, in your opinion, how could BWXT demonstrate that it is more conscientious, as you put it?

MR. BLOMME: Well, I just see sort of a disconnect, because I'm not sure that their activity -- they should be doing the activity in a population where there are all these young families, this kind of -- maybe at one time there was that those kind of things were allowed, but we think about how we want to plan our cities. Should we have a facility that has dangers attached to it in the centre of the city?

So I think that if they were really honest, it would work contrary to their interests. And I don't know if they really published it, had meetings, and discussed it openly in a very democratic situation, I don't know, would they get a democratic response in favour of their plant? I don't ...

THE PRESIDENT: So you've been here since this morning, and you describe this as a dangerous facility. But we've heard from the licensee, from staff, also from the MP that all the evidence seems to indicate

the facility's operating safely, well, well below limits -- allowable limits. Does that give you reassurance?

MR. BLOMME: Yeah, well, like I mean our science changes too. We become more and more aware of things that affect us. And my sense is to keep things as natural as possible and then to use that as a baseline to move out from. I'm just thinking of like our society seems to have so many things that we don't really want to investigate and we want to accept, like 5G. Like there's not even any test to study the radiation effects of 5G. It seems to be a foregone conclusion that we have to have 5G. And the health effects of it seem to be totally out of conscious.

And so I'm just thinking, so now with all these cumulative radiations, I guess that someone mentioned about doing global tests on radiation levels, somehow compounding the different things. But a little bit of radiation here, and a little bit of radiation here, some chemical stuff going on here -- in the end what kind of toxic soup are we creating with that? Maybe we can survive a little bit of radiation, but if we can survive a little bit of radiation here and a little bit of radiation here, but when you put them all together, what kind of results

are we getting?

THE PRESIDENT: Thank you. You know, so there are a number of issues that you've raised that we will definitely be addressing over the next few days because other intervenors have raised, whether it's around insurance, whether it's around cumulative effects.

But I'll ask you if you've got any other final comments.

MR. BLOMME: I'm good.

THE PRESIDENT: Well, thank you very much for your intervention and bringing your grandson with you.

Our next presentation is by Mr. David Fernandes, as outlined in CMD 20-H2.55.

Mr. Fernandes, the floor is yours.

CMD 20-H2.55

Oral presentation by David Fernandes

MR. FERNANDES: Good morning. My name is David Fernandes. Thank you for allowing me the opportunity to speak today and voice my concerns and plead to reject BWXT's licence renewal application.

I am married, with a five-year-old son.

We live 800 metres away from the BWXT Toronto site. I have lived here for approximately 15 years, and I was never aware that I lived near a nuclear fuel manufacturing facility. I have known of the building, but did not know what it or the former GE Hitachi did. I was not aware there was radioactive material on site, let alone 700 tonnes of it. Honestly, I naively assumed that such a facility would not be operating or be allowed to operate in a densely populated city. Had I known, I would not have purchased my home.

I became aware of BWXT's processing of uranium from a fellow concerned citizen outside the Lansdowne subway station. I was and still am shocked to know that such a facility is operating and granted permission to operate in the middle of a dense and growing residential neighbourhood within the most populated city in Canada. This is just not acceptable.

Despite any statistical analysis and opinions of how safe BWXT claims to be or what their emissions are within safety limits, the fact that manmade or factory-made uranium emissions are released into our water and air is increasing risk of exposure. Exposing me, the residents of this densely populated area, including my

five-year-old son and countless other children, to the risks of consuming and inhaling uranium particles is simply unacceptable, and in my opinion, it would be selfish and irresponsible of the Commission if it were to allow it.

I work downtown Toronto and travel by subway. Aiming to stay healthy, I routinely opt to walk home from Lansdowne station rather than take the bus. This walk home takes me past BWXT. I must have walked past BWXT over a thousand times, just walking home from work.

Since learning I have been walking past radioactive material storage at a scale that supports a quarter or more of all nuclear power in the province, I have stopped walking.

I have also routinely taken my son to Davenport Village Park. It is approximately 350 metres from the nuclear fuel manufacturing facility. We have not been back to the park since, and I will not be returning as the weather gets better.

Common sense tells me that if a factory is emitting uranium into the air and water, there is a heightened chance that I will inhale or ingest it. The same goes for my wife, my son, and countless other residents and children in surrounding schools, parks, and

homes every day.

The feelings that arise from the thought of my five-year-old son having a harmful uranium particle lodged in his lungs is difficult for me to express.

I ask the Panel: Do you feel it's okay for my five-year-old son to ingest a harmful uranium particle which escapes BWXT's facility -- any particle, including one of the particles within the legal limits? Can you ignore this same threat if the victim of this radioactive exposure is your own child?

Is it just that I, my wife, my family, my fellow residents have an increased risk of ingesting radioactive particles? For all the other children in the area, being such a densely populated area, I believe there are five or more schools within a 1.5-kilometre radius, many parks, balconies, back yards, gardens, and public spaces that should be safe for residents and taxpayers to use.

I do not want BWXT to continue operating in my neighbourhood or anywhere in Toronto. The risk is too great. Beyond the simple risk of residents inhaling harmful particles, there is also the risk of accidents within or outside the facility, including fire, vehicular

accidents during transportation, train accidents or derailments as the facility is directly beside a major track.

As I was thinking about submitting my intervention, I received an emergency alert on my cellphone January 12th, informing me of a nuclear incident at the Pickering Nuclear Generating Station. It was reported as an error. I can understand that, as mistakes do happen. Things happen. Accidents happen, even with people's best efforts, intentions, and safeguards to prevent them.

A question to the Panel: What are some of the worst-case scenarios? And what impact would it have in the area? For example, an explosion, fire, faulty technology or human error, a terrorist attack, train derailment.

And a question I would have for BWXT as well is that, you know, given the challenges or the difficulty of communication, if something were to happen, how would I know that I need to evacuate my family?

I do not want BWXT or any other nuclear fuel manufacturing facility operating in my neighbourhood. And we would sincerely appreciate if you have the well-being of your citizens as the absolute and only

priority in your decision-making. There are more isolated, less-densely populated locations for BWXT to operate. They must move.

Thank you.

THE PRESIDENT: Thank you, Mr. Fernandes. I hear your concerns and your anxiety.

Did you attend the Meet the Regulators session that the CNSC had arranged?

MR. FERNANDES: No, I was planning to make it, but I was not able to attend.

THE PRESIDENT: Okay. Dr. McKinnon?

MEMBER MCKINNON: Yes. Thank you very much for your comments.

I'd like to address the concern you have about inhaling particles. So I'd like to ask the CNSC staff: What are the health effects of inhaling one or very low levels of uranium particles?

And related to that, just as we have natural background levels of radioactive materials in soils and rocks and so on, what are the background levels in air, or if they can be measured, can you comment on that?

MS TADROS: Haidy Tadros, for the record.

So I will ask our environmental protection

specialists, human health specialists who are in Ottawa to take both your questions with regards to the health effects and the background effects.

Just a point of note, we have about a 15-second delay between when I ask Ottawa to speak, and then when we hear them. So they're not -- they're standing by.

Ottawa, please go ahead.

MS RANDHAWA: Kristi Randhawa, Radiation and Health Science officer, for the record.

So your first question was regarding the effect of inhaling one particle of uranium. So if we look at the dose of inhaling one particle of uranium, or even the probability of that one particle uranium getting lodged within the lungs, the dose over a long period of time would be very, very small. We're speaking to less than 0.001 microsieverts. And the cancer risks at these very small doses would be negligible.

When we look at studies of workers who are exposed to uranium, we see very weak associations between uranium exposure and lung cancer, and there's no evidence that there's a causal association between this exposure.

For other types of cancers, there is no

evidence to support an association, as well as for non-malignant diseases, there is no evidence to support that as well.

And can I ask for some clarification on the second question? It was regarding background levels or background doses.

MEMBER MCKINNON: Yes, it was my curiosity, because in the reports we are shown levels of background concentrations of uranium in soils, for example. But I didn't see anything to indicate what the general background level -- if there was no plant here, are there measurable background levels of uranium in the air.

MS RANDHAWA: I would like to pass that question to one of the environmental protection specialists in Toronto.

MS SAUVÉ: Kiza Sauvé, for the record.

So my first response was that we know that the background dose in Canada is about 1.8 millisieverts.

To get the air number, actually, I went just quickly to the CNSC website, where it breaks it down. And so I can tell you in Canada the inhalation dose is on average 0.9 millisieverts, so almost the same as our dose limit that licensees have. And that's just from living in

Canada, from the inhalation dose. There's also cosmic radiation, terrestrial background, and just your natural radionuclides in the body that add up to that 1.8.

So 0.9 is the inhalation dose.

MEMBER LACROIX: So what you're saying is that if you walked by that plant, you would be getting no more exposure than anywhere else in the city?

MS SAUVE: Kiza Sauvé, for the record. That's correct.

THE PRESIDENT: Dr. Demeter?

MEMBER DEMETER: Okay, thank you very much for your intervention.

I will address all the emergency questions when we have emergency services available and fire this afternoon, because I want to know as well worst-case scenario and so forth.

I just wanted to know from you whether you ever received any of these flyers that had been discussed that are being sent out three times a year?

MR. FERNANDES: I have received a flyer. I received one recently. And to be honest, I don't know if I've received them in the past. I do look at all my mail, even the junk mail, Canadian Tire flyers included. Nothing

from my memory.

I know it would not have given me the notice that I think as a resident I would need. I mean, sure, it's nice to know about barbecues, but I need to know just plain facts, you know. We are a facility that stores 700 tonnes of --

MEMBER DEMETER: Well, again, thank you --

MR. FERNANDES: -- radioactive material.

MEMBER DEMETER: -- for taking the time to --

MR. FERNANDES: So I have received one --

MEMBER DEMETER: -- come. I appreciate your intervention.

MR. FERNANDES: -- recently that I know of, to answer your question.

THE PRESIDENT: Before I turn to Dr. Berube, you know, the 700 tonnes and the 150 are your limits. What are your actual levels kind of like?

MR. SNOPEK: Dave Snopek, for the record.

I don't have that number right in front of me, but it's much smaller than the 700. It of course varies with production, but it's much small than the 700 number in actuality.

THE PRESIDENT: When you say "much smaller," it is like 10 per cent of it or 50 per cent of it? Just --

MR. SNOPEK: Approximately 10 or maybe 20 per cent.

THE PRESIDENT: Thank you.

MS TADROS: President Velshi, if you'd like the numbers, Julian Amalraj has those numbers.

THE PRESIDENT: Thank you.

MR. AMALRAJ: Julian Amalraj, for the record.

BWXT processes approximately at 50 per cent capacity for -- of the 150 megagrams. And in terms of the storage on a monthly basis, they are around 10 and 20 per cent typically that they keep.

THE PRESIDENT: Right, thank you.

Dr. Berube?

MEMBER BERUBE: Thank you for your intervention. I take it this is your son here. So welcome. I will just wave to him.

My question is for CNSC staff.

Looking at the safety case analysis for the facilities, you are obviously very aware of what the

risk hazards are and probably the worst case scenarios and also the probabilistic outcomes of that.

Looking at the Toronto facility, what is the worst case scenario and what is the probabilistic outcome of that?

MS TADROS: Haidy Tadros, for the record.

I will pass this question to our safety analysis specialist in Ottawa, who have done exactly that.

MR. BURTON: It is Patrick Burton, for the record.

If we had to put out one single worst case scenario, I would say that that is a large fire. So any time that we're talking about risk, there are two components to that. There is the probability of that event occurring and then there are the consequences of that event occurring.

So looking at the values that are in BWXT's Safety Analysis Report for the Toronto facility, the assessment of a large fire is about one in every 5,000 years. I believe they in fact had some numbers in their presentation regarding the emissions that could take place if such an event occurred.

In our assessment those numbers are at

levels that remain protective of human health as workers and the public and the environment should such an event occur.

MEMBER BERUBE: Just to expand on that a bit, in the event that such an event did happen what training do you give your on-site firefighting staff to actually deal with this kind of a situation.

MR. SNOPEK: Dave Snopek, for the record.

So we have a fully developed emergency response plan that involves both immediate and continued response by our staff, but also the involvement of the Toronto Fire Department.

We work very closely with the Fire Department. We did a lot of work in the last couple of years in developing the program alongside the Toronto Fire Department, and we did several exercises with them to practise the response of the new plan.

So internally we do support with our staff doing several functions within what we call our Emergency Response Organization, and all of that staff is trained to the specific tasks that they are going to be assigned to do, or that they could potentially be assigned to do over the course of the emergency.

THE PRESIDENT: Dr. Lacroix.

MEMBER LACROIX: Thank you, Mr. Fernandes, for your presentation.

In your submission you seem to be concerned about what insurance is currently in place. What are you referring to: commercial insurance or liability?

MR. FERNANDES: Insurance in general, liability mainly. If something were to happen to me, my home, what kind of coverage, what kind of protection do I have?

I purposely left that out of my verbal piece. But yes, that was my concern.

MEMBER LACROIX: BWXT, could you answer this question?

MR. MacQUARRIE: It's John MacQuarrie.

Just to clarify, is the question: What insurance do we have in place?

MEMBER LACROIX: I presume that you do have commercial insurance.

Also, are you under the NLCA, the *Nuclear Liability and Compensation Act*?

THE PRESIDENT: Let me clarify the question that many intervenors have asked.

In the event there is contamination that goes off site, what kind of remedies can the public expect as far as clean-up and what would your liability be for making sure that happens?

MR. MacQUARRIE: So we are responsible, if there was an event, to clean up the event. We do maintain insurance for liability for off-site injuries or damage to property. It is considerable. We also, regardless of that insurance, are a substantial corporation that maintains a capability to respond to that type of situation.

So we feel we are quite well protected for any postulated event that could happen.

THE PRESIDENT: Mr. MacQuarrie, you mentioned a letter that got issued after the last hearing because this had been an issue that was raised then too.

Is that what this letter says as well?

I think staff made reference to it.

Is that what is covered in the letter as to what BWXT's liability is and how they would honour that obligation of clean-up?

MS TADROS: Haidy Tadros, for the record.

So the letter that CNSC staff received was a confirmation that BWXT has liability insurance through

their corporation and that that liability insurance has been estimated by a third party to be accurate for the businesses that they currently conduct.

It does not give a number because that is for BWXT's information, but it does provide assurances to staff that from a corporate perspective BWXT is covered in any situation with regard to on-site/off-site liabilities.

THE PRESIDENT: So given how extensive this is an area of concern, would it not be worthwhile for BWXT, for you to put it on your website and whatever other means of communication you have, and CNSC for us also -- and maybe it is a frequently asked question and here is the response: that in the event, in the unlikely event that there is off-site contamination that you would look after remediating that and give the public reassurance that they are looked after?

MR. MacQUARRIE: It is John MacQuarrie.

Yes, it is reasonable for us to put that on our website and to provide the information we provided in the letter to the CNSC staff.

THE PRESIDENT: Thank you for that.

And staff, maybe a clarification for something you had on one of your slides around financial

guarantees and that the Commission could order BWXT.

But I somehow read in the slide -- it's not in your written CMD -- that we could actually access the financial guarantee to do that clean-up in the event BWXT didn't honour that obligation.

And I don't think that is quite correct. They are financial guarantees for decommissioning only. Isn't that correct?

MS TADROS: Haidy Tadros, for the record.

That is correct. The financial guarantee that is in place for BWXT and the proposed financial guarantee that is before the Commission is for just that: decommissioning and decommissioning alone.

The reference to the NSCA was to provide confidence that for whatever situation, hypothetical as it may, the *Act* provides authorities to the Commission to be able to access financial guarantees, perhaps not this one, to ensure that there is moneys available for the purposes of the *Act*.

THE PRESIDENT: Yes, it was confusing. I found it confusing.

Mr. Fernandes, you have the last word.

MR. FERNANDES: So I can't speak for

everybody in my neighbourhood, but I know for certain that a lot of people just don't know. And if they did know, I'm sure that the number of interventions you would have received would have been much higher. I'm certain of that.

I mean, I'm not questioning BWXT's efficacy or their ability to function. I'm sure they do a great job. I just don't think it's the right place to do it. To me, it just doesn't make sense.

I understand that probabilities are low. Even if one particle goes in the chances of cancer are very, very low. I understand and respect that. I am sceptical of some of it, for sure. It's just a particle that would be in my lungs that would not be there if they were not there, should not be there.

It's just a basic concept of it just not being in the right spot. It's such a hugely densely populated area. It may have been okay or acceptable 50 or 60 years ago, however long ago, but it just isn't right now.

I can only imagine the number of financial implications here, given that BWXT earns well over \$1 billion a year and political influences and pressures.

Madam President, you mentioned that the

sole purpose of the Commission was to represent the community and the public. So in my mind it's a very clear decision. I hope that you will keep what I say in mind and make the right choice.

THE PRESIDENT: Thank you and thank you for your intervention.

I think your son is getting a bit impatient.

--- Laughter / Rires

MR. FERNANDES: Yes. Thank you.

THE PRESIDENT: Okay. The next presentation is by Ms Janine Carter, as outlined in CMD 20-H2.65.

I guess Ms Carter isn't here.

Is our next one -- okay.

Then moving right along.

We have Ms Ursula Medeiros, as outlined in CMD 20-H2.215, as our next intervenor.

We will turn the floor over to you once you have settled in. Thank you.

CMD 20-H2.215

Oral presentation by Ms Ursula Medeiros

MS MEDEIROS: Good morning. I don't know if it's still morning here or is it afternoon?

THE PRESIDENT: Afternoon now.

MS MEDEIROS: My name is Ursula Medeiros and I'm here to just voice my concerns as to why I feel BWXT's licence should not be renewed.

I have lived in the City of Toronto for over 30 years, and it was alarming for me to learn that BWXT, a uranium processing plant, is in my neighbourhood and I did not even know that it existed.

I have also worked for GE and I didn't even know that a plant labelled or listed as GE Hitachi was a uranium processing plant.

It was through fliers that I was handed out at the bus stop, a young gentleman who raised the awareness to me. A greater concern is that my daughter -- a greater concern is that my daughter and my granddaughter recently moved to the neighbourhood and her condo is kitty-corner to the uranium plant.

She would not have purchased her dwelling,

just like many other folks have said, if she knew this plant existed.

When visiting my granddaughter a fun thing she loved to do with me was to go to the park to play and show off her strength on the monkey bars and her cartwheels. Now going to the park within the area concerns me and I'm scared and I'm confused as her health is now at risk.

She recently was diagnosed with diabetes and she is only a child. I will never know if this is the cause of the uranium plant, and I'm sorry to have her go through this in her young years as a five-year old child.

The majority of the neighbourhood is made up of families and schools, meaning BWXT is exposing children to these risks. Can BWXT guarantee 100 percent that no risk is involved to the health of the community, of the children and the people who live in this neighbourhood?

Yes, the statistics that are provided indicate that the levels are safe, although I am not 100 percent confident and exposure to contaminated air and inhaling the powder of the uranium has been confirmed that it could be, could be, health issues by entering the lungs and damage to other organs, kidneys, even causing cancer.

Inhalation, I know it was indicated that the one particle cannot completely, the levels are so low, but I still do not believe in this. The inhalation of uranium dust, even the one particle, who is to say that that cannot affect the child or the adult. Depending on the person's health to begin with, it could be.

Even though the stats indicate they are safe, exponentially on a daily basis for those who live within the area, especially my daughter who lives kitty-corner, I believe it increases these risks.

How can the government allow people in this city to be exposed to the possibility of toxicity in our water, soil and air? The dangers that come from over-exposures or repeated exposure are dangerous and can be fatal.

Also the other condos, but my daughter's condo, overlooks the railroad tracks. It has been mentioned that there are emergency processes in place. What would happen if the train derailed because her condo right overlooks the railroad track?

How safe are the people within these condos? What would happen if there is a train derailment to the people living in these condos? Are they aware of

the transportation routes? Does BWXT provide communication to residents about how the materials are transported, if it's via truck, if it's via train?

If it is via train, you indicated that there is emergency processes in place. I do not believe that people are aware of this.

And secondly if there is deliveries by truck, how frequent are these deliveries made and are the tests for the air quality done at the time when there is completely no deliveries for a long duration? What would happen if the air quality tests would be done when the deliveries are made and materials are distributed into the plant on that day? How high would the levels be? Would they be any different?

Or even if they did tests of the levels in the air within a week from there, would the levels be the same?

There is many uncertainties, I think, from the tests, I believe just from my own belief. I do believe that these tests that are done, are they done only by BWXT or is there outsourcing done by other companies?

If it's only done by BWXT, then are these tests hiding something from the public?

I do believe also that with the emergency procedures that are in place, yes, all these measures and precautions are taken. But there's always a chance of human error, even with expert skilled employees and environmental factors that can also affect chances of let's say explosions.

We are not safe with this plant being so close to our community, but as well as such a big city as Toronto.

I was wondering, it would be interesting to find out if a poll was done within just the residents within the community, how many of them are aware, because I've been living here for so many years and everyone I speak to, no one is even aware that this plant exists in the City of Toronto.

I personally would like the Commission to review the renewal of this contract. I do not welcome BWXT to stay. I would be pleased to hear that this plant would be shut down and moved to another location.

Thank you.

THE PRESIDENT: Thank you.

Dr. McKinnon.

MEMBER MCKINNON: Yes. I would like to

ask a question of the company.

Thank you. You raised a number of very interesting points. One of them is communication and another is emergency preparedness and emergency planning.

We heard that in the community many members are unaware of the plant. However, if there were to be, in your worst case scenario, planning any incident, would it involve any required response or impact on any of the neighbours?

In other words, would they be stakeholders in the response?

I'm just wondering how you would plan to communicate to them if such an event were to occur.

MR. MacQUARRIE: It's John MacQuarrie, for the record.

In all of the accident scenarios that we have analysed, we have not seen the impact of those to be such that the community members would be required to either shelter in place or evacuate. So no need to take action by the community members.

So in our planning for those events and in preparedness for those events we haven't seen the need to involve the community because they are not required to take

any action.

MEMBER MCKINNON: Even for something like the train derailment that you mentioned in the presentation?

MR. MacQUARRIE: Yes, that's correct. So in the case we've analysed a train derailment we've looked at how such an event might happen. We worked with CP Rail, who manages that rail line, to understand how an accident may happen.

We consider that our building where we actually process the pellets is close to that rail line, so there could be an impact to our building there. Probably the worst case that we can foresee would be considerable structural damage to that facility, perhaps a fire.

And those events, as I presented in my presentation this morning, can cause a small release of uranium into the community. But in those cases, by our analysis, it's not significant enough to cause the community members to have to take action.

MEMBER MCKINNON: Okay. And I guess the other side of that is that if something does happen, even if it's contained and doesn't involve the community members, they are probably very aware that something has

happened. Some of them are aware that you are a nuclear facility so they might be even more concerned.

Would you have any plan in place to assure them, communicate to the neighbours and assure them of what happened? In other words, do you have a post incident plan of communicating to the neighbourhood?

MR. MacQUARRIE: So under our public information program we do communicate events. Certainly something like that would be communicated in various ways.

So yes, the answer to your question is we would communicate that.

THE PRESIDENT: Dr. Demeter.

MEMBER DEMETER: Thank you for your intervention.

Again I will reserve some of my questions on an emergency fire here to deal specifically with incidence evacuation scenarios.

For CNSC staff, could you confirm that the potential initiating event for an accident at the BWXT plant is related to a train derailment that impacts -- that's been factored into your emergency planning to include root causes that are related to train derailments, potential -- what's being carried, whether it's flammable

or inflammable, that's part of the picture?

MS TADROS: Haidy Tadros, for the record.

So, yes, rail derailment, rail accidents were factored into the safety analysis report and I would ask our specialist in Ottawa to speak exactly to the kinds of scenarios that were looked at.

MR. BURTON: I can confirm that train derailment scenario impacting Building 7 were considered in BWXT's safety analysis report. And I'll draw everyone's attention back to BWXT's deck where they actually have the table which lists complete building collapse as one of the scenarios that is a possible outcome, so that's a linkage to the analysis that was done in terms of the train derailment scenario and we assessed that as being conservative.

It's difficult to know what type of damage might result from a train derailment scenario and so BWXT has done the right thing and assumed the worst case.

THE PRESIDENT: Dr. Berube.

MEMBER BERUBE: First of all, thank you for coming. We appreciate that it takes a tremendous amount of courage to walk in and speak in this kind of environment and it can be quite daunting, so we appreciate

that you've made the effort and taken the time to come and speak to us; it's deeply appreciated.

The questions I have are about general operations, I think. We're looking at worst case scenarios and stuff like this but every day in and out of BWXT you're taking materials in and you're moving materials out. Could you describe to me basically what your primary transport systems are for bringing in uranium and exporting pellets, which is what you're doing?

MR. MacQUARRIE: It's John MacQuarrie, for the record.

So, uranium comes to our facility via road, via transport truck, a tractor-trailer. It's delivered in, if you recall my presentation, the drums that are sealed drums and inside those drums there's a bag, such as a plastic bag that has the UO₂ powder inside that. It's received into our facility and stored in a protected area in that part of the facility. So, that's how we receive.

Then, once the pellets are finished and ready for transport to Peterborough they leave in the same area, via transport truck. They are packaged in trays and stacked on top of each other and then wrapped and sealed, stored on a special transport truck and they are

transported by road to the facility in Peterborough.

MEMBER BERUBE: CNSC, if you would please, could you give me some understanding of how safe these containers are in terms of transport?

MS TADROS: Haidy Tadros, for the record.

We have our transport specialists who are standing by in Ottawa, as well, to give a perspective of how the containers are certified and how they are used from a safety perspective.

MS OWEN-WHITRED: Karen Owen-Whitred, for the record. I'm the director of the Transport Licensing and Strategic Support Division.

Transport is governed, first of all, by Canadian regulations which are themselves based on international regulations which have been around for many decades and are periodically reviewed and if necessary updated by the international community, and then Canada, in turn, reflects those requirements within our domestic regulations.

In terms of the safety, it's the underlying principle is that we address safety based on the nature of the material being transported. The requirements get more strict as the risk presented by the material being

transported increases.

In the case of the material being transported by BWXT it's actually one of the lower risk materials that you would consider transporting. So, as has already been discussed, it is transported effectively in drums. And the analysis that's done shows that under normal conditions as well as under accident conditions the radioactive risk posed by that material is extremely low.

THE PRESIDENT: What has been the track record of BWXT when it comes to transportation? Have you had any incidents?

MR. MacQUARRIE: John MacQuarrie, for the record.

We're had no significant incidents. In recent past the transport truck was in a minor collision but there was no significant damage to either vehicle. And as far as I'm aware, there has been no other transportation events in our history.

THE PRESIDENT: Thank you. Dr. Lacroix.

MEMBER LACROIX: Staff, you discussed the possibility of a derailment, so that means that there is a railroad that passes near the facility; am I right?

MS TADROS: Haidy Tadros, for the record.

That is correct. It was actually in one of the pictures when we showed an aerial view of the facility itself.

MEMBER LACROIX: And on this railroad circulates trains that transport all sorts of substances, chemical substances?

MS TADROS: Haidy Tadros, for the record. That is correct.

MEMBER LACROIX: So that has nothing to do with BWXT per se; it's a public railroad?

MS TADROS: Haidy Tadros, for the record. That is correct, it is a commercial railroad that brings goods in and brings goods out.

MEMBER LACROIX: And are there hydrocarbons that circulate on this railroad?

MR. AMALRAJ: Julian Amalraj, for the record.

Yes, you could have hydrocarbons transported on that railroad. It is operated by Canadian Pacific.

MEMBER LACROIX: So it poses a risk to anybody in the City of Toronto? I mean, it could derail anywhere?

MR. AMALRAJ: That is correct.

MEMBER LACROIX: Okay. Okay, thank you.

THE PRESIDENT: Okay, anyone with an -- maybe a question for staff. Ms Medeiros has raised a concern about her granddaughter being diagnosed with diabetes and if that was in any way related to the BWXRT operation. Can you folks comment on that, please?

MS TADROS: Haidy Tadros, for the record.

We will have a public health authority available to us at one-thirty and definitely something for them. But, perhaps I'd ask our specialist in health and radiation effects in Ottawa to potentially talk about what the science is telling us.

MS RANDHAWA: Kristi Randhawa, Radiation and Health Science specialist.

So, no health effects other than kidney damage have been consistently found in humans after inhaling or ingesting uranium compounds. And this is only at very significant exposures. So diabetes is not associated with these exposures or radiation exposure.

THE PRESIDENT: Thank you. Ms Medeiros, over to you for any final comments.

MS MEDEIROS: Just about the air testing.

In the transportation, like how frequent is the air quality tested once materials are being uploaded or brought into the premises? Have testing been done at that particular time and what would the levels be versus having the air emissions tested at periods where not -- where the materials are not being loaded or unloaded at the premises? Have these tests been done at very specific times at the -- or at various times within the --

THE PRESIDENT: Okay, question for BWXT.

MR. SNOPEK: Dave Snopek, for the record.

With respect to transportation I just want to paint a little bit of a picture. These aren't bulk materials that are being delivered by like a rail car, open-top dump truck. These are in non-dispersible form inside a transport truck. So, for example, we receive powder in drums. The transport truck connects to our loading dock right directly to our building, at which point it is opened and the material is offloaded drum by drum. So, there's really not potential for dust generating processes associated with transportation of raw materials into the plant, and similarly with pellets being transported out of the plant.

That said, we do air monitoring both

inside the plant and we do air monitoring at the perimeter of the plant with our boundary air samplers, and those are run 24/7. So, through all operations we're doing that air monitoring.

THE PRESIDENT: Okay, thank you. Thank you very much for your intervention.

We'll now break for lunch and we'll resume at two o'clock. Thank you.

--- Upon recessing at 12:58 p.m. /

Suspension à 12 h 58

--- Upon resuming at 2:01 p.m. /

Reprise à 14 h 01

THE PRESIDENT: Good afternoon. And we are ready to start moving again.

The next presentation is by Dr. James Deutsch, as outlined in CMD 20-H2.81. Dr. Deutsch, the floor is yours.

CMD 20-H2.81

Oral presentation by James Deutsch

DR. DEUTSCH: Thank you. I appreciate the opportunity.

So I'll apologize to the translators that I'm -- really I've been thinking about things up until this morning, so I don't have a text that I'm going to read from entirely.

And I have to rush back to the clinic shortly after this, so I appreciate those of you allowing me to go in front of them.

So first, a bit about my background in science. I'm not an expert on the current subject but my experience has been literally hands-on. In my PhD and post-doctoral studies in biochemistry at Cal Tech and the University of California at San Francisco Medical Centre I was working regularly with radio isotopes mainly Alpha and Beta emitting, so the point being that measuring that with a Geiger counter doesn't get you very far.

I had first-hand experience of lab accidents that happened from time to time over the years with these radioactive compounds. And more recently, in my

MD and post-MD work I've been involved in the critical review of policies and procedures and medical ethics. The issue of trust is central to my work.

Also, I live not far downwind from this plant and I have an adult child who lives also not far downwind.

In 2013 I requested a meeting with Toronto Public Health and the chair of the Board of Health of Toronto about this plant when it was under the ownership of GE Hitachi. They would explain basically there are standards, therefore, it must be safe if they are under the standards. They didn't really seem to engage on how do these standards arise. So it's like some diagnostic categories in my own medical field, standards are often decided upon by committees, by consensus.

Globally, the International Atomic Energy Agency and the World Health Organization colluded -- this was in 1959 -- in restricting the research and dissemination of information that could interfere with the nuclear industry. So, this kind of - this is a big red flag for me.

There are similar things going on in the medical field about the reproducibility crisis and the

availability of research that's published.

Today, I feel, is a pro forma exercise; I've been to this kind of thing before and I'm not expecting very much to come out of it. And I've got to stay within my time but I'd like to ask for a moment of silence for all the victims of the nuclear and weapons industry thus far and for the thousands of generations after us who will have to suffer the consequences of the decisions that have been made in a relatively short period of human history.

--- Pause

DR. DEUTSCH: Thank you.

I'll speak to the good and caring people who have come here to witness this proceeding and to support each other, as well.

I'd like to talk about the nuclear fuel chain. It's not a cycle because it doesn't go around to the beginning again. It's a chain from mining on indigenous lands that have not been involved in free prior and fully informed consent. It passes through various communities. It ends up here and then it goes on elsewhere and ends up in reactors, and over 200 new radioactive isotopes or elements are created from the process.

There is no safe plan for the waste. Someone likened it to building a skyscraper without toilets.

Further, and I'll get to this around BWXT, but the nuclear weapons are being revived and redesigned and the Bulletin of the Atomic Scientists puts us at 100 seconds to midnight, the closest it has ever been.

I'd like to talk about disinformation and misleading information. The industry regulatory complex exploits the cognitive and emotional vulnerabilities in the public in all of us, namely, that radiation is invisible; what you can't see can't really hurt you; that the lifetimes of radioactive elements are vastly greater than our imaginations can comprehend so it kind of overwhelms our ability to think about that sometimes. It confuses us between radiation from outside the body and radiation from inside the body. And these terms of high dose and low dose or high level and low level, etcetera, and that uranium is natural, that kind of implies it's organic, you know, it's good for you; you get it at the health food store. That kind of word is not meaningful.

Further, one of the public health agencies focussed on our collective anxiety, that that's the

problem; it's not the actual radiation but it's the anxiety that we have about it. And their job is focus on real biological safety.

I came across this book in the library at U of T where I teach, it's called *Building, Measuring and Improving Public Confidence in the Nuclear Regulatory Workshop Proceedings*, Ottawa Canada, May 2004. And a very young chair, Linda Keen, at that time emphasized to the international group that was collected together that public confidence is the main emphasis that they need to think about.

There are many examples of communities that have been falsely reassured and deceived and I won't go over all the history. But, the history of nuclear science is, I think, good to touch on briefly.

In terms of our own bodies and whether we're safe or not, it was physicists in the field of health physics who pioneered that area, but they weren't biologists. There were also geologists and this comes up when you think of what to do with the nuclear waste. And, then the life sciences which I have participated in.

Since the last hearing there have been spectacular advances in the understanding of complex

biological systems, the genetic repair mechanisms, epigenetics, immune function and regulation and the weakening of bodily defences and transgenerational effects. And also the notion that sometimes radiation exposure can be synergistic with other processes that are going on so you get a kind of more than additive effect.

In this era of the Corona virus I think it alerts us all to think about what actually happens in biology? What happens in our bodies? What can we do about it? Human lives and health are at stake. How much of this knowledge has been incorporated, the new knowledge I refer to?

In my view, the present site here, the BWXT plant can be seen as a case study in medical ethics on a large scale.

Now, to the community concerns, a lot of people have been talking about that it's a growing residential area. It wasn't at the beginning. The railway tracks go right by. The oil trains from the shale go by, the one that derailed in Lac Megantic passed by here. So, basically, this neighbourhood is a profit centre for an American corporation with the neighbourhood absorbing the externalities, especially in the event of such a

catastrophic accident.

With regard to BWXT, they're involved in nuclear power and the nuclear weapons industry. None of this is safe. And nuclear power is not helpful for the climate emergency -- and I won't go into the small modular reactors; there's a lot on that, as well.

Safety standards that have been provided by BWXT look to me like boiler plate and generic.

In terms of regulation, there's CNSC, Occupational Health, Public Health and the Courts; they all deal with a mandate to monitor and to control and to make rulings and decisions in a climate of political and other pressures and expectations.

In terms of the environment and regulation in general, regulatory bodies, I'll quote from an organization in the States,

"The current environmental regulatory structures are mostly about permitting certain harms to occur. They act more to legalize the harmful." (As read)

And this is not just your body, it's any regulatory structure. In other words, rather than

preventing harm, your job is deciding how much harm is acceptable based on what I would call inadequate information.

So my time is running down, but regulatory agencies deal in standards under government and industry influence and public scrutiny. What can result is a defensive identification with a professional class -- and I've been part of this, too -- whistleblowers are often outcasts.

I would remind you of the precautionary principle and the responsibility, and I think the whole situation has the makings of a Shakespearian tragedy. You, the Panel, as tasked with three contradictory missions:

- 1) To promote nuclear power;
- 2) To facilitate Canada's role in its global marketing and disseminating of what I would say are bomb capable nuclear reactors; and
- 3) To regulate and keep us safe.

Now, 3) is the one that I feel is most important. As a doctor, that's my primary goal, but I have to adhere to hospital procedures and everything else.

I am out of time now, but I want to talk about and just basically remind you of fully informed

consent and don't just move it elsewhere. This whole nuclear chain is harmful to humanity and future generations and needs to stop.

And the jobs, well, there are so many things to be done in this climate emergency and they should be good paying and have benefits and all of that. So thank you.

--- Applause / Applaudissements

THE PRESIDENT: If you didn't hear me this morning, no applauding, please.

Let's start with Dr. Demeter.

MEMBER DEMETER: Thank you very much. I have a question for the presenter. Thank you very much.

But first of all I will get some confirmation from CNSC staff of how you calculate the public dose and whether that includes both external and internal radiation sources. And then I will ask a question to the engineer.

MS TADROS: Haidy Tadros, for the record.

I would like to ask our environmental protection specialist to take the question on public dose.

MS SAUVÉ: Kiza Sauvé. I'm the Director of Health Science and Environmental Compliance Division.

The public dose at the Toronto facility includes gamma and air. So the air is an inhalation, so both external and internal, yes.

MEMBER DEMETER: So for the intervenor, the public dose to the public based on estimated internal and external exposures are .001 to .01 let's say, which is equal to 1/10th to 1/100th of a dose of a chest X-ray. So what risk are you -- I mean we have to limit -- I mean I am limiting my question to this intervention and this licence before us. This is the risk to the public. Can you put that into some perspective with your intervention, 1/10th to 1/100th of a chest X-ray?

DR. DEUTSCH: I know what that means and I also have to say I don't know what that means. We are in an environment where there is so much confusion of terms and how things are measured, but I'll use someone else's analogy. It's like, you know, you have a nice warm fire and you are sitting in front of it and it's warming you up. So let's say that somebody says, "I want you to swallow one of the coals from this fire, one of the hot coals", well, that is going to go to a certain part of your body. So I don't even know what that means.

And I don't really trust health physicists

who consider a body as kind of a unit of mass that would -- you know, in a sense, by implication, that the internal dose would be kind of distributed through that mass. You really have to look at where that particle goes, what is going on there physiologically, what is going on in that person in terms of DNA repair mechanisms, immunity and, you know, what else is going on healthwise for them.

We do know that we live in an environment where we are in generally a weaker state of bodily defences than we were in the past. Of course there were other pathogens back then that we had no defence against and we are a lot better off now, but in general you are seeing a lot of autoimmune diseases, unexplained illness, you know, undiagnosed syndromes in patients. I see a lot of that in my work. I am at Sick Kids and at another centre as well.

MEMBER DEMETER: Just to follow up with staff for a second. Your modelling for the internalized dose, does it include characterization by isotope and biodistribution?

MS SAUVÉ: Kiza Sauvé, for the record.

So I am getting that yes it does. I'm hoping that we can go to Ottawa and we can get Bert Thériault, who might be in the room, to give you some more

information, but my understanding is that it does.

MR. THÉRIAULT: Bertrand Thériault, for the record.

So the way that the dose to the public is calculated, first of all, is that an individual -- they look at all age groups. Infants, children and adults are standing at the fence line of the facility 24 hours a day, 365 days a year. For the BWXT facilities, about 90 percent of the dose is actually from external dose from material on site and about 10 percent from material taken into the body. The dose from internal -- the internal dose takes into account the amount of UO_2 that is taken into the body, the amount that is deposited in the respiratory tract, the amount that is deposited in all tissues and organs up until age 70 for infants and adults, and for 50 years after the intakes for adults.

MEMBER DEMETER: So as I understand, the internal dose that is calculated takes into account biodistribution in specific organ or tissue weighting components. Does that give you any more comfort?

DR. DEUTSCH: No, it doesn't, because, first of all, I would really be interested in how you come up with such a measurement. That is a pretty complicated

thing.

But secondly, I am talking about a person who happens somewhere and something gets inside. That's what counts. And it is not averaged over a year, but at that particular time. So let's say there was a specific release on a particular day and a person is going by.

I also note I am missing something about the decay products, specifically radon. And also, what about pregnant women? And women and girls, as we know, are more susceptible for various biological, physiological and genetic reasons. So, you know, you can go through the exercise of breaking that all down, but good luck, I don't think you are going to come up with a meaningful number for a particular person who happens to be living there or, you know, living there or walking by.

MEMBER DEMETER: My understanding is that the calculations are based on the most critical, vulnerable person and the biokinetic models are well established by international agencies such as ACRP and deal with all the decay products, as I understand from the answer, and deal with them up to 50 years decay in your body. So that is the science and that is what used, as I understand from the deliberations, to calculate these total doses.

THE PRESIDENT: Dr. Berube...?

Dr. Lacroix...?

MEMBER LACROIX: Speaking of radon, what is the contribution of radon in UO_2 -- the dose contribution from UO_2 coming from radon?

MS TADROS: Haidy Tadros, for the record.

I will ask our internal dosimetry specialist in Ottawa if he has the answer to that.

MR. THÉRIAULT: Bertrand Thériault, for the record.

So the dose from UO_2 consists of the dose from the three isotopes of uranium: uranium-235, -234 and -238. Now, as uranium-238 decays, it produces other radionuclides. The two short-lived ones, protactinium-234m and uranium-234, their doses are taken into account in the dose to the public. The next one after U-235 is thorium-230, but its half life is in the order of 100,000 years, so it would not build up in any significant amount. Whatever thorium-230 is formed, some decays to radium-226, again long-lived at 1600 years half-life, and then radon is produced from that. So the amount of radon produced is extremely small. There would be essentially no radon dose in this case.

MEMBER LACROIX: Thank you.

THE PRESIDENT: Dr. McKinnon...?

MEMBER MCKINNON: In your presentation you mentioned the precautionary principle and I think it's a very important one because there are certainly uncertainties in many things that we are dealing with. So I would like to ask CNSC staff to perhaps explain what the principle is briefly and if they could give a couple of examples of how it is used in setting limits and other factors.

MS TADROS: Haidy Tadros, for the record.

CNSC staff have spoken about this and we would be happy to provide a description. I would ask our environmental protection specialist to take that.

MR. RINKER: Mike Rinker, for the record.

I am the Director General responsible for Environmental and Radiation Protection at the CNSC.

So in general terms the precautionary principle is established in the *Canadian Environmental Protection Act, 1999* and it states that should an important or significant effect be predicted, one should not use scientific uncertainty to avoid mitigating that effect.

An example of where we would use that in

setting limits, we have evidence mostly through United Nations Scientific Committee on the Effects of Atomic Radiation, UNSCEAR, who has looked at levels of effects that would cause known carcinogens for example and you would see from epidemiological evidence that, you know, at roughly around 100 mSv in a year you certainly see the risk of dose versus health effects. Through precaution we have set out in our regulation a limit of 100 times lower than that, 1 millisievert per year per member of the public.

In addition, an extra level of precaution is the concept of ALARA, as low as reasonably achievable, where we require licensees to implement a program to further minimize and to continually optimize their facility to reduce exposures to as low as reasonably achievable.

It is through those programs that you see releases from a facility like BWXT in Toronto and in Peterborough to have dose consequences down in a few microsieverts per year. And so those requirements are our institutionalizing the notion of precaution.

THE PRESIDENT: I think we have someone from Public Health, Toronto Public Health.

Besides Dr. Deutsch, this morning we have heard concerns from other intervenors on things like there

is no safe level of radiation or inhalation of uranium dust at even really low levels could cause harm or even one single particle of uranium dust could cause lung cancer. Staff have commented on it. I wanted to get your perspective on how you would try to address those concerns, please.

DR. NAVARRO: Thank you.

My name is Christine Navarro, I am an Associate Medical Officer of Health and Healthy Environments at Toronto Public Health.

As we have discussed already, uranium is a naturally occurring substance in rocks and ores. You are going to have exposure to uranium and exposure to radiation in your day-to-day lives from background emissions. What is most important is always the dose, how much you are exposed to it, how long you are exposed to it before you start seeing any important health effects. With uranium, the health effects are associated with its chemical properties and not its radiological properties and particularly with natural uranium.

With the chemical properties, you will see the health effects more -- I'm sorry, you will see the exposures more with ingestion than with inhalation, and

really the most important health effect would be on the kidneys. You may see some change in kidney function in terms of like biomarkers like protein in the urine or glucose in the urine. Actually, this is on the balance of all of the information.

All of this information is available through an extensive review of the scientific literature. This is publicly available. If people would like to look at what the health effects of uranium are, they can look at the United States Health and Human Services website, the Agency for Toxic Substances and Disease database, and there is an excellent summary there available on the health effects of uranium.

THE PRESIDENT: Thank you.

Staff, do we -- I don't know how reasonable it is to expect members of the public to try to access that website. Do we have something on our website that would make it easy for folks to see? Independent of what the CNSC's is, it's research from other established scientific organizations on the effects of uranium.

MS TADROS: Haidy Tadros, for the record.

Yes, we do. We have countless scientific articles and abstracts, and CNSC staff in their expertise

and knowledge do participate in a lot of this research. Perhaps I will ask our health specialist in Ottawa if she can provide some detail as to what exactly is found on our website and how the public can access it.

MS RANDHAWA: Kristi Randhawa, for the record, Radiation Health Science Specialist.

So we do have epidemiological studies on our website that do include workers who work at these facilities. Specific to uranium exposure, we don't have studies that specifically look at outcomes such as kidney toxicity. So I don't know -- I'm trying to think if there is anything that would be relevant there. But if you look under Port Hope studies, those would be the studies were you would find those workers who work at those facilities.

Another good document is the UNSCEAR 2016 report. It does have an annex that provides all the evidence on uranium, worker studies in there and provides a good synopsis and conclusions of those health effects.

THE PRESIDENT: So I guess the short answer is there is nothing easily accessible on our website on effects of uranium, whether it's inhaled or ingested?

DR. DUCROS: Caroline Ducros, for the record.

Other than UNSCEAR, no, there is not, but that is a good suggestion that we can add. We can link to what the Public Health Authority has just identified and make that more available.

THE PRESIDENT: Thank you.

Dr. Deutsch, final comments from you, please.

DR. DEUTSCH: I have to say that my silence doesn't mean that I agree. I think there are many well-meaning people who work in this field and do the studies. What I am familiar with in my field of medicine is how much tunnel vision we can have in the specialties without -- you know, which keeps us from looking at the bigger picture.

You have numbers, you have studies that have been funded. The question is who funded them, how reliable are they. Again, we are experiencing a crisis in medicine looking at actually who funded studies and what other money is involved for the people who do the studies or ghostwrite them or sign on as authors who haven't read the data. So, you know, all of these studies would have to be looked at with this lens, and again, going back to the IAEA and the World Health Organization in 1959, the kind of

grand bargain that we are not going to look too closely at this stuff and we are not going to connect the dots too well.

I would leave it at that and I would echo -- I am not this kind of person, but my hero/shero Greta Thunberg who asks collectively of all the people who participate in this and they know that this stuff is dangerous all the way through the nuclear chain, as she said, "How dare you?"

THE PRESIDENT: Thank you.

--- Applause / Applaudissements

THE PRESIDENT: Please don't make me remind you, no clapping. We need to move on with our proceedings.

The next presentation is by Ms Priscilla Medeiros, as outlined in CMD 20-H2.206.

Ms Medeiros, the floor is yours.

CMD 20-H2.206

Oral presentation by Priscilla Medeiros

MS P. MEDEIROS: Hi. My name is Priscilla Medeiros. I am a single mother with a 5-year-old daughter.

I purchased my first property here at 1410 Lansdowne three years ago in hopes of creating a better quality of life for myself and my daughter. Two years after living here I found out that the building I look at from my balcony is a uranium plant.

What does this mean? Why wasn't I notified about this? Why is there a uranium processing plant in a densely populated city that is growing?

I began to spend some time researching this and I found some alarming information. Power plants, including the BWXT, produce uranium dust. The dust particles are emitted into our air supply and are highly toxic and carcinogenic. When inhaled, they can attack and impact our health in rapid ways, especially in children.

The Centre for Disease Control states, and I quote:

"Uranium is a toxic chemical that when ingested can cause kidney damage and its chemical properties way faster than its radioactive properties would cause cancer to the bone or livers." (As read)

This toxicity is what my daughter, myself

and other families in the area are breathing. On July 26th of 2019 my daughter was rushed to St. Joseph's Emergency (crying) (indiscernible) state. Her father and I were shocked when Dr. Sutton diagnosed her that she had developed type I diabetes. Since we have no family history of this illness/disease, we were told that environmental causes can trigger an onset of diabetes. I will never know if this was caused by the plant, but what I do know is that this could have been a contributing factor to a lifelong disease that my poor child has to endure that robs her of her innocence and a carefree childhood. I think the toxic plant in our community infecting our air will not by any means help her or any child, especially with an already compromised immune system. It will only make matters worse.

During my research I came across the story of another family who is similar to me, moved into the area with the knowledge of the presence of BWXT. They did not want to wait and take the risk to see what could potentially happen to their family's health, so they moved. But not everybody can do this. I constantly live in fear every day when I walk my daughter to school, Perth Public School, or play at the park or go grocery shopping that we

are breathing in chemicals that can cause serious illnesses that are irreversible and fatal.

I met other mothers in the schoolyard and informed them of the uranium plant in our community. Some had been living there for 14 years and had no idea. We have not even been given the knowledge or option to make a better choice for our families. How is this safe in our city? What proof do we have that your plant doesn't cause harmful chemicals in the air? What are the risks you are putting in our community?

Do any of you here on the Panel have children or grandchildren? How would you feel about letting your innocent children play in the neighbourhood park, knowing very well that they are potentially breathing in toxic air? All it takes is one fine dust particle to get into their lungs and there is no turning back.

This can all be prevented if BWXT leaves our city. As a community, we deserve to feel safe. We deserve to know the truth. Thank you.

THE PRESIDENT: Thank you.

Dr. Lacroix...?

Dr. McKinnon...?

MEMBER MCKINNON: I'm very sorry to hear

of the condition of your daughter, which brings me to my question for CNSC staff. Is there any -- are there any studies which would indicate if there is an underlying health issue whether there would be an increased susceptibility to any radiation exposure?

MS TADROS: Haidy Tadros, for the record.

So I will ask our health expert in Ottawa to take that question and perhaps we could hear from the Toronto Public Health Authority as well with regards to that. And I believe our Director General, Mike Rinker, may have something to add on the uranium as well to complete the picture of exposures and risk.

MS RANDHAWA: Kristi Randhawa, Radiation and Health Science Specialist, for the record.

In terms of susceptibility, we do know that children are more susceptible to some types of tumours. However, not all types of tumours are types of cancers. If you are speaking to other disorders -- is that what you are speaking to?

MEMBER MCKINNON: Yes. If there is an underlying condition, in this case diabetes. The question was more general, if it does increase if the body is ill by any means, if there is an increased susceptibility to

radiation exposure.

MS RANDHAWA: Kristi Randhawa, for the record.

There is no evidence that I am aware of that there would be an increased susceptibility.

DR. NAVARRO: First of all, thank you, Ms Medeiros, for sharing your story with us. I am sorry that you have had to go through this. I know it is very difficult, so I appreciate you expressing your concerns here in this setting.

Likewise, I am also not aware of any evidence that would suggest that there would be increased risk for health effects with, say, an immune disorder or other immune suppression.

THE PRESIDENT: Mr. Rinker, did you have anything to add?

MR. RINKER: Mike Rinker, for the record.

So what I was going to contribute -- and I am not 100 percent certain it's relevant to this particular intervenor who raised some important concerns -- was more on the development of the uranium standards that help us understand that the public is protected.

THE PRESIDENT: Maybe I will just add to

what has been discussed. The intervenor asks what proof do we have or do you have that the emissions from the BWXT facility is not causing any harmful effect?

MS TADROS: Haidy Tadros, for the record.

So one of the slides that CNSC staff had used was to try to bring a bit of perspective around sort of the health effects in terms of uranium and beryllium and the levels that are found from these facilities.

Perhaps Dr. Ducros can add as well.

DR. DUCROS: Caroline Ducros, for the record.

When we talk about evidence, we talk about the data that is submitted as part of annual compliance report and that data comes from continuous monitoring at the stack as well as perimeter monitoring. In Toronto there is also a more enhanced environmental protection program for the soils. So that is the evidence that we look at and assess and conclude upon to say that the levels that were presented in our slide where the emissions are quite negligible is based on that evidence. We check that through inspections and through desktop reviews that the reported numbers that we are getting are in fact what is happening. So we will do an inspection at the stack. And

BWXT can talk also about third-party reviews of their program.

THE PRESIDENT: And as I looked at the staff CMD, you talk about the Environment Impact Statement and the health studies and the incidence of different cancers and disease in the neighbourhood around the BWXT facility as compared to other areas in Toronto. Can you comment on that?

DR. DUCROS: Caroline Ducros, for the record. We can comment on that.

If you want a more in-depth response, Kristi Randhawa in Ottawa can talk about the comparisons with cancers in other areas, but we are not seeing any elevated levels in the surrounding areas for the Peterborough or Toronto facilities.

I don't know if you want to pass it to Ottawa.

--- Pause

MS RANDHAWA: Kristi Randhawa, for the record.

So we have in our EPRR report specific summaries that include the health data for the Davenport area compared to other areas of Toronto and we don't see

any significant differences in terms of cancer rates within this area compared to other areas in Toronto.

And I don't know, maybe Public Health Toronto, if they want to speak more to some of the surveillance that's done or some of the health monitoring that is done in the area.

THE PRESIDENT: Thank you.

DR. NAVARRO: So Toronto Public Health monitors a number of health status indicators across all neighbourhoods of the city. This is also available on Toronto Public Health's website. You just have to go to "Inspections and Monitoring" and then "Population Health Status Indicators" and you can search by your neighbourhood. This is just for the benefit of the intervenors.

So when we look at cancer incidence in Toronto overall, it has been decreasing since 2003 and it's lower actually than the rest of the GTA -- sorry, it's similar to the rest of GTA and lower than the rest of Ontario.

When we look at the age-specific rates, we see that for Dovercourt-Wallace Emerson-Junction the age-standardized mortality for all cancers is actually

lower than in the rest of Toronto as well as for the rest of Ontario. So it is also lower than in the rest of Toronto for lung cancer as well as other lower respiratory disease, hospitalizations and mortality.

THE PRESIDENT: Thank you.

Dr. Demeter...?

MEMBER DEMETER: Thank you very much for your intervention and thanks for sharing the story. I can understand the challenges of managing diabetes in a young child is not easy all the time.

I wanted to ask a question about another part of your intervention now that we have fire and emergency people here, about the hydrogen tank and I wanted to get a sense a worst-case scenario and impact on the neighbourhood. So the scenario being what is the worst-case scenario if that explodes -- in a way that's the worst-case scenario -- and given the blast radius, what is the impact on the neighbourhood?

MR. JESSOP: Good afternoon. My name is Jim Jessop, I am the Deputy Fire Chief of Operations for Toronto Fire Service.

We do not have nor have we calculated that information. What we have are standard operating

guidelines and training procedures on how to mitigate if a fire did occur with that tank, but I do not have the specific calculations you're asking me for.

MEMBER DEMETER: Then to BWXT, does anyone have that information, the worst-case scenario if that tank would explode through either a projectile or being set on fire? What is the worst-case scenario and the blast radius and the impact on the neighbourhood?

MR. SNOPEK: Dave Snopek, for the record.

So we have reviewed the hydrogen storage tank as part of our safety assessment report for the facility and that looks at what are the potential accidents that could take place. For those that are -- all of them are very highly unlikely.

The hydrogen tank is sited, installed, it complies with all the relevant codes, it is maintained in accordance with the codes and it is inspected routinely by the TSSA. So any events associated with the hydrogen tank in terms of leaks and fire, that sort of thing, are exceptionally unlikely events, in the neighbourhood of less than one in 10,000 years.

However, we have analyzed even low likelihood events and in terms of consequence, as

Mr. MacQuarrie said during the presentation, there are no events where there is structural damage to buildings onsite or offsite. So there are no uranium release consequences associated with the hydrogen tank.

In addition, there is no pressure wave that has the potential to injure persons, both onsite and offsite. There is a potential that there are broken windows as a result of a low pressure wave onsite and in the immediate area around the facility.

There is also, in the event of a fire -- so this is not an explosion of the tank, but if there is spilled material and there is a fire, there is a potential from heat from that fire, you know, it being hot. So there is a potential for exposure to heat both onsite and offsite, but the natural aversion reaction to the heat would be to go in increased distance, so we wouldn't expect serious injury as a result of that offsite.

MEMBER DEMETER: And again to CNSC staff, is there a way that we can have third-party validation that the worst-case scenario is as the licensee has stated? I thought that would maybe perhaps come from Emergency Measures and Fire that you have this huge tank, but to be honest I don't want to take their word for it, I want it to

be validated. I mean I know they have put the safety analysis to you, but how do we validate that?

DR. DUCROS: Caroline Ducros, for the record. I will begin and I will pass it to the safety specialist in Ottawa.

But the tank, its location, its construction, its design is all under the purview of the Technical Standards and Safety Authority, the TSSA. So they do the inspections of the tanks and they verify that it's still in good condition.

In terms of having that third-party assessment, I am going to pass it to the specialist in Ottawa to see how that's done or if that's done.

MR. BURTON: So it's Patrick Burton, for the record.

I will just reiterate what BWXT said about the tank being built to the appropriate codes and standards and being licensed and inspected by the Technical Safety Standards Authority. I will note that their safety analysis report, and specifically including the areas related to the hydrogen tank, was in fact prepared by an outside contractor, it wasn't BWXT who prepared that themselves. And I will just reiterate that when we receive

that type of report we carry out our own thorough technical assessment to make sure that we consider the information inside to be credible. So with respect to validation, I think that we fulfil that role.

MEMBER DEMETER: Thank you.

THE PRESIDENT: Dr. Berube.

MEMBER BERUBE: So I'm going to talk to the intervenor here. First of all, thanks for your presentation. I am going to ask you some questions that pertain to your heartfelt beliefs, which is something that is really important to get to here.

Is it your belief that this plant has had deleterious effects to yourself and your family's health and well-being?

MS P. MEDEIROS: I believe that every body is different, so we can't really say what is going to affect you is going to affect me, but if there is something that's toxic in the air like this and it takes one little particle, especially when you are a little child and everything is developing, you are more sensitive and then you don't even know in years to come if that is going to affect me still.

MEMBER BERUBE: So your general concern is

you just don't know what the impacts really are?

MS P. MEDEIROS: I don't.

MEMBER BERUBE: Okay. And let me ask you another question. I know you have been here all morning. Has any of this discussion actually helped assuage, reduce those fears, that concern?

MS P. MEDEIROS: Say that again.

MEMBER BERUBE: Has your experience this morning with all of these answers and all this questioning helped to reduce your concern or your anxiety over it?

MS P. MEDEIROS: Not really, no.

MEMBER BERUBE: Okay. And why is that?

MS P. MEDEIROS: I just don't -- I just don't believe all of it. I don't believe that, you know, if I am in the park for two hours a day or an hour a day that that chemical that we are breathing in doesn't impact the body in some way, especially if you are little and maybe you just were born a little bit more sensitive and then you don't get the chance to maybe outgrow that sensitivity.

MEMBER BERUBE: Okay. Thank you.

THE PRESIDENT: Dr. McKinnon, any questions?

MEMBER MCKINNON: Yes, just a follow-up question to what Dr. Demeter was talking about, while the Fire Chief is here for a limited time.

So my question is to the company and also to the Fire Chief and it is really in recognizing that, you know, changes in organizations do occur over time. So I was wondering, you know, are there any measures in place that you would routinely update each other on, your preparedness and what plans you have, so that something doesn't sit on a shelf and the new guy doesn't know about it? Do you communicate regularly?

MR. JESSOP: So again, Jim Jessop, Deputy Chief, Toronto Fire, in charge of the Operations Division.

So the answer, sir, is yes. In fact, the Emergency Response Plan, that is jointly prepared by Toronto Fire Service and BWXT, calls for what you are suggesting, that it occur annually, which it does. Our standard operating guideline that was developed specifically for this building -- and that's not to say we don't have standard operating guidelines for other particular buildings in the City of Toronto -- is reviewed annually. And the other matter that occurs is our first in response area, those firefighters and the first in trucks

get a tour of that facility every year and I can confirm the last one was actually October 31st, 2019.

So in answer to your question, we absolutely look at this every year.

Myself, now that I am in charge of this, this was one of the first briefings I actually did have when I took over and it is something that, you know, candidly to answer the question, it doesn't just sit but it is constantly refreshed and reviewed.

THE PRESIDENT: So on a follow-up to that, what we heard from BWXT this morning is in their worst-case scenario if there was a hydrogen tank and there was an explosion, the worst thing that would happen offsite would be broken windows. Is that what your assessment would be too?

MR. JESSOP: So again, we have not done that assessment. That wouldn't be fair for me to comment on. What I can say is this. We actually have a specific guideline on actually what to do in the event of (a) a leak of the hydrogen tank and/or (b) in the event of a fire in the hydrogen tank and we take our guidance from the Emergency Response Guide which is produced and CANUTEC as well, which is available for our assistance in the event of

such a thing.

It is important to note that, you know, if there ever was, the first thing we do is actually we shut the fuel source down. So this is something, you know, we have dealt with this with propane tanks and other types of pressurized gas cylinders. Yes, the volume, you know, sounds larger, but really, gas pressurized fires are not unusual for any large metro fire service to deal with. I just can't be specific, ma'am, in terms of, you know, radiuses or potential damage. I just don't think that would be fair for me to comment on.

THE PRESIDENT: Thank you.

Dr. Demeter, any more? Okay.

Thank you very much for your intervention. Did you have any final comments you wanted to make, Ms Medeiros?

MS P. MEDEIROS: No, but I have a question.

So I have been living there for three years and I just started getting communications via mail last year before the upcoming hearing. In terms of the communication sent out, what is the radius in kilometres of the 4,000 households you try to reach?

THE PRESIDENT: Okay. Question for BWXT.

MS CUTLER: Natalie Cutler, for the record.

We distribute mailers to approximately 1500 metres around our site. Not all of the homes within that 1500-metre distance are covered, but that is the approximate distance that we distribute within. Thanks.

THE PRESIDENT: Okay. Thank you very much.

The next presentation is by Mr. Rob Mound, as outlined in CMD 20-H2.241.

Mr. Mound, over to you.

CMD 20-H2.241

Oral presentation by Rob Mound

MR. MOUND: Thank you. And thank you for inviting me to the suit side of the barrier. It's really nice up here. It's pretty good. I like the tables.

I would like to say that historically I have always been pro-nuclear energy and pro-medical isotopes and to move me to oppose this application by BWXT has actually taken some work. You all seem like honest and

good people and I might even take John up on his hotdog offer someday. I have been impressed by the consideration you have given to many of the speakers, but I fundamentally don't trust you. I don't trust BWXT, I don't trust CNSC and I don't trust that there is not regulatory capture going on here. I hope you don't take it personally, this lack of trust is due to historical circumstances that we can't change and I will go into later in this presentation, but it is not because you don't seem like nice people.

I also know that it's mutual, because the police searched me multiple times to come in here, so I know you assume that I am a potential threat. I can assure you that I have operated safely in this community for decades. I can tell you that the probability of a negative event involving me is something like one in every 5000 years that might happen, and I can tell you what is in my bag, but I understand that that is not going to be good enough for you because you care about safety at this event and therefore I have to do better than that and I have to provide more than that if I'm even going to get in the door. So I understand that you assume I am a potential threat and likewise I assume that at least some of you are capable of covering up potential threats in my

neighbourhood, but most of you do really seem like nice people.

Relevance. I have been an immediate neighbour to the plant for 15 years. The plant backs onto St. Clarens and Primrose is the next street, so it is hard to be much closer to the site than I am.

Communication. Once again, communication has been poor. The only reason that I knew 10 years ago is the same reason I know this year that there is a 10-year review, is because community activists went door to door and leafleted the subways. There has not been communication by the company or whatever organization is supposed to oversee the company or, more specifically, their procedures don't get to me. This is how we found out a decade ago and this is how we found out today.

With less than a week's notice I had to put in a request to speak by following a link a neighbour sent to me. I was told that without having it in writing ahead of time they would not accept me and I had to request an extension and it was provided in an email, et cetera, et cetera. It's not easy to find out about this or to participate in this hearing and those are important barriers that should be considered.

The newsletters allegedly mailed -- no, I don't mean allegedly, I believe you. When you say you mail them three times a year for the last 10 years, that would be 30. I have received one invitation to a barbecue. It might be that I have a no junk mail sign up, so I don't get them. I'm not sure why I don't get them, and I am not saying you're lying, but I am saying that I don't get the flyers. That is a 97 percent failure rate on flyer delivery and that is not a good standard.

You present data in odd ways. Thirty percent of Toronto are informed and 40 percent of those say that you are doing a good, very good or excellent job. Thirty percent times 40 percent is 12 percent. That means 88 percent are either uninformed or think you are doing a poor, very poor or maybe abysmal -- I'm not sure with the opposite of excellent is.

This comes back to the historical and fundamental problem and the reason for the heavy lack of trust, which is secrecy, past and present. When I moved here 15 years ago and I was in the neighbourhood there were some people doing construction on the building in the northeast corner. I understand that BWXT is inheriting problems caused by General Electric, but I assume that many

of the workers are the same people. Regardless, people were on break and we struck up a conversation. At some point I asked the contractors what they were doing, they told me. I asked what the plant did and they immediately shut up. They told me that if I wanted any information I would have to contact the plant at the buzzer at the security fence, which I did not do, but it made me curious, so I asked a friend.

A neighbour said, "I don't know what happens there, but I have a friend at the Dufferin Fire Station and they wouldn't tell me what they do either, but they said if there is a fire you need to get out of neighbourhood." There was more swearing than that, but that is a summary.

Then -- and this is a key thing for me -- about a decade ago a video was released by a community activist who asked a worker on film what they do in the plant. The person lied outright and said they make ceramic plates. There is a video of that, I am sure you have seen it. I assume that secretive people have something to hide.

The fact that historically contractors have been told not to speak to neighbours, that firefighters appear to have been informed of risk, but

again not to tell people the details, that a worker's first instinct was to lie, suggest to me that there is a lack of transparency which has been historically and intentionally created. Whatever hotdog event or screened community consultation the company puts on I believe is cover for this.

So all self-reported data, all self-monitoring data I don't trust. I don't trust that calibration is done properly; I don't trust when units are given in kilograms instead of milligrams as if they are trying to minimize numbers; I don't trust comparisons to background radiation and background threats. These threats all add and I don't consent to them. If I have background radiation plus an X-ray plus a plane flight, it doesn't mean that we are not adding to that risk. Having abusive parents doesn't mean an abusive relationship is okay because it's less than the regular background abuse, you still have more bruises.

This is the original problem with BWXT and General Electric in the neighbourhood and it's why I can't take seriously some of the claims that have been made to date, because I just don't trust them and I don't know how to fix that.

As far as a safety plan, as far as I know there is none. No information has ever come to people that live around the plant if there is a catastrophic engineering failure. Maybe there is a plan, but it seems to be a secret.

At a community meeting a couple weeks ago when people asked about that information, it wasn't available.

I also don't trust safety plans using data created by the company.

Rail risks. There are train tracks and a rail intersection nearby. In 2013, the train crash in Quebec that killed 42 people and destroyed 30 buildings, that's a train that went through the same place that we were. I wonder how much worse it would have been if it had included a uranium plant, and I wonder if this has actually been considered.

I don't accept the probabilities created by the company, and I'm sorry because like I -- it's not personal.

The risks related to the hydrogen tank. It's obviously explosive and, while we were told that the tank meets all standards, I believe that's true of the

propane tanks that exploded in Toronto a decade ago. The Sunrise Propane tank disaster in Toronto in 2008 resulted in two deaths and millions in damages.

I wonder how much worse it would have been if it had included a uranium plant. I wonder if this type of worst-case scenario has been done. Nine thousand (9,000) gallons is less than 36,000 litres, and I wonder why we use such an archaic unit when we describe it, as if it's just to make it smaller.

Earlier this morning, we were told that people don't park by it. And while that's true as a rule, I'm sure, I've seen trucks park beside it.

I know that they clear snow in there, run snowploughs right beside it. I wonder if there's a truck with uranium in it beside a plant that's hit by a snowplough what the effects of that will be.

The -- I don't know.

I worry about things other than buildings being damaged. I worry about the trucks that are transporting the waste out of the building, which I asked about 15 years ago, or into the buildings.

Risks in the neighbourhood. Toronto has changed a lot in the last decade, and the neighbourhood in

which the uranium plant hid is no exception.

There are 3,000 at Lansdowne and Dufferin, multiple new condos to the north, south, east, families, et cetera. Obviously, if this site was going to be suited today, you wouldn't put it in a sea of condos.

The safety risks related to catastrophic failure has to increase with increased population. The concern is not what will happen when everything works. I believe when everything works it's probably okay. But the concern is always what will happen when everything fails.

And I don't really believe that this is considered or communicated, and it comes after decades of secrecy and disinformation, so the licence, I believe, should not be renewed and you should shut it down.

Since I got two minutes left, I noticed several things this morning.

Page 30 to 31 about the beryllium and the schoolyard in Peterborough, if you just put averages on those things and then standard deviations and then ran a T-test, you can see probably that those are statistically significant increases. If they're not statistically significant increases, then I wonder why you produce data that doesn't allow you to do statistical tests that could

prove it if the sample size is too small to prove it.

But it looked pretty clear to me that if you were to put those things with averages and standard deviations and run a T-test that there's been a clear increase, which needs an explanation, in Peterborough.

I also wonder why the releases are so much higher in Toronto compared to Peterborough by many orders of magnitude into both water and air. That was in the presentation this morning.

I wonder if either the technology used in Peterborough could come to Toronto so that we have lower releases or if Peterborough can expect orders of magnitude greater increases in releases if they move operations there. And I think those are questions that should be answered.

I would also just like to say thank you for your time. I've had a good day.

THE PRESIDENT: Thank you. Thank you for your submission.

Dr. McKinnon.

MEMBER MCKINNON: Yes, thank you. You've raised a lot of points.

I guess the hydrogen tank keeps coming up,

and you mentioned a possible collision with a snowplough is one possibility, so I'd like to ask BWXT. There's obviously some protection around the tank.

Could you discuss the type of incident that it would be capable of withstanding, including collisions with large vehicles such as snowploughs?

MR. MacQUARRIE: It's John MacQuarrie, for the record.

The tank has protection around it in the form of a curb that is around it entirely, and then there are posts known as bollards that are around that tank as well, so it would take, in my estimation, a fairly significant collision to actually reach the tank.

I don't know that we've ever studied that in particular, so -- as far as I know, we haven't studied that.

THE PRESIDENT: Dr. Demeter.

Dr. Berube.

MEMBER BERUBE: One of the points the intervenor brought up we haven't actually dealt with too much this morning. It is actually waste handling at your facility in Toronto.

How much of it is produced and, actually,

where does it actually end up?

MR. SNOPEK: Dave Snopek, for the record.

There's several types of waste that are produced, and the first kind, actually, isn't waste at all. It's material that goes back to the supplier for recycle, so this can be material that's just non-conforming in terms of pellets that are chipped or perhaps were dropped or became dirty. Those go back for recycling.

But there are other wastes in the form of things like material that's been removed -- needs to be removed from the area and can't be cleaned down. Our first attempt is always to clean down, let's say, a piece of equipment that's no longer required to get it to the point where it can be free released. Where we can't do that, however, it becomes a waste.

So we have those types of wastes which would be metal, solid wastes, and we also have soft compactible wastes.

In most cases, those go to a waste vendor for processing, either incineration or metal melt. And then those come back to -- for storage in Canada by the waste vendor.

MEMBER BERUBE: So you're recovering

almost 100 percent of the uranium, then. Is that the case?

MR. SNOPEK: Dave Snopek, for the record.

It's very high proportion of the uranium that is actually retained in the process or gone back for recycle. It's not a lot of material that is actually in the form of waste.

MEMBER BERUBE: Can you give me a number?

Do you know what your ---

MR. SNOPEK: Dave Snopek, for the record.

I don't have the number in terms of the kilograms of waste material right. I can get that.

THE PRESIDENT: Dr. Lacroix.

MEMBER LACROIX: Coming back to the hydrogen reservoir, Fire Chief, are you aware of an hydrogen explosion in a reservoir in an unconfined space and, if so, what were the conditions that led to the explosion?

MR. JESSOP: Jim Jessop, Deputy Fire Chief, Operations.

I am not aware of an explosion with that type of a vessel. Certainly the deponent reference Sunrise Propane that happened a number of years ago.

You know, the Office of the Fire Marshal

conclusively reached the determination that occurred because of an illegal transfer to the tank. It had nothing to do with the tank itself, but it had to do with the illegal way that the propane was being loaded and unloaded.

So in answer to your question, I have never in my 25 years seen nor heard of an explosion of a hydrogen cylinder of this size.

MEMBER LACROIX: Thank you.

THE PRESIDENT: A couple of questions. I'll start with BWXT first.

Mr. Mound talks about lack of trust, and there were two specific examples he gave. One was the secrecy around the operations and people not being forthcoming on what actually happens in there.

Have you had open houses for your facility where the public is invited to come and walk around?

MR. MacQUARRIE: It's John MacQuarrie, for the record.

What we do is during our annual barbecue, for example, we have a sign-up sheet for anybody that would like a tour of the facility, and people do want tours so we provide those.

We also offer tours for others who request

it at any time.

THE PRESIDENT: And the second one was around your emission results and is there any third party verification that what you're reporting is actually correct. And maybe I'll get CNSC to comment on it first but then come back to you and see if you get any third party verification of that.

Staff.

MS TADROS: Haidy Tadros, for the record. Perhaps we can ask our specialist in emergency management at Ottawa to begin and, based on their answer, we can complement that.

DR. DUCROS: Pardon me. Can you rephrase the question, please?

I think maybe I thought -- is it emergency planning or emissions?

THE PRESIDENT: No. It was on emissions and air monitoring around that.

Is there any third party verification that's done of that?

DR. DUCROS: Oh, okay. Pardon me, then. We will retract sending it to Ottawa in that case.

So I'll pass it to the environmental

protection specialists.

THE PRESIDENT: Sorry. And I meant more than the IEMP.

MS SAUVÉ: Kiza Sauvé, for the record.

So for uranium air emissions at BWXT Toronto, HEPA filters are sampled and analyzed daily and also verified externally by an independent laboratory for testing by delayed neutron activation analysis.

So they're both sampled in-house and third party. And during inspections, CNSC Staff could verify those third party reports.

THE PRESIDENT: And have you ever come across inconsistencies between the two?

MS SAUVÉ: Kiza Sauvé, for the record.

No, we have not.

THE PRESIDENT: So Mr. Mound, I hope that gives you a bit of reassurance that there's an independent set of eyes that looks at that as well.

Anyone with any more questions?

If not, Mr. Mound, over to you. Any final words?

MR. MOUND: I'll pass.

THE PRESIDENT: Thank you for your

intervention.

The next presentation is by Mr. John D'Orsay as outlined in CMD 20-H2.176.

Mr. D'Orsay, over to you.

CMD 20-H2.176

Oral presentation by John D'Orsay

MR. D'ORSAY: Thank you.

I start off much like Mr. Mound, as somebody who is generally positively disposed towards atomic energy. Some of that comes from the fact that my father was a nuclear biological chemical decontamination instructor, so had a chance early in my life to see lots of stuff about the development of atomic energy.

I've also had cancer, but that doesn't make me an expert on cancer and radiation therapy.

One of the other pieces that shapes my presentation or orientation to this area is back in 1997, I assisted Albert MacLean in planning a grievance because he'd been terminated. Albert MacLean was the mine inspector that was responsible for the Westray Mine where 26 miners died because he didn't take a prevention approach

to his work.

So I come away from that looking at what's the record here, and that's one of the things I want to address with you is what is going on here with -- when incidents occur, how are they being followed up, what's the role of the Commission and are they taking steps to make us all safer.

My first concern when I came to this application was quickly looking up in the agency that was referred to, the United States agency on dangerous -- Agency for Toxic Substances and Disease Registry, which very quickly took me from uranium to radon.

And I went through the 237 pages of the staff report, and the word "radon" occurred in one sentence. They said, well, Health Canada's doing a study on that. That's it.

But when I looked at the World Health Organization Handbook on Public Health and Radon, it talks about how low levels of radon are precisely where the risk is, that the regression line does not go through the origin, it's above the origin because the low level's where the enhanced risk is that tends to plateau with larger amounts.

So part of this became for me that you can't manage what you don't monitor. And I'm hearing about that.

And the materials out there seem to have a consensus that the yellow cake uranium did generate radon. There seems to be a risk there that should be addressed.

And I think another part of that is, for example, when they had an incident -- it was, in fact, in Blind River, so it wasn't this operator's facility, they had barrels which were -- had pressurized gas in them and when they opened the barrel, workers got covered in uranium, okay. And they had several of those.

But the response that was approved by Nuclear Safety Commission was to have the workers wear respirators and open the rest of the barrels.

In the account that I read of this, there was no account of what was the gas. The only part of that scenario that was reassuring to me was that the barrels were initially sealed, all right, and that continues to be the case. We saw that in the slides this morning, that the material is received in a sealed manner.

In my world, you have a hierarchy of health and safety interventions, and they were reflected in

the materials that we got this morning as well. You start with the engineering interventions, all right. Then you move on to the administrative and then you move to the personal protective equipment.

And those things are embedded in the Ontario *Occupational Health and Safety Act* as the response. I'm expecting the same thing happens with the Canada Code that you should be applying.

That led me to go through the various incidents that were outlined in the various reports from all of the processing facilities, sort of a meta review of what's going on here, all right, and whether you can be said that people are looking at incidents and near misses and saying, "Oh, what's our engineering response to that?", right.

On the one with the barrel discharging uranium into the air, it seemed to me that the engineering response is, well, we better get an isolated room and -- with negative pressure, and we should probably use some kind of remote manipulation to open the barrels in order to protect even the workers on site. But also, if we think there's gases there so that we can use that facility to capture the gases so it doesn't become an emission.

That was just a simple example of that.

I moved on from there to -- it was interesting this morning, then, to hear about how the beryllium has exactly those protections in place in Peterborough, but we don't seem to have the concern around the radon in the other environments.

Similarly with the flood in the Peterborough facility, and we heard a little bit this morning about that, that there was a rainstorm and the first floor of the building where the uranium was stored got flooded. Cleaning up the water meant accumulating a lot of water contaminated with uranium which was then stored in barrels and eventually put into the sewage system.

My issue here is one that -- a couple of ones, is one is that the Commission's standard, the release that's allow at 9,000 kilograms per year, which is nowhere what the company's actually achieved, so how do you have a standard that reflects as low as reasonably attainable if the standard you give the company is, you know, 9,000 times what they're actually doing. It's not pushing people to do things more safely, all right.

Secondly, that when I looked at the

supplemental staff report, you see that there was a concern there about did rainwater just go into the sewage system. Was it a sudden, you know, flushing out?

And no, we're assured that there's a standard for the release, and it's .6 milligrams per litre.

When I look at that, I'm trying to imagine why you'd have that level of discharge in water because, after all, you've got something that's higher than most of the uranium composition on the ores, it would be easily recovered by eliminating the water, right.

Takes us back to the other areas that I had where a barrel of grindings, the material that happens when you grind the uranium pellets, and that's something that's recycled, as I understand it. I noted that because there was an incident where the barrel that it was being shipped in was -- had a hole in it, all right.

But that took me to that -- the strangest words that I heard this morning or the most difficult ones for me were, we're doing things here the way we have been doing them for the past decades.

There's been a whole lot of development in precision manufacturing in the last 60 years, right. If you're -- you shouldn't actually be in a position where

you're still grinding your pellets to make them meet your standards. You should be changing your moulds, right.

So if they're going to pack up and go to Peterborough, that's one occasion where they ought to be changing their moulds, but they should be incorporating these things into their own -- into the facility that they have.

There'd be less dust going up their stacks or going into the air, right, if they did less grinding.

These are engineering interventions to try to control what are some of the hazards.

There was among the things documented an incident where a truck driver who expended -- a contracted truck driver who exceeded the annual level for exposure, right. There was no response to that about how do we protect truck drivers that are dealing with transporting these materials.

I'm really pleased to see that somebody, that would be the transportation safety authorities, recognizes that uranium is hazardous.

Okay. There was fire in the furnace area of the Toronto facility, right. This is caused by loose fittings, we're told.

Now, again, an engineering response. I found an engineering response. It's on the GE Hitachi web site. And it was one-piece ceramic fittings rather than multiple pieces.

One other one that had a lot of attention in my initial submission, and I paid some attention to the hydrogen tank, which was an immediate worry to me, and there was a hydrogen tank that exploded in a South Korean research facility, right, where they're doing a lot of research in how to use hydrogen for powering their communities, that type of thing.

I don't know the size of it. That wasn't included in the reports. What I do know -- did notice was that it destroyed two buildings, right.

It seems to me that it's something that some agency has to follow up to find out what's the blast radius. I'm taking it it's South Korea. They're a well-regulated environment. We ought to be able to have some case that they installed similar equipment.

And I think the last thing I want to say was I'm concerned about something did happen. I spent some time going through the shareholders' reports, and I'm puzzled by this thing about the insurance, right.

I pay my \$65, I buy a share, I go to the annual meeting of the company in Akron and I'm allowed to get -- I'm a shareholder. What's going to happen to my equity if there's an accident in Toronto, and they'll tell me, right.

They won't tell us here. Troubles me.

When I read the rest of the reports, I'm concerned because the equity of BWXT because of \$600 million of equity take-outs that they've had in 2016 to 2018 is very small. It's on the order of \$250 million. They can't stand a big shock, right.

So I'd like to hear -- and they do say in the report, they spend several pages on it, that we have trouble getting insurance. We can't make assurances.

So I can't rely on this being a big company. They seem to be maybe too small to actually run a company with this kind of risk.

Thank you.

THE PRESIDENT: Thank you. We'll open the floor for questions, and start with Dr. Berube.

MEMBER BERUBE: So we've been talking about this hydrogen tank quite a bit this morning. So let's just look at the safety devices that are in play to

actually keep this thing from blowing up. Let's talk specifically about the design of the pressure-release valves, how many are there, secondary devices to do this. Also, if you would, did BWXT talk about the nature of the compressors, whether they're fully redundant or not, to keep the tank energized and how that's all set up, please.

MR. SNOPEK: Dave Snopek, for the record.

The hydrogen tank is a liquid hydrogen tank, as you mentioned. So it's under low pressure. So the design pressure of the tank's only 150 psi.

It is a double-walled tank. It's vacuum insulated between those two inner and outer layers, and that's what provides the insulation.

In the event that the tank over-pressurizes, which could happen upon loss of vacuum or loss of coolant, there are two pressure-relief stacks. On each stack, there is a pressure-relief valve. So if the tank over-pressurizes, that valve will open and release the pressure.

Alongside that, there's also a pressure relief, what's called a burst disk, which is set slightly higher than the pressure-relief valve. So if the valve fails to operate, the disk breaks and relieves the

pressure. That is duplicated, so we've got two of those.

So there's actually four devices that are available to provide pressure relief from the tank to avoid an over-pressure situation for whatever cause.

MEMBER BERUBE: Obviously, you've done a calculation on the reliability of this in terms of probability of four-fold failure. What is it?

MR. SNOPEK: I think the type of event -- sorry, Dave Snopek, for the record.

I think the type of event you're talking about is an over-pressurization of the tank that leads to tank failure. And I'll pass that back to Doug Chambers to discuss that.

MR. CHAMBERS: Doug Chambers, for the record. Thank you very much.

Before we get into our calculations, want to mention that Air Products, who provide the tank, did a very full and does a very full routine hazard assessment both on the location of the tank, is it suitable, and on the safety systems associated. And I would not pretend to be as familiar with hydrogen systems as Air Products.

And the other thing I want to mention is hydrogen is the lightest element. If it's not contained,

it will rise very quickly; it will disappear very quickly. And we're all familiar with parties and children's parties and balloons filled with helium. If you let go of that balloon, it rises and disappears very quickly. Hydrogen dissipates even faster.

So first of all, it's very important that the hydrogen tank is stored in an open area where you have no confinement. And secondly, it's important -- I think Dave already mentioned -- this tank is not highly pressurized. It's a cryogenic tank. And the only situations I'm aware of for a BLEVE, for example, which is probably the worst scenario, are in pressurized tanks. And there are examples where welds on pressurized tanks fail.

And there also is a requirement to check and replace, actually, the rupture disk and the safety valves on a regular basis.

So these are all part of the background.

Any event, we looked at the literature and we think something like a BLEVE is an extremely rare event, less than one in a million. And even if it were to occur, because it's cryogenic, not pressurized, it would be a subsonic pressure wave as opposed to a supersonic pressure wave. All that means the pressures are much less.

And we predict, using very acceptable models that are used by US EPA and US emergency planners for looking at these kind of scenarios, that basically yes, you would expect some broken windows, possibly people could get cut from the broken glass. But you would not expect the situation where buildings fall down or get knocked down. And so it's not just our assessment, as I say, but also the hazard assessment by the people that design and operate these facilities that are very important.

I'm only aware of one BLEVE with a liquid hydrogen tank system, and basically that was associated with firemen putting water in a safety valve. And basically it's very important, and it's been discussed several times, that the fire department and BWXT are very familiar with the systems, any changes to the systems in terms of responding to a fire if it's an event at the facility.

So I feel very comfortable that the situations we looked at in our safety report, which your staff has reviewed, are quite conservative, frankly, and sort of the worst-case scenario we could visualize, at least.

So thank you very much.

MEMBER BERUBE: Still one question on the one-in-a-million event. Is that one event in a million years? Or how do you define that?

MR. CHAMBERS: Yes, you would not expect this to occur more often than a return period of one in a million years.

THE PRESIDENT: Okay. Dr. Lacroix?

MEMBER LACROIX: Thank you, Mr. D'Orsay, for your presentation. You seem concerned with the presence of radon in Yellowknife -- in Yellowknife? -- in yellowcake. I'm sorry, what a mishap!

The staff have prepared a document in which they address most of the concerns of the intervenors. And if you look at this document, comment number 6, staff could provide you with an explanation concerning the presence of radon or not in UO₂. Staff, could you reply, could you comment on this, please? It is on page 1112.

MS TADROS: Thank you, Haidy Tadros, for the record.

I believe it was our internal dosimetrists in Ottawa who provided us with that clear explanation in our supplemental.

MEMBER LACROIX: This is document CMD

20-H2.B.

MS TADROS: Thank you, that is correct.
Haidy Tadros, for the record.

I would ask Bert Thériault to again provide an explanation of the radon.

MR. THERIAULT: Bertrand Thériault, for the record. I'm a dosimetry specialist with the Radiation Protection Division.

So this response is very similar to the response I gave earlier today. So in the CMD, it states that only UO₂ is received by BWXT for pelleting operations, not yellowcake. No detectible radon is released from UO₂ powder or pellets. Radon is produced by the decay of radium-226, which is part of the uranium decay series for uranium ore. At the milling stage, all progeny of uranium, including radium, are removed and concentrated in the tailings. Therefore, there's such little radon activity in UO₂ pellets and powder that it is undetectable.

MEMBER LACROIX: Thank you.

THE PRESIDENT: Dr. McKinnon?

MEMBER MCKINNON: Yes, thank you for your comments. I was, as you were speaking, trying to categorize some of your general concerns such as, you know,

the engineering design and what do you do when you encounter a problem. And maybe one way of doing that would be to talk about the safety culture, you know, which is the general response of people to solving problems and so on.

So I would like to ask the company: How do you differentiate between safety culture and safety performance?

MR. MacQUARRIE: It's John MacQuarrie, for the record.

So my view of differentiation between safety culture and performance is the way that our people go about addressing our operations, not necessarily as an after-the-fact prevention, but how they think about it preventing it from happening in the first place. So you know, it's more about how we use leading indicators in our business to address concerns that we may see and make sure that we have a preventative mindset to that.

And so in my view, I see a great deal of that in the way that our organization operates. There is a culture there to look at and understand the fact that people make mistakes and that we have to design systems and processes to recognize that those things happen and make sure that there is a robust defence, in-depth way of

performing our operations to ensure that we get the result that we expect.

And I think our safety record, which is the output of that preventative safety culture mindset, is a good indicator that we have a fairly strong safety culture.

MEMBER MCKINNON: I'm also just curious when there was a change of management from GE in the buyout in 2016, was there a significant change in the management structure and any change in safety culture and practice?

MR. MacQUARRIE: So we acquired the business late in that year, in December, and so a little over three years ago.

There's been some management changes at the senior executive level, but generally, other than normal changes that happen in the course of a business, there hasn't been any significant changes in the management organization. And the processes that we use are essentially the same with, you know, continuous improvement that happens over the course of time.

THE PRESIDENT: Dr. Demeter?

MEMBER DEMETER: Thank you for your intervention.

You've brought up an issue that has been brought up by other intervenors, and I think it's a good time to ask BWXT what they do in the aftermath of a very heavy rain or overland flooding. Is there any monitoring you do to look at the impact beyond your fence of the water that runs off from your property to monitor it to make sure it didn't contaminate the surrounding area? What's done in the usual aftermath of an overland flooding type of situation or an extremely heavy rain that exceeds your storm sewer capacity?

MR. MacQUARRIE: It's John MacQuarrie, for the record.

So the heaviest rain that we've experienced in Toronto was in 2018 during a significant storm. We did not do any monitoring of groundwater off our site outside of our fence or outside of our buildings. We were able to contain all the water to inside of our facility that entered our facility. We have a significant sump capacity there, and we're able to treat it through our normal treatment process. So we didn't do any monitoring, because we didn't see any pathway for that water to get out of our site.

MEMBER DEMETER: And CNSC staff, is this

correct, that there's no evidence of overland flooding and picking up contaminants from the site and going off site in a heavy-rain situation?

MS TADROS: Haidy Tadros, for the record.

So flooding, again, is looked at from a risk perspective when we look at our environmental risk assessment, so I'll ask our environmental protection specialist to look at that.

It is noteworthy, though, that the emissions currently don't have any detectable amount, so even in a rain and flooding scenario, we would not expect to see any detectable amount. So our monitoring results have shown as such with regards to the data that we have.

But maybe our environmental protectionist staff can speak to the flooding scenarios.

MR. McALLISTER: Andrew McAllister, director of the Environmental Risk Assessment Division.

So the example that was used here was an example where they were able to contain the flood waters through the mechanisms that were described.

In the event that they weren't, we would expect something similar -- I'm going to use Port Hope and Port Granby as an example, where they had a situation where

the flooding exceeded some of the water management structures that they had, resulted in off-site releases of water. That became a reportable incident. They had to go subsequently do testing where those waters went to verify that the environment and human health were protected.

So in the hypothetical situation here, if something were to be breached in that sort of manner, we would expect something similar to unfold.

THE PRESIDENT: Question for BWXT: One of the issues the intervenors raised is how your facilities are rather old. How have you introduced -- give us examples of some new technology that you've introduced that would enhanced your safety performance. He spoke specifically about grinding and, you know, kind of taken aback that you still have a process that may seem kind of archaic.

MR. MacQUARRIE: It's John MacQuarrie, for the record.

I would say that it's generally true that we're using similar processes that have been used for decades.

In terms of why we grind pellets, it's important to have a precise diameter, which is important

for the fuel operation once it's in a reactor. Once you press a pellet and it goes into a furnace, it changes diameter, and it's very difficult to control how much it changes diameter. So the only way to get the outcome diameter is to precisely grind it.

We have made improvements to how we do that to know exactly what we're getting and to minimize waste. We've looked at different technologies in terms of how we minimize our waste and filters and what we can do to reduce the amount of filters we use and things like that.

So there's been -- you know, where we can find technology to improve our operations, we do that. But on the other hand, our operations have worked very well and have a very high throughput and very low scrap, and so there isn't a great deal of reason to change our processes in significant ways.

THE PRESIDENT: Okay. Mr. D'Orsay, over to you. Any final comments?

MR. D'ORSAY: I think I just want to reiterate Justice Campbell's comments on prevention and where, you know, you have scientific uncertainty, you might have the possibility of a hazard, you plan for and work around the possibility until you've proven that you don't

have a hazard. So that's the take that I have on a preventative approach. And that's one that the documents here weren't encouraging me to see that, okay.

And that's it. Thank you.

THE PRESIDENT: Thank you very much.

Our next presentation is by the Ontario Clean Air Alliance, as outlined in CMD 20-H2.154.

Ms Angela Bischoff will present this submission. Ms Bischoff, over to you.

CMD 20-H2.154

Oral presentation by Ontario Clean Air Alliance

MS BISCHOFF: Thank you. Thank you to Members of the CNSC, BWXT, and the public.

The Ontario Clean Air Alliance is an environmental NGO working for a hundred per cent renewably powered Ontario. And I live in central Toronto, and I spend time in the vicinity of the BWXT, so I'm personally invested as well.

Uranium is an alpha-emitting nuclide, radionuclide, harmless outside the body, but can be harmful inside the body. And I know there's been some conversation

about that this morning. I would like to quote or reference my statement there that uranium is an alpha-emitting radionuclide.

I'd like to quote the International Agency for Cancer Research. It operates under the aegis of the World Health Organization. And it says this about alpha-emitting materials:

"Internalized radionuclides that emit alpha particles are carcinogenic to humans. All radionuclides that emit alpha particles and that have been adequately studied have been shown to cause cancer in humans and in experimental animals. Alpha particles emitted by radionuclides, irrespective of their source, have been shown to cause chromosomal aberrations in circulating lymphocytes and gene mutations in humans *in vivo*." (as read)

And it goes on and on.

But this statement for me clarifies the basic scientific fact that all alpha-emitters are human

carcinogens when they become internalized.

In 2016, air at the perimeter of the BWXT Toronto factory was tested at 390 times the natural background of uranium concentrations. In 2017, soil around the Toronto factory was tested at 10 times natural background levels.

Given that every gram of uranium released contains trillions of small radioactive uranium particles which can be inhaled or ingested, and given that hundreds of epidemiological reports and cell and animal studies indicate that uranium is a potent carcinogen and mutagen due to its chemical and radiological toxicities, and given that it only takes one uranium particle lodged inside the body to cause cancer, impaired immune systems, heart disease, birth defects, damage to a developing embryo, can cause spontaneous abortions and miscarriage, how can it be that these uranium emissions are being allowed in a residential neighbourhood in the middle of Toronto, Canada's largest city?

The CNSC allows 9,000 kilograms of uranium released annually into the sewer and 760 grams into the air from this plant. Are you suggesting that the company could be within the CNSC guidelines if they released 8,900

kilograms of uranium into the sewer and 700 grams into the air per year? This is not a rhetorical question. I'm trying to understand if the CNSC standards are set with residents' health in mind, especially the most vulnerable members of our society such as pregnant women, fetuses, and young children, who are all more radio-sensitive than adult males.

BWXT claims this plant has released 46.2 grams of uranium into the air and 3.62 kilograms of uranium into the sewer system over the past five years; however, according to advice received from Dr. Ian Fairlie, radiation biologist, these figures, which are likely to be estimates, appear to be very low, given the millions of grams of uranium processed each year by this facility.

We have seen no documentary evidence that these estimates are correct, nor evidence of the models used to produce these estimates, nor uncertainty ranges for them. Can you provide these to us?

We understand the plant does its own radiation monitoring. I would like to see 24/7 independent monitoring of the plant, publicly available in real time. Would the CNSC consider this request if only to allay public fears that the company isn't providing accurate

information, as was the case of the SSI tritium plant in Peterborough, that for 18 years under-represented substantially their emissions?

Can you provide us with a full report for the 1999 fire that caused the evacuations of area homes? We asked Toronto fire department, and they said we had to do a freedom of information request.

Given that the Pickering Nuclear Station is set to close in 2024, and Pickering is only one of two nuclear stations that BWXT supplies, we'd like to know why BWXT hopes to increase their production as outlined in their application. What is their market?

The company flow chart on page 7 of their application says they're providing fuel pellets for Canadian CANDUs and boiling water reactors in the US and/or other countries. Are Toronto residents taking health and safety risks for American nuclear stations? What percentage of their business is to be used in Ontario versus the US?

While the likelihood of an accident may be small, it is greater than zero. We understand the liability insurance policy of the plant is proprietary information. We also understand that a Cameco uranium

pelleting plant in Port Hope, similar to the BWXT Toronto plant, has \$4 million liability insurance. That is less than what most people have on their individual homes.

We the citizens would like to know what this company's insurance coverage is in the case of an accident which could be catastrophic.

The same facility hosts a 9,000 gallon tank of liquid nitrogen, a highly explosive gas. So I understood from the gentleman earlier that it's not highly pressurized, but I imagine it's still an explosive gas.

In our view putting a Class I nuclear facility in a densely populated residential area next to a 9,000 gallon hydrogen tank, beside 700 tonnes of powdered uranium dioxide powder in barrels, poses serious risks to the local residents.

In the event of explosion, which the risk is greater than zero, could we have a dirty nuclear bomb in downtown Toronto, in which a radiological release could contaminate the local neighbourhood?

The group Citizens Against Radioactive Neighbourhoods in Peterborough listed on their website 11 uranium pelleting plants around the world that they could find. Only one of them, Toronto, was situated in the

middle of a densely populated urban centre.

Even the industry knows it does not belong in a residential neighbourhood. Accidents happen and when nuclear accidents happen they can be catastrophic.

I wonder, would BWXT get permission to build this dangerous plant in the middle of Toronto today? I think not. Nor do I believe they should get an extension to run another ten years in the middle of a dense urban neighbourhood. This is just common sense. It's not worth the risk.

It's not worth the risk in the middle of Toronto or really anywhere. Peterborough doesn't want the plant. No one wants the plant. It's time to adopt non-radioactive policies for making electricity.

Ontario should de-nuclearize its power generation and move to a 100 percent renewable power system with a combination of conservation, water power from Quebec and made-in-Ontario green energy. The whole world is moving to a renewable future. Ontario is being left behind, using last century's high-cost polluting and dangerous nuclear technology.

Thank you.

THE PRESIDENT: Dr. Lacroix.

MEMBER LACROIX: Thank you very much for your presentation. You have raised a number of issues that have already been discussed this morning and this afternoon.

I will focus on one comment that you made, which is in bold character. You say that there is no safe dose of ionizing radiation.

I read the document prepared by CNSC staff, Document CMD 20-H2.B, Comment No. 2 on page 9, and they address specifically this question.

So I would like to ask staff to reply on this matter. Thank you.

MS DUCROS: Caroline Ducros, for the record.

There is no nuclear reactions at this plant. This is a non-criticality facility and there is no ionizing radiation, which is why we don't look at an evacuation program like you would if it were a nuclear power plant. It's a very different level of risk and different types of risks.

So there is no risk of ionizing radiation as it's not used.

MS BISCHOFF: No risk of ionizing

radiation at this plant from the uranium?

THE PRESIDENT: Dr. Lacroix, did you have a follow-up question?

MEMBER LACROIX: No. Do you have page 9 in your document? It's Comment No. 2.

MS TADROS: Haidy Tadros, for the record. Yes, we do have it. Thank you very much. What we are trying to express in our disposition of this is radiation comes in many forms and we have in our website an opportunity to provide awareness to the public. There is a video on what radiation is and we have tried to present that in our slide as well with regards to the effects of radiation.

There are forms of radiation. What our explanation in our CMD indicates is that scientifically it is unfounded that there are any effects from ionizing radiation over a certain threshold. So while we as a regulatory body use a linear non-threshold model that is towards the ALARA principle, As Low As Reasonably Achievable, the science and the data that we currently have that we currently participate in, based on international work and international research, has demonstrated in countless scientific evidence that there is no effects to

radiation beyond a certain threshold.

So that is how we are able to look at the data and we are able to look at the information and provide the standards that we use and the ability to monitor, the ability to regulate and the ability to use the information from a science perspective to assure that the regulatory requirements are met.

So our response there is in effect trying to project all of this work from a science perspective on the effects of radiation, because radiation is everywhere. It's in everything we do. We have it inside our bodies. It's in Brazilian nuts that we eat. It's in the bananas that we eat. It's in the air that we breathe.

So to think of a world that has zero radiation is just not founded on anything scientific that we currently have.

The reason why we regulate is because there are opportunities for this radiation to be used toward a beneficial effect. We don't prohibit it; we regulate it.

So it's in effect that we can use the radiation that is all around us to some good in the world. So our job is to be objective, to look at the science, to

look at the monitoring and the verification that we use and to put forward information and recommendations to the Commission such that when you deliberate, you look at all of this evidence based on the science that is there and you make your determination using the precautionary principle.

MEMBER LACROIX: Thank you very much for elucidating this matter. Thank you.

MS BISCHOFF: Can I respond to that?

THE PRESIDENT: No, that's not how it works. You will get a chance at the end to say your piece. Dr. McKinnon.

MEMBER MCKINNON: Yes, thank you for your questions.

You brought up again the safety of the hydrogen tank and in this case it was a scenario involving an impact on the uranium dioxide drums and the potential release of that material into the air.

So my question to the company is: Has that been one of the scenarios that has been examined? How vulnerable would the uranium storage barrels be to such an event?

MR. SNOPEK: Dave Snopek, for the record.

Yes, to answer the question, the potential

impact that the hydrogen storage tank could have on the facility and then lead to a release of radiation has been looked at.

There are no hydrogen tank scenarios that lead to damage to the building and therefore there are no scenarios that lead to release of radioactivity.

As a matter of fact, all of the scenarios associated with the hydrogen tank are the same as you would have in any industrial application of hydrogen.

THE PRESIDENT: Dr. Demeter.

MEMBER DEMETER: Thank you for your intervention.

I wanted to talk to staff about the perimeter measurements where the natural background radiation was exceeded by 390 times in the air and ten times by the soil.

I did have a chance to look at the independent Environmental Monitoring Report in the CMDs and I'm trying to figure out are those figures accurate, the 390 and the ten?

And then depending on the answer we will figure out where we will go from there.

MS TADROS: Haidy Tadros, for the record.

I will ask our environmental specialist to answer that question.

MS SAUVE: Kiza Sauv , for the record.

When we reviewed this intervention we also were looking for where the 390 came from. We have been really trying to find that. So we haven't been able to find the 390 for the air.

In terms of the liquid, the water, one of the maximum releases was about five times natural background but still less than half of a guideline level where you might see any type of impacts to soil.

We haven't found those numbers. We would be happy to hear where the intervenor found them.

MEMBER DEMETER: Okay. And on the same --

THE PRESIDENT: Sorry, Dr. Demeter, maybe we can ask the intervenor to tell us what the source of those numbers is.

MS BISCHOFF: I see in my deputation I quoted BWXT compliance reports, and I guess I must have gotten that either from the No Pellets folks or from one of the other deputants.

So I didn't actually dig that up myself. So I can't answer in all honesty.

THE PRESIDENT: Thank you.

MEMBER DEMETER: In the BWXT report, page 38 of 59, there are two graphs that deal with Figures 16 and 17. And what I'm most interested in is the uranium boundary air sampling of licence period.

There is one outlier in 2016 which has maximum single measurement at a spike.

It might be good to maybe explain to the group what happened there and why it had such a spike in 2016, from BWXT.

MR. SNOPEK: Dave Snopek, for the record.

In 2016 -- let me back up.

We have five boundary monitors around the periphery of the Toronto facility. We change filters on those boundary monitors once a week. So in between filter changes they are accumulating material on the filter. That filter is then sent off site to a lab to determine the amount of uranium that's on it.

In this particular case we discovered that the boundary monitor appeared to have potentially stopped drawing air across it. After only one day it had failed. So we believe it only drew air for -- it's unclear whether it drew air for the whole time or for a portion of the

time.

It also was a very odd result in terms of the amount.

We likely should have discounted that because of the failure of the monitor over the course of that period. We did not. We wanted to make sure we weren't discounting data and we included it.

That result occurred when the monitor itself had failed.

I will say that we looked at the other results, both in the week before and the week after, and the same week for the other four boundary monitors, as well as our operations. There was no odd operational events and there was no indication on any of the other monitors that there was something real that was happening there.

Like I said, we probably should have discounted that upon discovery that the boundary monitor had failed in that period, but we didn't. We included it in the dataset.

I believe that's the result you are talking about that stands out.

THE PRESIDENT: Dr. Berube.

MEMBER BERUBE: Just to expand on that,

your remote air monitoring. Obviously they are a suction type device that's pulling air through a fan type of thing.

You don't have any remote telemetry on those devices to tell you whether they are operating or not, just operator intervention to check them on a weekly basis? That's how you do it?

MR. SNOPEK: That's correct. An operator goes I believe Monday mornings and goes and does all the filter changes. So they are touching each of the machines once a week.

But there is not a remote telemetry on them.

MEMBER BERUBE: You don't have operator routines that they actually go and check these things on a daily basis to make sure they are functioning?

MR. SNOPEK: I'm not aware if they do any additional inspections over the course of the week. This is a rather unusual event. I think this is the only one that I'm aware of in approximately 250 samples that we take in a year over the last four years. So about one in a thousand. So it's not a very common thing for these to fail.

MEMBER BERUBE: Just out of curiosity, how

hard would it be to put an alarm on these things, because they are so critical to basically monitoring releases from the facility?

Is it an overbearing ask to actually put some kind of remote telemetry on these things?

MR. SNOPEK: That's something we haven't considered that we could look at. The distribution of these around the facility doesn't make it terribly easy to get wiring, cabling, additional wiring and cabling to them. It's something we could look at.

I think the redundancy of them, the fact that there's five of them around the periphery of the facility, gives us some redundancy and therefore insensitivity to the infrequent occurrence of a pump failing on one of them.

MEMBER BERUBE: My only concern with that is prevailing winds of course are going to affect the monitoring characteristics. So if the wind is blowing from the east the whole week and the monitor is down for whatever reason, then you have no idea. Right?

MR. SNOPEK: And that's something we can look at.

MR. MacQUARRIE: I would just add, though,

that we are monitoring the stacks. So the boundary monitors are a secondary measure. The primary measure is the stack monitoring.

THE PRESIDENT: A question to staff.

The intervenor mentions that what BWXT has reported as far as emissions into the air and into the sewer system questions the veracity of the numbers, the 46.2 grams and the 3.62 kilograms.

Do you verify those? And if you do, is there a way to make that information available to members of the public on how you have done that and the kind of modelling that's used so that there is greater confidence in those numbers?

MS TADROS: Haidy Tadros, for the record.

So yes, we do verify and we have our Regulatory Oversight Reports that we present to the Commission every year with how these numbers come together.

I would ask our environmental protection specialist to provide a detailed answer.

MS SAUVE: Kiza Sauvé, for the record.

I hope I hit the mark but let me know if I missed part of your question.

As Ms Tadros said, we do report on them

annually. The actual numbers are right now included in our Regulatory Oversight Report, so they are available to the public, the actual discharges.

In terms of verifying them, the way that we verify those numbers is through programs. So we do inspections on the program. We review the monitoring program. We inspect the facility.

We wouldn't have a way to go in and count each particle in order to verify them.

THE PRESIDENT: Right. But if there was a way to say here are the emissions, here is what was measured on the filters, here is the model that was used and here is how they have come up with 3.62 kilograms, is there a way to follow that sequence of events just to say yep, we can trust this?

MR. LEROUX: Adam Leroux, Environmental Program Officer, for the record.

So BWXT, they do verify both their air emissions and liquid effluent results via an external laboratory. So those labs are independently verified.

THE PRESIDENT: So the labs not only say yes, here is what the filter has shown but this actually translates into so many grams of uranium?

I think that's what the intervenor was getting at or what Dr. Fairlie was saying; that is the numbers seem a bit too low.

MR. AMALRAJ: Julian Amalraj, for the record.

I'm the designated inspector for the facility and for most inspections I inspect the facility.

So part of our review in terms of the implementation and effectiveness of the program involves going through the entire program and the instruments, the calibration. So in this particular case the air flow rates, the calibration associated with the equipment.

So the air flowing through these ducts are pretty much standard in the speed in which they emit. So you are capturing the uranium and the third party calibration with the delayed neutron basically gives you what the reactivity is and it gives you an independent benchmark.

The air flows are verified with the calibration units that they have, and CNSC staff during our inspections independently verify that the calibrations are done accordingly and they are maintained accordingly to what the prescribed standards are.

THE PRESIDENT: So if the intervenor was interested enough, they could sit down with one of you and you could actually walk them through the steps.

MR. AMALRAJ: Yes, if necessary.

THE PRESIDENT: Or given the Peterborough experience at another facility where the numbers were not supposedly reported accurately.

I think it's a legitimate question and they just want to know where is the evidence to show that this is happening.

So if you did want to follow up on that, Ms Bischoff, staff would be happy to sit down with you.

Anyone with any further questions?

If not, Ms Bischoff to you for any final comments.

MS BISCHOFF: Thank you. That was good. Some good things came out in that discussion. I still have some questions that weren't answered, and I guess I have to go back to the drawing board.

For example, what's the process? Can I ask questions that were identified in my presentation that were not asked of staff? Great.

For example, what percentage of the

pelleting plant's business is for Ontario reactors versus American reactors?

THE PRESIDENT: BWXT?

MR. MacQUARRIE: It's John MacQuarrie, for the record.

We have not been producing any pellets for American customers for some time. At this point we don't see any demand for that. So right now 100 percent of the facility is for Canadian fuel.

MS BISCHOFF: Okay. But given that we are going to be closing Pickering, as I had said in my presentation, why do you want to expand the amount of pellets that you are able to produce?

THE PRESIDENT: So maybe you weren't here for the morning. They are not planning on expanding. It's a question of consolidating their operations in one facility.

MS BISCHOFF: Okay. I thought it was in the licence as an expansion.

Well, then, I guess -- the other one that a colleague has asked me to see if I can ask for is the report of the 1999 fire that caused the evacuation of area homes, how can I track that one down?

THE PRESIDENT: Was that a fire at your facility, Mr. MacQuarrie?

MR. SNOPEK: Dave Snopek, for the record.

In 1999 we've been talking a lot about the hydrogen tank. Prior to the year 2000 we didn't use a liquid hydrogen storage tank. We used gaseous storage tanks.

In 1999 there was a pressure relief device, a safety device, on one of those tanks released and because of the friction of the gas the gas ignited, which is what it is intended to do.

So these pressure relief devices are intended to release to a safe area. It is expected that there will be combustion upon release, and they are in an area where there is nothing else to burn. So they just burn safely.

That happened in 1999. There was, I believe, at the time -- I wasn't there but I believe at the time there was an evacuation as a precaution of the immediate homes in the area. But the system was actually operating as it was intended to. It was relieving pressure. It was venting to a safe location and at that safe location combustion of the hydrogen was safe.

THE PRESIDENT: So are there details of that incident available to members of the public who want to get that?

It's a while ago.

MR. SNOPEK: Dave Snopek, for the record. I'm not aware of that, from 1999.

THE PRESIDENT: CNSC, do we have details of that incident?

MS TADROS: Haidy Tadros, for the record.

Not to our knowledge but what we can do is maybe look at it, and if there is information we have a facility-specific page that as part of our initiative to ensure that we are more transparent with the information we have, we might be able to put that on that facility-specific page and make it available to anyone who is interested.

THE PRESIDENT: Thank you. I mean, they were a licensed facility of ours in 1999. So if you could take that as an undertaking.

Okay, anything else, Ms Bischoff?

MS BISCHOFF: Yes, a quick little question.

I appreciate that what the company has

released is well below what the CNSC allows as safe release. But I understand that the CNSC allows 9,000 kilograms of uranium could be released annually into the sewer, and 760 grams into the air from this plant.

Does that mean if they were to release -- like is it for real that the CNSC believes they can release 8900 kilograms of uranium into the sewer or 750 grams of uranium into the air and that the residents would still be safe?

THE PRESIDENT: Again, I think you have missed a lot of discussion that was held this morning around emissions and now a new way of approaching that. So I suggest you look at the webcast and hopefully that will answer your questions.

MS BISCHOFF: Okay.

THE PRESIDENT: Any final comment?

MS BISCHOFF: Yes, just in closing.

THE PRESIDENT: So this isn't for you to go through all your questions. The Commission has asked those questions they wanted to get more information on.

MS BISCHOFF: Okay, thank you.

Just to close, I just can't imagine this station would ever be approved today in the middle of an

urban population, and that's exactly why I don't think it should get the extension.

Thank you.

THE PRESIDENT: Thank you.

We will now take a 15-or-so minute break and resume at 4:30 p.m. Thank you.

--- Upon recessing at 4:12 p.m. /

Suspension à 16 h 12

--- Upon resuming at 4:31 p.m. /

Reprise à 16 h 31

MR. LEBLANC: We will be resuming. Please take your seats.

THE PRESIDENT: The next presentation is by Ms. Julia Tuer, as outlined in CMD 20-H2.105 and 105A.

Ms. Tuer, the floor is yours.

CMD 20-H2.105/H2.105A

Oral presentation by Julia Tuer

MS TUER: Thank you. Hi, there, I'm Julia Tuer, I am a local resident. I live at the corner of

Brandon and Primrose, putting me approximately 190 meters away from the BWXT facility.

I have never done anything like this before. I'm not an expert on the issue, but I am a concerned neighbour and mother. And, as a mother I feel the wellbeing of kids in a community is the responsibility of the adults in that community. And as we are all here today with the same addressing questions, you are now all my community today, as well.

I am not here to talk about the day-to-day effects of radiation or the carcinogens that may or may not present; other people have done this. But, rather, I want to talk about something that I feel BWXT has been skirting around, and that is simply that accidents happen.

All data that I am sourcing is from the International Atomic Energy Agency report titled *Protecting People and the Environment*. It outlines all the issues that should be considered when building and selecting a location for any type of nuclear facility.

I would be in what is called the critical group, those are those of us who live close to the BWXT facility who would be maximumly exposed in the event of a catastrophe. And what might those events be? We have

talked a lot about them today so some of this may be a repeat but bear with me.

One of those initiating events could be a fire. Of course these fires could lead to the dispersion of radioactive material or toxic material. Someone earlier mentioned that there is an impossibility of any uranium being released if a fire were to happen and, I'm sorry, I feel like that's a wonderful work of fiction. I don't know that you could say that it's categorically true that no uranium could be released from a fire. The fire could breach containment barriers.

So my question here is, what is the evacuation plan in the event of a fire that could potentially release radiation into the air? Who will tell five-year-old Dean and three-year-old Beau, my neighbours who live approximately 180 meters away from the facility, to leave their home? Who will help Jill and Maria, my elderly next-door neighbours with severe mobility issues, evacuate their home in time? What is in time?

The next event could be an explosion that could be induced by that fire that I spoke of earlier, or it could be the initiating event that results in a fire.

We also have possible sources of explosive

materials on site, mainly being H₂ -- yes, I'm going to talk about that tank again. We all know that there's a tank right there on the property adjacent to St. Clarins Avenue.

Liquid hydrogen, of course is rocket fuel. And it's rocket fuel because it burns at such a high intensity. It has a wide flammability range of when mixed with oxygen, and it requires a miniscule amount of energy to ignite a hydrogen air mixture and actually statically charged air can be all it takes to ignite liquid hydrogen. So, on a cold winter's day, when our air is most statically charged, that's a pretty good mix for an explosion or for an ignition.

So I have a question here; it was asked earlier and we all know that it cannot be answered at this point; what is the blast radius should the tank housing 34,000 litres of liquid hydrogen explode?

Now, you have told us you don't know the radius, but you have told us that you have modelled the explosion and that it might blow out some windows or shatter some glass, but what if me and my children are walking by the plant at the moment of explosion? Do you know that there is actually a gymnastics studio right

across the street from the tank on St. Clarins Avenue? What about the children going in and out there? What if they are caught in the middle of an explosion; are they susceptible to some sort of injury in that case? It may not - the explosion may not take down houses but will it take down a three-year-old across the street?

You also park trucks carrying uranium right next to tank. What happens in the event of an explosion and one of those trucks is sitting right there? Again, not enough to bring down a building, but is it enough to bring down a truck housing uranium?

The next initiating event would be leaks and spills. So, of course, again dispersion of radioactive material or toxic chemicals. But those leaks and spills can also lead to flames or explosions themselves. So my question here is that in the event of an accident what is the plan, and where is this plan communicated to the community? Who will tell four-year-old Alex and six-month-old Madeline that they need to evacuate their home in time? They live about 190 meters from the address. Or, what about two-year-old Gracie, across the street on Lansdowne; who is going to tell her and her family they need to leave?

There's also external fires and explosions. So these are events happening outside the facility that could negatively affect the facility itself. We all know about that rail line right next-door, just meters away. What happens if there's a derailment? What happens if there's a projectile from that derailment and it hits the building, or it hits one of those trucks holding the uranium or, again, that hydrogen tank?

To quote the report itself:

"To demonstrate that the risks associated with such external hazards are below acceptable levels the operating organization should first identify all potential sources of hazards and then estimate the associated event sequences affecting the facility." (As read)

So, in short, what is the domino effect of every single possible event that could impact the facility? Does anyone know for every possible event?

"The operating organization should carry out a survey of potentially hazardous installations in transport

operations for hazardous material in the vicinity of the facility."

We all know that that rail line does carry hazardous materials daily.

Has BWXT modelled all the possible event scenarios of a busy urban environment, of a train derailment, of an accident happening on busy Lansdowne Avenue?

We live in a city with gun violence. What if a bullet hits that H2 tank? I know that these are improbabilities, that they are a very small percentage of likelihood but the fact of the matter is that the percentage is not zero; the number is not zero, and anything above zero, in my opinion, is too much; that is too much of a risk.

And the next human factor, you all here may tell me that you have stringent safety measures, and I do believe you -- I do. But the fact of the matter is, there's a human element in all of this and as events of the past have shown us, human shortcomings can lead to big consequences. So, my last and most important and burning question is, who is responsible for keeping my family safe?

The BWXT appears to shirk or at least

dance around the answers when pressed about these issues. They have not shared any action plan in the event of an emergency. In the past, in fact, when issues like those that I spoke of, representatives have responded that these events are impossibilities, or near impossibilities. This is an irresponsible response and communicates to the community that they have either not modelled all possible events or that they have and the effects of an accident will be so catastrophic that we wouldn't stand a chance of surviving it.

This is a community filled with children and if the events could be catastrophic, if they could cause loss of life, just one life, then the risk is too high to be in such a densely populated area that's only growing.

Thank you.

THE PRESIDENT: Thank you. Dr. Demeter.

MEMBER DEMETER: Thank you for your intervention.

I won't touch on some of the areas that were discussed before, but I think the one scenario I would like BWXT to talk about is if there is a cannister that spills over, or if there's free uranium powder on the

ground outside; with the winds how do you manage that kind of risk from dispersal? Is there a scenario where you look at there's a truck hydrogen tank explodes, knocks cannisters off the truck, they spill the content onto the ground. How do you manage with heavy winds -- how do you manage dispersal in that kind of situation?

MR. SNOPEK: Dave Snopek, for the record.

First, I'll say when we do shipping of material the truck connects directly to the building, so there's not a lot of outside activities. As a matter of fact, even when we transfer waste from our main Building 7 to Building 9, it's through transport truck. However, if there were to be a spill we have spill response protocols where we've got a team that goes out to clean up that spill. That would involve several steps: isolating the area, cleaning the spills, using appropriate PPE, and then surveying the ground to ensure that it has been brought back to a clean or a pre-release state. But, again, very low likelihood because all of our activities are taking place actually in the buildings.

MEMBER DEMETER: Okay, thank you.

THE PRESIDENT: Dr. Berube? Dr. Lacroix?

MEMBER LACROIX: It seems that the bone of

safety contention here is the gas tank, and I was wondering from BWXT's point of view, what are the advantages and the drawbacks of storing hydrogen in the form of a liquified gas versus compressed gas or maybe in some sort of another chemical, for instance ammonia, for instance?

MR. SNOPEK: Dave Snopek, for the record.

I can talk to two of those three options. I have mentioned we previously stored gas under high pressure, and it's just that, it is high pressure tanks. They are about 2600 psi, so it's a high pressure system.

Inherently, the liquid system is a low pressure system that operates at less than 150 psi. As a matter of fact, that's the pressure at which that pressure relief would take over, so it's a very low pressure system. By comparison, household water supply is about 75 psi, it's low pressure, so inherently it's a low pressure safer system. There's not a lot of energy in terms of its storage. That's probably the biggest difference.

The other thing I'd say is, the liquid hydrogen tank that we have on site, the number has come up a few times, 9000 gallons. The supplier of liquid hydrogen does bring it to site and brings it to every other site where liquid hydrogen is used in tanker trucks that are

largely the same sort of tank except on wheels. And the capacity of those transport trucks is actually greater than 9000, they tend to be 12,000 to 17,000. So, just kind of as a comparison these things are driving around on the roads all the time and are exposed to all sorts of other hazards and in larger quantities potentially. So, the tank that we have, you know, is kind of more inherently safe. And we made that decision in 2000 to go to a liquid system for that reason.

MEMBER LACROIX: Thank you for this information.

THE PRESIDENT: Dr. McKinnon?

MEMBER MCKINNON: Yes, I have a question about the drums that are used to store the uranium dioxide. We have seen pictures and they look like oil barrels. How fireproof are they, is one question. And, also, are they the same containers that are used during transportation?

MR. SNOPEK: Dave Snopek, for the record.

Yes, the pictures that we had on the slides are used both to transport the UO₂ powder from the supplier to the site and are used to store. Storage is not terribly long-term, it's kind of in the process storage, so when we receive something it's not very long until it's

actually used in the process.

Your question is, how susceptible are they to fire? As part of our safety analysis reports we have looked at drum -- general drum exposure to fire. Generally drums that are sealed the way ours are with a very robust ring around them to hold the top on, generally they survive quite well in fire and very few drums actually eject their lids when exposed to fire.

THE PRESIDENT: A question around your evacuation plans and notifications. Do your emergency plans consider or cover evacuation plans and notifications?

MR. SNOPEK: Dave Snopek, for the record.

From a radiological perspective the safety analysis report looks at off site releases, and there are off site releases in the event of a fire within the facility. I think the distinction is when we're talking about hydrogen tanks there are hydrogen tank events that result in off site release of radio activity in the form of uranium. However, if there is a fire in the facility there is potential for release of uranium from the facility.

On the slides that we showed this morning we took kind of the worst case events and showed some of the data on that, and that was off site concentrations.

For smaller events, the releases are much, much lower. But in all cases there is no radiological release that leads to the criteria for public sheltering or public evacuation according to the provincial *Nuclear Emergency Response Plan*.

THE PRESIDENT: And from a non-nuclear hazard perspective, would you ever see a possibility of requiring that?

MR. SNOPEK: Dave Snopek, for the record.

We have identified in our Emergency Response Plan that for some events with the tank which are very, very unlikely, that there may be a need to do an evacuation. However, the controls on those conditions, for example the tank is sited in such a way that there's no combustibles in the area.

And really the largest hazard would be if there's a fire burning impinging on the tank and that's for reason the tank is sited according to NFPA 55, which has certain stand-off distances to combustibles so that we don't have that material available to generate that condition. However, if that condition existed at that point we'd be looking at evacuating off site to some level. But, again, very, very unlikely.

THE PRESIDENT: And so in that very, very unlikely event, I mean that was one of the lessons learned from the Fukushima incident, have you thought through how you would carry out that evacuation?

MR. SNOPEK: This event - Dave Snopek, for the record.

This event would be entirely an industrial safety type of hazard. It would be similar to an industrial safety hazard at any facility and the Fire Department would be following the protocols that they would for any industrial facility to initiate that community response.

THE PRESIDENT: Okay, thank you. Over to you for any final comments.

MS TUER: No final comments other than thank you for the opportunity to voice my concerns.

THE PRESIDENT: Thank you for your intervention. The next presentation is by Mr. James Tuer as outlined in CMD20-H2.180.

Mr. Tuer, the floor is yours.

CMD 20-H2.180

Oral presentation by James Tuer

MR. TUER: Thank you very much. To start, I realize most if not all of the concerns I'm about to address or bring up have likely already been addressed in documents or presentations that have been released in anticipation of this hearing. But I'm coming at this issue from the standpoint of a person who lives around the corner from the plant, who would like to expect information, expect important safety information about the plant be delivered to my mailbox as opposed to me having to look things up online on my own volition.

So if I raise questions about issues that BWXT has addressed on their website or in documents provided here, it's because I feel there should be a more open dialogue with the neighbourhood on an ongoing basis, to keep us informed about the goings on in our backyard.

I live one block east of the Lansdowne BWXT plant, with my young family, and I am personally not comfortable with the building being granted a license renewal for another ten years. Admittedly, we were unaware of the function of the facility when we moved to the

neighbourhood in 2013 and were alarmed to learn sometime later that we're living in close proximity to such large amounts of powdered uranium oxide.

I'm not against nuclear power generation and have no reason to doubt the skill and professionalism of the people that work at the plant, but it seems inappropriate to have this kind of facility in the middle of a densely populated and soon to be drastically more populated part of the city.

I'm aware of the neighbourhood's industrial past and that it might have once made sense for this building to have been located here. But the growth that Toronto has seen in the 55 years since the plant began operations means its presence in the current location of no longer tenable.

The main concerns I have with the BWXT plan are these: A facility housing powdered uranium dioxide simply should not be located within such a heavily populated area. It has been in the neighbourhood longer than many of the residents have but that does not mean it deserves to remain.

I'm aware that the danger from uranium dioxide particles escaping from the facility and making it

into my body is very low. But living within such close proximity to a building that stores hundreds of tonnes of the stuff obviously creates a much higher risk of breathing it in than if it were not be there at all. I hate taking a stance that essentially equates to nimbyism but this facility should be relocated far away from anybody's backyard, not just my own. It belongs in an industrial park alongside other facilities that deal with hazardous materials instead of across the street from townhouses and apartments.

As someone who lives a block away, I'm upset that I haven't been told of a contingency plan outlining what me and my neighbours should do in a worst case scenario emergency at the facility, or how we would even be notified of such an emergency. Is there a siren that will go off?

I'm further bothered to hear that when such concerns have been raised at meetings in the community they were met with responses implying that such emergencies were essentially impossible; that they just wouldn't happen, as if ruling out human error or freak accidents is a reasonable and responsible thing to do. The plant is directly next to train tracks, as we've talked about lots

here. As safe as it is, nobody can say a derailment is impossible.

If we have not been told an emergency plan because such a worst case scenario wouldn't allow time for evacuation then that's all the more reason for it to be far away from any area people live.

On another note, the facility is detrimental to the further development of our neighbourhood with the entire west side of Lansdowne being turned into residential units over the last decade and a half, the blossoming, dining, retail business scene on Geary Avenue, and the massive Gallery on the Park project, the writing is on the wall. Davenport, Dovercourt, Wallace, Emmerson, has become a hotspot for young families such as my own who are excited to join this growing part of the city. It will be far better for the future of the community and the city itself if we were able to utilize this location for more housing and retail purposes.

I have several questions for BWXT and the CNSC:

Have there been any long-term studies looking at cancer rates or other illnesses related to powdered uranium dioxide in the neighbourhoods surrounding

the plant? And how will the community be notified in the event of an accident?

I don't feel that the community has been sufficiently notified of this hearing process and what we as community members are to do in the event of a disaster, regardless of how unlikely those disasters may be.

I understand communicating these issues more openly with the neighbourhood will raise awareness of the plant's function to those currently oblivious which may create more resistance to your continued use to the Lansdowne property but it's something that simply must be done.

I am not against the existence of this plant, only its location. This kind of facility does not belong in a residential area. And for these reasons, I feel that their license should not be renewed.

Thank you for your time.

THE PRESIDENT: Thank you very much for your intervention. Dr. Lacroix?

MEMBER LACROIX: Thank you very much, Mr. Tuer for this intervention. You have raised a number of very interesting questions, and one of these questions I will direct -- re-direct it to staff. It concerned have

there been studies looking at cancer rates in the neighbourhood of the facility?

MS TADROS: Haidy Tadros, for the record.

I'd ask our health specialist in Ottawa to take that question.

MS RANDHAWA: Kristi Randhawa, Radiation Health Sciences officer, for the record.

So as noted previously, and by the Toronto Public Health Unit, there is monitoring of cancer rates within this area. There have been studies carried out over several decades that have repeatedly demonstrated that people who live near nuclear facilities are as healthy as the rest of the general population. So, for example, there have been many studies in the Port Hope, Ontario, where there was the radium and uranium processing and fabrication industry; it's been there since 1932, and we have synthesized all these studies and used a weight of evidence approach to show that -- or, which has shown that there are no adverse health effects that are attributable to the nuclear industry in Port Hope.

Port Hope has a little bit of a different story too where some of the waste was improperly disposed of throughout the town, which is unlike the BWXT sites, so

we see no risk in that population.

On top of that, with the environmental monitoring and the wealth of information that we know about the health effects of radiation exposure at these very low doses, we would not expect any increase in the likelihood of health effects.

MEMBER LACROIX: Thank you. Thank you for these explanations.

THE PRESIDENT: Dr. McKinnon? Dr. Demeter? Dr. Berube?

MEMBER BERUBE: Just one question that the intervenor brought up with regard to warning systems from BWXT in the event of an emergency situation. What kind of warning systems do you have? How do you employ them, and are they auditory or are they visual? What are they exactly?

MR. SNOPEK: Dave Snopek, for the record. So within the plant they are auditory systems. We have a fire alarm as well as other alarms that are enunciated within the building. But there aren't external alarms in the yard or alarms for the general population for the reasons that we've talked about.

THE PRESIDENT: Mr. Tuer, a question for

you. How were you notified of this hearing process? How did you get to know about it?

MR. TUER: At first it was door-to-door activists coming and alerting me to -- just making sure I know about what the facility was doing and then sort of like letting me know about the process. But it wasn't until a close neighbour of mine decided to take it a step further and got involved and felt like our voices would help to be added that really convinced us both to get involved. But it wasn't from BWXT outright.

THE PRESIDENT: And so from the CNSC about the hearing itself, how would you have liked to have been notified of it?

MR. TUER: Someone at the door, or something in the mail. Something that was simple, that wasn't too text heavy that just laid it out in simple terms and is easy to understand, and wasn't too -- that felt like it was more inviting; didn't feel like when you look at it that you could tell that it -- like I would be trying to be held back by the amount of information I'm being provided with -- just something simple and to the point.

THE PRESIDENT: Thank you. And did you come to this session underneath the Regulator?

MR. TUER: I did not.

THE PRESIDENT: A question for BWXT, how do you find members for your community liaison committee?

MS CUTLER: Nathalie Cutler, for the record.

We issue a mailer to 4000 individuals or 4000 residents in our communities to advertise the fact that we have a committee and we're looking for new members. We do that every fall. And we also put out a social media post. We also include that on our website. And, we also hang fence banners along Lansdowne so that folks that don't get out mailers or read our mailers see that when they walk by.

THE PRESIDENT: Good. And then I think just from the intervenors that we've seen for this hearing who have shown a great deal of interest, if they're not on your distribution list you may want to include them as wanting to participate.

Mr. Tuer, any final words from you, please?

MR. TUER: Yeah. Just based on what I've heard since I've been here, that a lot of neighbourhood fears I feel could be dealt with or handled a little better

if there was just a little more sort of openness where just say like the hydrogen tank, for example, that seems to be a very recurring thing where there's a -- we see it and are fearful of it. Where, maybe if we knew some of these issues, like if there was a message being like 'Hey, we know you're probably -- you see this giant tank in our parking lot, and here are the facts. Like, this is why you don't need to be afraid of it. This is what's going to happen.' If there's something, as opposed to just not saying anything and letting it sort of fester amongst the neighbourhood and then spreading rumours and things like that.

So just more openness in addressing things and say like, "If there is something that happens, you will probably be addressed by the fire station, like it's not going to be like a huge mushroom cloud if something goes up here." Just something to sort of ease our minds.

THE PRESIDENT: Thank you.

MR. TUER: Thank you.

THE PRESIDENT: And thank you for your intervention, both of you.

MR. TUER: Thank you very much.

THE PRESIDENT: Okay. The next

presentation is by Mr. Adrian Currie, as outlined in CMD 20-H2.125.

Mr. Currie, the floor is yours.

CMD 20-H2.125

Oral presentation by Adrian Currie

MR. CURRIE: Thank you very much.

As has been said, my name is Adrian Currie and I live at 54 Osler Street. I live less than 1 kilometre away from the BWXT uranium factory located at 1025 Lansdowne Avenue. I found out about this uranium factory a few years ago when it was in the news. To my knowledge, BWXT has not communicated with the community or at the very least I missed the communication.

When I moved into the neighbourhood six years ago, I did not know that the factory made uranium pellets. If I had known, I probably would not have moved into my home, knowing that there was a uranium factory which produces 50 percent of the uranium used in Canada so close.

People have the right to be informed before they move that there is a factory located at 1025

Lansdowne Avenue. I feel that it is highly inappropriate to have a factory -- have this factory in an urban setting because it is not worth the risk of inhaling particles of uranium. Not only that, it is unfair and foolish, in my opinion, to create high-level nuclear waste that will remain lethal for millions of years.

I am angry that this factory is allowed to produce five tons a day of uranium in our community. It is my opinion that BWXT should not have its licence renewed because the risk of an accident is unacceptable.

In addition, I do not believe that working with 700,000 tons of uranium onsite is safe and that none of this will accidentally escape into the air.

The public has a right to know what the worst-case scenario is and if BWXT is insured.

An issue of trust. Respectfully, I do not trust CNSC. I am not a scientist nor a specialist on the topic, but I am a concerned citizen. If you remember, cigarettes were causing cancer for many, many desperate decades before citizen groups started taking the cigarette companies to court and started to win. Where was the government to protect our citizens?

Times have changed. A plant built 50

years ago when the population was much lower may have been acceptable, but it is not now, not in my opinion.

People over profits. I appreciate that you, the members of the committee, the CNSC, and the employees of BWXT have families and need to provide for them, but let's put people before profits and learn as we live.

I am Jamaican by background. In Jamaica we have a saying in, "You live, you learn." We have lived through Fukushima and we must learn from this accident which became a tragedy.

Sunrise Propane. Whatever the cause, it happened and a life was lost. Two lives were lost. We do not need an explosion of this hydrogen tank immediately beside an apartment building surrounded by thousands of citizens.

The hydrogen tank. I have heard testimony about guidelines. Guidelines are okay in theory, but assessments are necessary. Not having an assessment by the Toronto Fire Department is unacceptable considering the risk to human life, whatever the reasons.

BWXT. To shut down this plant and to move to a more remote area for the benefit of citizens would be

costly to you, I appreciate that, but can you put a price on a human life? Can you put a price on two human lives?

New technology and safety precautions are all good in theory, but the risk to the surrounding community and the citizens, to the people -- we are all people -- the risk is unacceptable. We as a modern society living in the 21st Century and as a democracy can and must do better.

Thank you.

THE PRESIDENT: Thank you.

Dr. Berube...?

Dr. Lacroix...?

MEMBER LACROIX: Yes, I do have a question for you. Thank you for your presentation.

You said that you do not trust the CNSC. What could the CNSC do to win your confidence?

MR. CURRIE: That will take some time. What needs to be done is to not put the corporation's interests before the citizen's interests, before the people's interests. It is a pattern now in our democracy and our Western world that the corporations have way more influence over the government and our regulatory bodies than in my opinion they should. We tend to put the profits

and the maximizing of shareholders' interest above the needs and the lives of citizens. That must change.

There are far too many instances on this planet right now where individuals are a second thought, where the lives of citizens are a second thought. Why? Because corporations have been able to convince our political leaders and our regulatory bodies that maximizing shareholders' interest is more important than the lives and safety of citizens.

In this 21st Century, in this democracy, that must change and we must start today and move forward with that change. That is why I do not trust the CNSC, respectfully. And I appreciate the fact that you have lives and you have jobs to do.

THE PRESIDENT: Dr. McKinnon...?

Dr. Demeter...?

I have a question and I don't know who to direct it to, so maybe I will start with you, CNSC.

We have had a few intervenors talk about them having moved into this neighbourhood not being aware that there is a nuclear facility and that that should have been an obligation on someone to inform them of that and they may have actually not moved in had they known about

it. Can you comment on that? Like does that happen in any other jurisdictions and who would, other than, you know, the person moving in trying to do their own due diligence?

MS TADROS: Haidy Tadros, for the record.

So from our opinion, based on the requirements put on BWXT or any nuclear facility, we have the public information and disclosure protocols that are a requirement of these facilities and we would look to the licensees to know what their community's needs are, to be more proactive in providing information to their community needs on a regular basis, to update those public information and disclosure protocols and to stay I guess abreast of what the concerns and the issues are. So that would be on the facilities.

As a regulator, as an organization and an agency that is responsible for safety, part of our role is to also ensure that we communicate regularly. We have done so in this case, it was before the licensing hearing. We have talked about this matter about more communications to the Commission on a regular basis when we go before you for regulatory oversight reports. We as well need to look at our mechanisms and how we would provide more information, whether it be through our website. I mentioned earlier the

facility-specific pages.

So I think it is not on one individual or one organization, it is a responsibility that is shared in terms of communication. Communication goes two ways.

We do reflect on all of the interventions received here today and from the themes that are coming out, a lot of them have come here today with either a knock on their door or a phone call person to person. We would need to look at that mechanism and see how we can potentially provide that to the communities potentially in advance of a licensing hearing to make sure that they are informed about the information that we have.

So these are sort of initial thoughts about communication and how to I guess do better.

We have our communications experts who look at BWXT's public information disclosure program if you would like a bit more detail on what we look at.

THE PRESIDENT: Have we looked at, say, the City of Toronto's website and honed in on this particular neighbourhood and it will show all the industrial installations that are in there and BWXT's facility would be there? Like does that exist, do you know?

MS TADROS: Haidy Tadros, for the record.

To my knowledge, I do not believe that that exists at this point.

THE PRESIDENT: We will save that for tomorrow when they are back with us.

Back to you. Any final words?

MR. CURRIE: Yes. Fukushima, nuclear technology, it was a great idea 60, maybe 70 years ago, but we have learned. Accidents happen, human error is unavoidable. Safety precautions, no matter how good and well-intentioned, gaskets blow, seals leak, accidents happen, people's lives are in danger. This facility is in the middle of a dense residential neighbourhood. Fifty years ago it might have been acceptable. In my opinion, I don't think it is and I think that whatever the cost to move this facility, it should be endured, it should be taken because we cannot put a price on one person's life, much less a community's safety. We must live and we must learn and we must put people before profits. Thank you.

THE PRESIDENT: Thank you very much for your intervention.

The next presentation is by North American Young Generation in Nuclear, as outlined in CMDs 20-H2.92

and H2.92A.

Mr. Sunassy, the floor is yours.

CMD 20-H2.92/H2.92A

Oral presentation by

North American Young Generation in Nuclear,

Durham Chapter

MR. SUNASSY: That is correct. Veeshesh Sunassy, for the record.

First of all, thank you for the opportunity to intervene in this matter. I am the Vice President of the North American Young Generation in Nuclear, Durham Chapter, NAYGN in short.

The vision of NAYGN is to develop and shape leaders to energize the future of the nuclear industry. Today we are here to extend our support to BWXT licence extension application.

I work for the Darlington Refurbishment Project. I can see the key role that BWXT plays in ensuring that Ontario is being provided with clean and reliable energy safely.

Sixty-two percent of electricity in

Ontario is provided by nuclear energy. That is about 15 percent for Canada. That helps remove about 15 million tons of CO2 in the atmosphere. That is equivalent to 3 million cars.

In November 2019, the refurbishment project reached a major milestone as 480 new fuel channels were placed in Unit 2. These fuel bundles were provided by BWXT, manufactured at both the Toronto and Peterborough facilities. As future units undergo refurbishment, both at Darlington and at Bruce, we have a need for new fuel which BWXT can supply safely and with quality.

This year our organization had to boost the Toronto and Peterborough facility. Based on what we show and some of the concerns we have heard today from members, we will be addressing three areas in our intervention: safety, environment and community impact.

I will talk about safety, because safety is first.

Since the 1950s, BWXT has supplied the Candu nuclear fleet with reliable fuel and demonstrated their commitment to the industry, community, environment and public safety. CNSC staff has consistently rated BWXT's performance as satisfactory in all safety and

control areas, with zero lost time incidents for the latest reporting period at its Toronto and Peterborough facilities.

When my colleagues and myself toured both the Toronto and Peterborough facilities this year, we saw firsthand that their trained and competent staff have safety in the forefront of their minds. From their multiple environmental release safeguards to the general cleanliness of their production facilities, we were impressed on all counts.

For this reason, among the others to be discussed by my colleagues, I strongly believe that BWXT has earned the opportunity to continue being a pillar of safety in the growing Peterborough and Toronto communities.

MR. AWAD: Dany Awad, for the record. Thank you so much for the opportunity to let us speak today.

I am the current Professional Development Chair of the NAYGN, Durham Chapter and I am here to speak today about BWXT's role in protecting the environment and conserving it.

BWXT contributes to the continuous efforts of preserving the environment as they implement a

comprehensive environmental protection program geared towards monitoring and controlling radioactive and hazardous substances emitted from the facilities. The program is meant to identify concentrations in the environment and to assess exposure to the public.

During our facility tour, the level of rigour in terms of the facilities' waste management was visible, ensuring complete isolation between clean and dirty zones. In terms of facility design and procedural adherence, the implementation of the safety culture was evident with pre-job briefs, safety moments, ensuring the correct PPU was on, the handrails were used throughout the tour, clean floors and rooms with no clutter and appropriate safety signage present where needed, the use of negative pressure in rooms where uranium powder might be airborne. Additionally there is a water treatment facility onsite used to treat all the irradiated water used in the fuel pellet manufacturing process.

The efficacy of this program is reflected in the 2014, '16, '18 and '19 results of the Independent Environmental Monitoring Program. This, along with the conclusions of available health studies for uranium processing facilities, confirms that the public and the

environment in the vicinity of the BWXT Toronto facility are protected and there are no expected health impacts.

That addresses the environmental impact of the facility itself. However, by being one of the main suppliers of uranium fuel pellets, BWXT also plays a key role in minimizing carbon production and generating emission-free electricity.

Uranium is an abundant natural resource with considerable energy density. One uranium fuel pellet is capable of creating as much energy as 400 kilograms of coal, 41 litres of oil or 350 cubic metres of natural gas. Shifting away from fossil fuel and to renewable and emission-free sources of energy factors heavily into sustaining a clean and eco-friendly environment. Thank you.

MR. MATACHNIOUK: Danil Matachniouk, for the record. I am the current Communications Committee Chair of North American Young Generation in Nuclear, Durham Chapter. I am actually outside of the automotive industry.

BWXT Nuclear Energy Canada has supplied fuel and robotic technologies to Candu power stations for over 60 years and provides approximately 400 highly skilled positions in the Peterborough and Toronto regions.

I have spoken to the nuclear professionals at BWXT during my site visit to both their Peterborough and Toronto facilities and know first-hand their commitment to safety and professionalism. We discussed their public information initiatives and were pleased to learn about their 24/7 toll-free telephone line, local newsletter and postcard communications, yearly community barbecues, public tours, and much more. I think BWXT's transparency and desire to educate the public on their business is a quality that other organizations should strive for. It goes above and beyond their requirements.

I also believe it is healthy to have competition in fuel production as one corporation cannot have a monopoly on the industry. Currently, Cameco and BWXT are the sole manufacturers of nuclear fuel for all Candu nuclear power stations in Canada. If BWXT was to not renew its licence, Cameco would be the sole producer of nuclear fuel, making it a single point vulnerability.

Furthermore, given the recent Minister of Natural Resources' announcement regarding the federal government's commitment to the development of small modular reactors announced last week at the Canadian Nuclear Association 2020 Conference, BWXT is well positioned to

support the Canadian nuclear industry in the development of these technologies. I am confident that BWXT will be able to deliver its role as a safe and responsible supplier of nuclear fuel and robotic technologies for the Canadian nuclear industry.

In summary, we believe BWTX is qualified and competent to continue to run their facility in a safe, clean and transparent manner.

Two, we believe BWTX represents a new model of an outstanding corporate citizen.

Three, we believe BWXT can continue to deliver low-cost, clean, dependable fuel and engineering solutions to our current and future nuclear energy fleet.

On behalf of North American Young Generation in Nuclear, Durham Chapter, we strongly support the continued operation of BWXT Nuclear Fuel Processing Facility in Toronto and Peterborough and the renewal of their nuclear fuel facility operating licence. Thank you.

THE PRESIDENT: Thank you.

Dr. McKinnon...?

MEMBER MCKINNON: Thank you for your perspective.

So as a committee, do you have any

outreach activities to the public?

MR. SUNASSY: Thank you. Veeshesh Sunassy, for the record.

Yes. As part of our mission we engage and inform the public about the benefits of nuclear technology. One of the things we will do in April, we also go to schools to advertise about nuclear technology. We have issued -- we have a book that explains the benefits of nuclear technology which is on sale on Amazon. That's one way we do it.

The second way we do it, we do lunch and learns, where any development that happens in the nuclear business, we put that forward to the public and to the members and also through our website. Thank you.

MEMBER MCKINNON: Okay. Because I am quite interested to know what you found, you know, as a committee has been most effective that you might be able to share with the company.

MR. SUNASSY: Definitely. Personally, I was at the Canadian Nuclear Association's 2020 Conference this week. One thing that was very beneficial is we presented to students who came to the conference and a lot of them expressed interest in opening new NAYGN chapters.

For example, Point Lepreau, New Brunswick didn't have a chapter; Western University didn't have a chapter. They were very interested in opening chapters.

So going out to universities, we are presenting ourselves and explaining what we do, what we are advocating for. This is what we have seen has been most beneficial. Because our target is mostly young professionals who want to get into the nuclear industry or the energy business as a whole and putting our name more there is one of the things we found was most effective.

Dany is our Professional Development Chair. Maybe he can comment on the professional development aspect of that.

MR. AWAD: Well, in terms of professional development, we are always looking to support all the students and all the new professionals, help them transition from the student life into the professional industry life, moving from academics to industry. So we do that in a variety of ways.

We believe that there is definitely value added in having technical seminars which we focus on, but we also believe that there is not as much attention being given to soft skills, communication skills within the

engineering and the technical world really. So that is something that we are also trying to focus on a lot by having soft skill seminars, allowing -- giving opportunities to network, creating networking events. So that is one thing that we try to focus on.

Additionally, we also do a lot of facility tours. One of the tours was actually with the BWXT facility, which we learned a lot from. And yes, so that covers essentially what we do, between lunch and learns, professional development workshops, soft skills and technical skills, as well as networking events. So thank you.

THE PRESIDENT: Dr. Demeter...?

MEMBER DEMETER: Thank you very much for your presentation. I appreciate the general discussion about communication and how you talk to young professionals. I'm interested if you have any advice for this setting specifically on how to communicate to your generation who are not necessarily professionals in the nuclear industry. So how would you communicate to the members of the public around this facility in your generation? What do you think are effective communication strategies to inform individuals of your generation?

MR. AWAD: Dany Awad, for the record.

Well, there are a lot of ways we can go about it, but I do know that the younger generation is very much in touch with social media, so that is something that we try to, you know, focus on a lot. The idea here is that there is a lot of knowledge gap, so most of the questions that we run into tend to be very fundamental in nature. So what we try to do is to reach out through social media accounts and also we do certain events where we present ourselves.

We kind of have certain setups where we encourage different students, different members of the public, to come out to us and ask us questions in a very casual manner. That can be in different social events or it could be on campus. It could be any place really where we know students would be eager to be or have to be. So that is what we try to do, just raising awareness in general through the channels that we have, be it in person or in social media, but we do know that in person tends to be the most effective strategy.

THE PRESIDENT: Dr. Berube...?

MR. MATACHNIOUK: I'm sorry, can I just add to the last point? I just wanted to add to Dany's

comments.

Danil Matachniouk, for the record.

Another great way that is already set up to reach out to the young generation of nuclear professionals is to join us at lunch and learns and technical seminars that we have to develop as young professionals.

Just to add to Dany's point, just that there is a knowledge gap for young professionals and by having that direct contact with senior nuclear professionals and learning about technical seminars or lunch and learns for the supply chain, or the facility tours that are provided by BWXT and other organizations, that is one of the best ways to reach us because that gives us a lot of knowledge that we require to continue to support the industry going forward. Thank you.

THE PRESIDENT: So let me follow up on Dr. Demeter's point, which is -- we will talk about BWXT's facility in Toronto specifically. What outreach can you do amongst the young professionals or the young members in this community to get them better informed about the aspects of their particular facility, what the risks are, how they are managing it and try to address their concerns?

Do you see yourselves playing a role in that at all?

MR. SUNASSY: Veeshesh Sunassy, for the record.

Definitely. Just for the record, the facility tour we had in Peterborough was something that was open to our members. We had about 25 members who went. So just by having 25 members going and them sharing their experience with their colleagues, that is one way of reaching out to the general public.

Another way that we could help is again by these lunch and learns, so by covering diverse aspects. So for example, future events can focus on safety and then even the licence extension. That was something personally I wasn't familiar with. So having a lunch and learn and events that explain these processes, what companies have to do to extend their licence and what is important for them. To me, the regulatory requirements, that is another way we can do it. And we also --

THE PRESIDENT: But my question is: How do you engage members of the community, not your professional community, I meant members of the public here in addressing their concerns?

MR. SUNASSY: Definitely. Our events are

open not only to our members, we advertise it through our social media and through our events, but the challenge we have in this particular scenario is they don't have access, they haven't heard of our organization. So if we do events, we are already targeting people who know about our organization. So far this is what we have noticed. So people like here don't come to our events just because they don't know that we hold these events where we explain. For example, once a month, every month, we have a meet and greet with an executive with the Board of NAYGN where people can come and talk to us, ask us questions about safety, about what we are doing for the future, but that is something we could take back so that we not only include our members or people who know about our organization, so for example putting it in newspapers so that we could reach out to a bigger audience.

THE PRESIDENT: Thank you.

Dr. Berube...?

MEMBER BERUBE: Yes. Thank you for your presentation. I'm curious as to your experience during your tour of BWXT's facility. I guess you said Peterborough, right, with 25 people? Could you just summarize the impression, did any of you personally go

through that, what were your impressions, what do you walk away with after that kind of an event?

MR. AWAD: Dany Awad, for the record.

Well, the first thing I noticed -- well, just to give you an idea, I do work in a nuclear facility and I am familiar with the level of rigour they have in these types of facilities. So that being said, when I was walking through the BWXT facility I was very pleased to get a very familiar sense of, well, a similar level of rigour in terms of procedural adherence and safety compliance and being very mindful of really everything from safety culture to having your PPE on and everything. And the most interesting part was once we started to get into the details associated with the manufacturing process and the waste management, so that was really interesting to me, well for multiple reasons, and what was amusing to me was that they had a water treatment facility onsite to treat all the irradiated water which is a byproduct of the manufacturing process. So having a water treatment facility onsite and having negative pressure rooms where uranium powder might be airborne, all these measures were very eye-opening to me, kind of explained a lot of details that I needed to know personally, also gave me a sense of

comfort I would say. So that was my impression from the tour of BWXT in Toronto. Thank you.

THE PRESIDENT: Dr. Lacroix...?

MEMBER LACROIX: Thank you for your presentation and your engagement. I have no questions, thank you.

THE PRESIDENT: Okay. Well, thank you for your intervention and your flexibility in allowing the other intervenors to get ahead of you. So thank you.

Moving on.

--- Pause

THE PRESIDENT: The next presentation is by the Committee for Future Generations, as outlined in CMD 20-H2.216.

Mr. Kotango Maburingo Kimura will be presenting this submission.

Over to you.

CMD 20-H2.216

Oral presentation by

Committee for Future Generations

MR. KIMURA: I just wanted to say that

that name is actually not correct.

THE PRESIDENT: So sorry about that.

MR. KIMURA: It's okay. That is actually my old Facebook name.

My name is Kota Kimura. I am here on behalf of the Committee for Future Generations, which is a group of residents in Northern Saskatchewan who are mainly Cree, Dene and Métis Indigenous peoples.

The BWXT Technologies Inc. uranium processing facility is not a stand-alone concern, it is only one part of the nuclear fuel chain, beginning with uranium mining and milling and ending with uncertain dilemma of nuclear waste storage and reprocessing. The impacts along every link of the nuclear industry chain are affecting us now and will continue to create hazardous risk far into the future.

The uranium dioxide that is transported to this facility on busy public highways will be required to avoid going through other cities and it would have to take the hazardous goods route. How is it allowed to be transported into downtown Toronto on residential streets if it is considered too hazardous everywhere else?

Uranium U208 is mined in Northern

Saskatchewan at remote mine sites. Not since the uranium mines near Uranium City, now nearly a ghost town, and Elliot Lake, Ontario has a uranium mine being located near a community where it would have obvious health impacts on the public. These places are so hazardous to work at that employees are only allowed onsite for two weeks in and then away for two weeks. They are required to wear radiation monitoring devices to determine how much radiation they are exposed to. Even so, there are studies which show that the radionuclides and heavy metals are not remaining confined to the mine sites. These are known to be entering the traditional food chain of the mainly Indigenous people of the region. Since BWXT Technologies Inc. is located in a high-density population residential area, it is questionable how its continued operation is justified.

There is a documented uranium spill at the Key Lake Mill site in 2018 where uranium which had absorbed into the concrete floor of the molybdenum extraction plant seeped through the porous concrete. It was eventually discovered that there were elevated levels of uranium in the groundwater that had flowed several metres from the building. The company's experts and engineers are still not forthcoming with a plan to clean up the site.

When the CNSC was asked what regulations they have regarding building materials using such facilities where radioactive and other toxic materials are, the CNSC response was that they do not regulate the building materials, they depend solely on the Canada Building Code, which gives guidelines that set minimum standards.

In light of this revelation, the public in the vicinity of BWXT Technologies should be very concerned. The IEMP done by the CNSC does not show any monitoring is being done beneath the building. How contaminated is the building? What is the plan for protecting the public of the residential area when this business closes and the building must be decommissioned and demolished? These are serious concerns that must be addressed, the sooner the better.

Port Hope is another example of poorly regulated facilities that contaminated many homes at great cost to clean up and even greater cost to the health of many citizens of that town. It would be irresponsible of the CNSC to allow BWXT Technologies to continue to operate, store and produce these risky hazardous materials in the residential area around 1025 Lansdowne Avenue in Toronto,

Ontario.

It is time that CNSC and BWXT do the right thing, close and decommission this uranium processing facility with the greatest of care. The impacts are no longer unknown. The people should not be expected to live with the risks any longer. One mechanical failure, one accident is all it takes.

Thank you for having me here.

THE PRESIDENT: Thank you for your intervention.

Dr. Demeter...?

MEMBER DEMETER: Thank you very much for your intervention. It leads to a question that I have had as well and it gives me an opportunity to ask it.

A number of intervenors have alluded to how long the plant has been there. It's an old plant, it has changed hands and management. I wanted to ask if there are legacy issues related to the plant's operations through its decades. Has there been source characterization of those legacy issues and have they been built into the decommissioning plan such that the funding for decommissioning, the guaranteed funding, takes into account those legacy issues? And maybe if there is significance

between Peterborough and Toronto for those kinds of issues, maybe you can just kind of summarize it that way.

MR. MacQUARRIE: It's John MacQuarrie, for the record.

So by legacy issues I'm assuming you mean uranium specifically in the case of Toronto and Peterborough, and perhaps beryllium in the case of Peterborough?

MEMBER DEMETER: Yes. One thing I am not aware of is a lot of these operations had very different applications in the past, I'm not sure of the whole history of what was produced there, but if it's just uranium, then that's what it is, but are there legacy issues with areas that are contaminated that would need special cleanup in the buildings for example?

MR. MacQUARRIE: If you are referring to these facilities' use before they were used for making nuclear fuel, so prior to that by General Electric, we don't have knowledge of that as BWXT. That would be a question for General Electric to answer.

Our focus is the nuclear operations on these site, which are both GE sites that we lease from.

So we have well characterized what uranium

is in these facilities and beryllium in the case of Peterborough. That is reflected in the decommissioning plans that we have.

Just to be clear, so in Toronto where we make pellets, we have cleaning staff there that are cleaning the facility. We know that we don't have loose uranium around the facility. We know that there is no substantial uranium that we are aware of on the floor, the ceiling, the walls. Part of the decommissioning, though, would be to methodically survey all of those materials and remove them, and to the extent that they are contaminated and need to go to a special waste stream, that would be done, because it is easy to detect and characterize those materials.

So in the case of decommissioning, the fund for Toronto is a bit higher because we suspect that there will be more material removed from walls and perhaps floors and that that would go into a nuclear waste stream.

In the case of Peterborough where we are manufacturing bundles with pellets, sintered pellets, we expect there is less material that would have to be removed from the facility. Again, similar situation, we have cleaners maintaining that, we know they are clean. We know

that the presence of beryllium is very low in the facility and we continue to clean for that. And all of that is reflected and built into the decommissioning plans, preliminary plans that we have.

MEMBER DEMETER: Thank you for that.

And for staff, maybe you can help me out. If there are legacy issues that aren't related to the current process but still have contamination issues that are non-radiologic, let's say lead from previous -- is the current licensee responsible for all remediation for legacy issues in those buildings or is that under a different jurisdiction or a different scheme?

MS TADROS: Haidy Tadros, for the record.

So we can confirm that there are no radiological legacy issues from the old GE Hitachi. What we do know is that there are dioxins and PCBs that potentially might be on the premises.

With regards to the preliminary decommissioning plan, I would ask Ms Karine Glenn, who reviews the preliminary decommissioning plans and cost estimates associated with the cleanup of the current site.

MS GLENN: Good afternoon. My name is Karine Glenn and I am the Director of the Waste and

Decommissioning Division at the CNSC.

I confirm that in putting together the decommissioning plans the licensee must consider any hazardous waste that may be non-radiological in addition to any waste that is radiological. So they need to consider both non-radiological hazardous waste and radiological hazardous waste, so we look at that in their preliminary decommissioning plans.

It is also important to note that the level of certainty that the licensee has towards characterization and knowledge of their site and knowing what's there and what's not, how certain they are will affect the level of contingency that they apply and it is per activity. And so that is all taken into consideration in our evaluation and they have, as BWXT pointed out, identified areas that would be removed from the buildings and disposed of as waste.

So yes, they do need to take into account not only radiological but also hazardous waste.

MEMBER DEMETER: So I just want to clarify. The non-hazardous waste that you are referring to includes legacy issues from the plant that they are currently operating in that may have been the

responsibility of previous owners/occupants?

MR. JAMMAL: It's Ramzi Jammal, for the record.

MS GLENN: Karine Glenn, for --

MR. JAMMAL: A cleanup is a cleanup and PDP with respect to the preliminary decommissioning plan and the work that they have to do, it's depending with respect to the end use of the site. But a cleanup is a cleanup. In other words, if it's going to be a greenfield or a brownfield, that is what the PDP is set up to do.

As Ms Glenn mentioned, they take into consideration hazardous and non-hazardous substances to include any legacy. So once it is determined to be a greenfield, then it's cleaned up to that level; if it's determined to be industrial brownfield, then it's cleaned up to that level.

MEMBER DEMETER: Thank you very much. That clarifies it.

THE PRESIDENT: So I'm kind of finding it a little challenging reconciling that with what I heard you say, that you are not sure what legacy waste may have been left by GE, but you are still liable for cleaning that up. Is that correct?

MR. MacQUARRIE: It's John MacQuarrie, for the record.

So yes, we are liable to clean it up, but we do have a lease agreement with GE that makes them liable to us for anything other than the materials I discussed.

THE PRESIDENT: And if I look at the revised preliminary decommissioning plan estimates, how much -- I didn't know what the previous ones were. Do you have that? How much did they change from five years ago?

MS TADROS: I will pass this to Ottawa to the financial guarantee expert.

MS GLENN: Karine Glenn, for the record.

The difference for the current financial guarantee is a decrease of approximately \$4 million from the previous value of financial guarantee. And that's because they've gotten greater precision as to what the contamination is onsite and what they would have to decontaminate as well as greater accuracy of the cost of certain activities that they would need to do.

And so we did look at that, and certain -- only certain activities they were able to decrease the contingency on. And that's what contributed to the decrease in the value of the financial guarantee.

And just to complement Mr. Jamal's answer, just so we all understand what the end state for this facility is for this decommissioning plan is release as an industrial site. So it's not a green field, it's what we would call a brown field. But again, it would be unrestricted use for industrial reuse.

THE PRESIDENT: Thank you.

Dr. Berube?

MEMBER BERUBE: So just to follow up on this, these facilities are leased facilities; right?

MR. MacQUARRIE: Yes, that's correct.

MEMBER BERUBE: Right. So the decommissioning plan is to return them back to the leaseholder, which would be GE in this case?

MR. MacQUARRIE: That is correct.

MEMBER BERUBE: Right. So this decommissioning does not include razing these facilities to the ground. It's just basically clearing yourself out, cleaning them up, giving them back to GE?

MR. MacQUARRIE: That's correct.

MEMBER BERUBE: Okay. Thank you.

THE PRESIDENT: Dr. Lacroix?

MEMBER LACROIX: Thank you for your

presentation. An interesting question that you raise is the transportation route, and I would like to know, is it confidential or is it of the public domain?

MR. MacQUARRIE: This is John MacQuarrie, for the record.

Yes, we view that as confidential information. It is known to the people that it needs to be known to, but we don't publish that.

MEMBER LACROIX: Thank you.

THE PRESIDENT: Dr. McKinnon?

MEMBER MCKINNON: Yes, I want to address a question you had on the contamination of the building, and it's related to an issue that has been raised before about the discharge into the sewer system.

When you're cleaning up and using the water to flush and clean the floor or if there's an overland rainfall and so on, there's a release into the sewer system. But my understanding is you also control that in the building with a settling tank, and you measure the concentrations of radionuclides in that before releasing.

So my question, actually to CNSC: In the settling period, these are heavy elements we're talking

about, is there any chance of these settling out? Or once the discharge into the sewer system takes place, would heavier particles have any risk of accumulating through settlement at any point? Is that a risk factor?

MR. AMALRAJ: Julian Amalraj, for the record.

So that is accounted for. They have a flocculant that actually helps with the settling. And the heavier particles, along with the flocculants, actually get to the bottom of the tank. And the cleaner water is continuously sampled, and when it reaches the level that it can be released, that is when it is released.

MEMBER MCKINNON: Okay, so that's all taken care of before it's actually discharged?

MR. AMALRAJ: That is right.

MEMBER MCKINNON: Okay, thank you.

THE PRESIDENT: Okay, thank you. Thank you very much for your intervention. Any final comments from you?

MR. KIMURA: I have a question, actually. In regards to the transportation, the response, you know, the route, it's confidential. And the previous responder said only people who need to be informed. Who are these

people?

THE PRESIDENT: BWXT?

MR. MacQUARRIE: It's John MacQuarrie.

I'm not sure I entirely understood the question. But in terms of the transportation route that we follow, the -- so our people involved in the operation know that, the trucking company knows that, that's -- Transport Canada, I believe, knows that, CNSC I believe knows that route, so that we view that that's sufficient. Nobody else in our view is needed to know that.

And I'm sorry if there's another part of the question, I didn't understand it.

THE PRESIDENT: Yeah, that was the question, who needs -- because you said the route for transportation is confidential and only those who need to know, know it, and he wanted to know who needs to know it.

Thank you very much for your intervention.

MR. KIMURA: Thank you.

THE PRESIDENT: Okay, the next presentation is by Ms. Sarah Mancini, as outlined in CMD 20-H2.219.

Ms. Mancini, the floor is yours.

CMD 20-H2.219

Oral presentation by Sarah Mancini

MS MANCINI: Hi there. My name is Sarah Avery Mancini. I am 24 years old, and I am one of the 1,966 concerned individuals who have signed the petition to stop BWXT's licence renewal.

First I would like to thank you for moving this hearing as part of the petition from the original location at Yorkdale and closer to the facility.

I did not grow up in Toronto, nor do I have any family within 365 kilometres of the city. For the past four years, I have been looking out for myself in the city with skyrocketing rent and a housing crisis. Like all the interventions before me, I have simply been trying to build a home and a life here.

I have lived and worked within 600 metres of this plant since 2017. I was even excited when developers bought my old rental, as that meant more people were going to see the potential in community this area has to offer.

Last year I found the perfect spot to call my home on Brandon Avenue. One night, while exiting the

subway from work, I was politely approached by someone asking if I knew there was a uranium processing plant in this area. This is how I, and many hardworking individuals, found out about BWXT.

Did you know on an iPhone map, the building comes up still as GE Canada, with the subcategory industry? There is no website linked. For a company that claims on their website to have a public disclosure protocol providing information on the licensed activities to persons living near the site, why is their website not updated? Why is their name not listed? Especially on modern map applications like Waze?

In the initial presentation by BWXT, they stated 352 people were surveyed, 149 of which were regarding the Toronto facility -- that is less than half of that number -- of which 30 per cent knew of the facility's activities. If my math is correct, that is 45 people.

When I step out my front door every day to go to work, I have to stare at this facility -- the storage building, according to the photo diagram. Do you know what this makes me think? At the beginning of this intervention, I mentioned I'm not from here. I'm from Windsor, which shares a border with Detroit, where my mum

is from.

On December 5th, 2019, a property called Rivere Copper and Brass collapsed into the Detroit River, a river that flows 24 nautical miles directly to Lake Sinclair and Lake Erie. Before I am objected for relevancy, let me tell you why this matters. In the 1940s, Rivere Copper was subcontracted under the Manhattan Project, where it spent many years constructing uranium rods. During a holiday weekend, this site crumbled into the Detroit River.

Both Detroit and Amherstburg have drinking water intakes, and both the American and Canadian environmental alliances and health and safety institutes are concerned with the significant residual radiation contamination and the resettlement of contaminated sediment. In fact, one of the specific chemicals found was just confirmed by Ms. Haidy in the last legacy discussion, PCBs.

As Julie mentioned earlier today, this is an area living as a chemical cocktail from past industrial sites. I am well aware of the testing done internally by BWXT to ensure they have met environmental standards. But as Dr. James said, standards are often set by committees.

Too often we confuse a scientific result and its albeit correct facts as doctrine rather than exploring other results or variables to that controlled environment -- example: human error.

Your slideshow was dedicated to showing the public that you are meeting those standards, and that is great for BWXT. But this meeting is showing you a growing number of individuals who don't accept or agree with those standards. So I'd like to ask some critical questions.

1. I believe it was John MacQuarrie who confirmed earlier that BWXT's Toronto location is an existing facility. In document REGDOC-2.10.1, it says:

"REGDOC-2.10.1 is intended to form part of the licensing basis for a regulated facility ... as either part of the conditions and safety and control measures in a licence ..."

Furthermore, in the document it says:

"For existing facilities: The requirements contained in this document do not apply unless they have been included, in whole or in

part in the licensing or licensing basis."

"Should they ... not ... follow it, they should explain how their ... approach meets [regulations]."

My question is: Does the Toronto location follow the REGDOC-2.10.1 as a guideline? If not, can you specify your approach?

2. In the initial presentation by BWXT, it was stated your functioning is satisfactory. Is that a pass-fail system or is it a more tiered grading system?

3. Have you ever done testing on the inside of the transport trucks, specifically in the trailers transporting these drums, for any particles or anything potentially harmful that could transfer through clothing or other things?

4. In regards to Mr. Fernandes' presentation, you discussed insurance as it was transactional: how to get product out; how to repair homes; how to expect an explosion. But what price do you account for someone's life, someone's health?

THE PRESIDENT: Thank you.

Dr. Berube? Dr. Lacroix? Dr. McKinnon?

MEMBER MCKINNON: Yes, thank you for your comments. I have a question on that basis for the company.

So when the drums are transported and received in your facility, the intervenor mentioned, you know, possibility of dust escaping. Do you have any control measures to, you know, prevent anything or detect anything in trucks or prevent any loose dust from getting into the local environment?

MR. SNOPEK: David Snopek, for the record.

Yes. When trucks dock at either of our facilities -- in the case of Peterborough it's inside the facility, in the case of Toronto, it's connected to the facility -- and there are requirements for cleanliness of drums when they're packaged, as part of the load when they're going back empty as well as when they're coming to the facility.

We also survey the inside of the trailer periodically to ensure that the levels are acceptable on the floor, for example, where floor trucks are going on and off of the trailer itself. So we do survey those to make sure that they are maintained within levels.

THE PRESIDENT: Dr. Demeter?

MEMBER DEMETER: Thank you. Just to

follow up with that question about the trucks. Are the transport people designated as nuclear energy workers and do you badge them, do your analysis? What's the extent of the occupational protection for the transport people who may handle the drums at some point but not what's in the plant itself?

MR. SNOPEK: Dave Snopek, for the record.

The transport truck drivers don't handle the product. It's both loaded and offloaded by our people. So there's no potential for direct contact in handling of packages, for example.

In terms of external dose rate, that's been looked at, and the dose rate in the cab of the truck is very low. There's no potential that the transport truck drivers can go over a public dose limit. So they're not classified as nuclear energy workers.

MEMBER DEMETER: Thank you.

THE PRESIDENT: Staff, question for you around REGDOC-2.10.1. Can you elaborate on that concern, please?

MS TADROS: Haidy Tadros, for the record.

So as staff supplemental indicates, REGDOC-2.10.1 is the Nuclear Emergency Preparedness and

Response REGDOC. And I will ask our colleagues in Ottawa on emergency preparedness to talk about their assessment of BWXT with regards to requirements in this REGDOC.

MR. COLE: For the record, my name is Christopher Cole. I'm the director of the Emergency Management Programs Division of the CNSC.

I want to thank the intervenor for this question, because at CNSC we do take emergency response very seriously. And as such, we have a very robust regulatory system in place to ensure that the facilities are safe and are ready to respond in the event of emergency.

This particular REGDOC, 2.10.1, is in the *Licence Condition Handbook* for the licensee. We've done inspections to ensure they are in full compliance, and yes, indeed, they are in full compliance with that regulatory requirement.

THE PRESIDENT: Thank you.

Last word from you, Ms. Mancini?

MS MANCINI: I guess all I have left to say is that I feel the discussion of how to better reach the public has been quite exhausted today, yet it seems to be disregarded that the fact that almost every intervention

has stated that they would not have moved into this area had they known previously. So I just find it interesting that this question has been bypassed, this remark has been bypassed by the Panel asking ways to better reach the public through social media after they have moved in.

I think it's quite clear that it's not welcome in this dense area, especially with all the expansions in the area. But as Julie said today, we can only strongly urge you to do what we think is best.

THE PRESIDENT: I do want to correct you on that. We have spent a whole lot of time today talking about how the community can be engaged better and better informed, and we actually did even talk about when the representatives from the City of Toronto are here tomorrow we can find out from them how do they do anything that may help individuals who are considering moving into this neighbourhood to find out what industrial installations are in the neighbourhood.

So I just wanted to let you know we've actually spent a whole lot of time. I don't know whether you've been following us today, but it's on our webcast. So thank you --

MS MANCINI: I've been here since 8:30.

I'm aware. Thank you.

THE PRESIDENT: Thank you.

So moving on to our next presentation,
it's by Ms. Kyoko Sato, as outlined in CMD 20-H2.243.

Ms. Sato, the floor is yours.

CMD 20-H2.243

Oral presentation by Kyoko Sato

MS SATO: Hello, my name is Kyoko Sato.

Today I'd like to present specific questions and comments with regard to the contents of a written application submitted by BWXT NEC. In doing so, I seek clarifications of the grounds on which CNSC has made a recommendation to the Commission to approve BWXT NEC's application for renewal and to question such a decision.

So page 4 of the application, it reads:

"BWXT NEC continuously improved engagement with the communities in Toronto and Peterborough through timely, transparent and meaningful discussion in an effort to develop an atmosphere of openness and

transparency with members of the public, elected officials and Indigenous groups."

By this, do they mean those community barbecue events? I am not convinced that the company has done anything other than such nominal gestures of outreach to be open and transparent about what it is actually doing in its facility.

I've seen increased police presence around the facility at some point. It did not create an atmosphere of openness, to be sure.

So same page, page 4:

"Sharing information concerning anticipated effects on the environment, [and the] health and safety of persons that may result from the activity."

We never received such information. Where is it? How did they provide it? Who measured "anticipated effects" and concerns, and how?

And I have to apologize that some of the questions I raise or about to raise might have been addressed partly, but I was not able to be here all day for

work and other reasons. So I apologize for that, but I think some of us who were not able to be here earlier would benefit re-addressing some of the questions I might raise.

So page 14:

"Human performance indicators such as Near Misses or First Aids are tracked as a measure of performance improvement."

What were such adverse outcomes and experiences being recorded at BWXT NEC Lansdowne site? What risks and incidents have been experienced and predicted at this site? And how have they been managed? What are the turnover rates of employees? Reported cases of problems had apparently been resolved each time, but the application does not state exactly how they have been resolved.

Page 22:

"Internal radiation hazards exist at both the Toronto and Peterborough facilities in the form of loose Uranium which may enter the body by inhalation, ingestion or absorption."

Is loose uranium released outside the

facility, potentially exposing the residents and pedestrians to uranium powder, which is a radioactive material? If so, who monitors and how is it done?

Page 24: Action levels for the radiation protection program at Toronto facility are set much higher than for its Peterborough counterpart, and I'm curious as to know why.

According to the application, BWXT NEC routinely measures workers' possible radiation exposure levels. The levels seem very high, but presumably they have protective gears on them. But us, the members of the public, do not walk around in protective gears. We did not sign up for living in such a close proximity to the uranium processing plant. We did not have shields installed in our house. We do not have a specialized filtering system to ensure that we are not inhaling uranium dust.

How come nobody in the past 10 years of our residence here have come to knock on the door -- and I think some other presenters have asked the same question -- asking to measure radiation levels of the air, water, or soil of our home as well as on our skin? Has it ever been a public health concern? Whose responsibility is it, I would like to know. And without those actions being taken,

I'm surprised that CNSC had made a recommendation to approve the application anyway, and I feel it's a little irresponsible on the part of CNSC.

Page 28: The application shows the estimated radiation doses to the member of the public, but it is estimation. What are the actual measurements in water, air, and on skin of the public in the area?

Where exactly is the boundary of the BWXT NEC? And I have looked at the map that they provide.

Page 28: The upper limit of 1,000 unit mSv per year is indeed a higher level than the normal level of absorbed radiation in the air of Fukushima Daiichi before its nuclear meltdown. It seems rather lenient to me, and I'm glad that the estimated level is nowhere near the upper limit. But I would like to have the actual hourly measured level of radiation in the surrounding areas of the facilities reported to the public until the hearing or further actions be taken.

Page 35: BWXT NEC purportedly never exceeded the action level of emission of uranium in the environment in the last licence period. But if it ever did exceed any, made report to CNSC, then who would ensure residents' safety? Once emitted, it would be extremely

difficult to contain the uranium dust. Also how far does the dust travel with the wind? Or is it on the move, it would no longer be a localized concern, it would affect a wider area of Toronto and beyond, so the public of Toronto needs to be informed of it.

Page 38: According to BWXT NEC's record, uranium in boundary air sampling shot up in 2016. What happened?

And I find that the City government, I would say, has to address something like this, because it presumably authorized developers to further develop the Dupont Corridor without informing prospective residents or taking any action to intervene in the continued operation of the facility or the company.

The effects of radiation are not only the concerns of those who reside in close proximity to the facility, but should also be of the entire city, as uranium dust travels widely.

We have witnessed the global reach of nuclear meltdown of Fukushima Daiichi. It should be in the best interests of both the City of Toronto and developers to remove the BWXT NEC from downtown Toronto.

Page 42: What were the exercise scenarios

used in training? In other words, do they include all potential scenarios that are specific to each site? Should all residents not be informed of what kind of scenarios they should be prepared for and how, because these are not specified in the document?

Page 46: There have been four reported events related to transportation over the current licence period. Two were related to classification, one related to damaged packaging and a fourth was a minor motor vehicle accident.

As a result of damaged packaging, what happened? Where did the motor vehicle accident occur?

Please consider the non-viability of having uranium dioxide being transported through the City of Toronto where motor accidents are occurring frequently.

I think I'm running out of time here.

I will continue.

Page 47: I have not been a beneficiary of the public information program of the company. For instance, I have not received a single copy of a community newsletter that the application mentions in the past ten years of my residence in the neighbourhood.

The application includes the following:

"Maintaining information pamphlets with current information about the facilities of interest to the members of the public". But I never received any such pamphlets.

Page 48: I have no knowledge of the following events taking place: holding or participating in public community meetings and open houses.

Having said that, I would say if we were to be better -- had we been better informed, would we be advocating the continued existence of BMXT? I would say no.

But I would like to underline that I don't want anybody to assume that the member of the public are opposed because we don't know any better.

If BWXT had included with -- sorry, I'm running out of time.

I would like to conclude by the following.

As the application states, the facility has been in operation since the 1950s, the same vintage as the TDC, which is constantly having signal and other problems. It is not the case that the hard structure of the facility is outdated? I am concerned that such a high risk operation as uranium pelleting is carried out in an aged structure.

Finally, I would like to state that I am very alarmed that it has been approved and recommended for continued existence. I really urge the Commission to move forward and do the right thing, and please do not renew the application.

Thank you.

THE PRESIDENT: Thank you very much for your intervention. You have raised a number of issues, many of which we have discussed earlier today. And as I have told previous intervenors, I direct you to go to our website and review those.

There are some new ones that you have raised, so we will go around and have our Commission Members ask questions.

Starting with Dr. Lacroix.

MEMBER LACROIX: Thank you for your presentation.

You have raised your concern with regard to action level and my question is directed to CNSC staff.

Once an action level is exceeded, the licensee must correct the situation and report the event to CNSC.

But what does CNSC do next?

MS TADROS: Haidy Tadros, for the record. Just to be clear, your question pertains to occupational radiation protection action levels?

MEMBER LACROIX: Well, it's based on one of the issues raised by the intervenor, on page 35. It says that once an action level is exceeded -- concerning the emission of uranium -- the situation is corrected by the licensee and then they report to CNSC.

But what does CNSC do next?

MS TADROS: Thank you. Haidy Tadros, for the record.

We have our radiation protection specialists in Ottawa who can describe exactly the steps we take once an action level has been exceeded.

MS SAUVE: Kiza Sauvé. I'm going to jump in because the quote was the emissions.

There was another previous in the intervention about radiation protection, which is why we thought it might be a radiation protection one.

On page 35 the quote in the intervention, once an action level is exceeded, I just want to remind the Commission and intervenors that an action level is set much lower than a release limit, and in fact licensees often

have the administrative level in-house as well.

So an action level, what that means is that there is a possibility that there could be a loss of control.

So the licensee is required to report to the CNSC when an action level is exceeded. It does not mean that a release limit was exceeded.

What the CNSC is then looking for is a report from the licensee about what happened and what they are going to do to fix that to ensure that it doesn't happen again. So that report is reviewed. Often there is an original report that comes in and then maybe a seven or 21-day report once the licensee has done the investigation.

So CNSC will follow up on those reports and continue watching to ensure that it doesn't happen again.

Should an action level be exceeded many times in one year, then more stringent enforcement will happen. So either more inspections will happen or CNSC will be looking at the program to see what's happening and why that is happening.

But I remind you that it does not mean that a release limit was exceeded, and we will always

confirm that the environment and the public remains protected.

MEMBER LACROIX: Thank you.

THE PRESIDENT: Dr. McKinnon.

MEMBER MCKINNON: Yes, thank you for your intervention. Lots of new points.

I also want to ask a question about action levels.

You mentioned that they were different in the Peterborough and Toronto facilities.

I just would like to ask the company why would they be not equal? So these are the action levels at the two sites. Just some of them.

MR. SNOPEK: Dave Snopek, for the record.

Action levels are set based on the specific process that's happening and the performance that's generated from that process.

As was mentioned, they are used to identify potential losses of control for a process, so they are very process-specific, given the difference between the operations between the two facilities. Therefore, some of the action levels are different.

THE PRESIDENT: Dr. Demeter.

MEMBER DEMETER: Thank you very much.

I will stay on a theme. Sometimes I think we get stuck on the status quo level and we're looking at efficiency of an operation relative to safety based on the status quo. We have heard a lot of intervenors talk about the age of this building.

If we were to benchmark and compare this operation to a state-of-the-art new facility that does what they do, does the age of their building and the infrastructure and the ventilation, does that hamper us at all in saying it would still meet the standard? There is not a lot of gain to go to a whole new building relative to the safety case that they have presented.

I know there are other facilities that do what they do in Canada; there's other ones that do in the world. How are we doing benchmark-wise compared to other facilities, to get out of the bubble?

MS TADROS: Haidy Tadros, for the record.

I will start and I will pass it to Mr. Julian Amalraj just to make sure there is a note on the record.

CNSC staff use the most updated codes and standards, so when we talk about buildings the current

building needs to meet the current codes and standards. So it's not a question that we're living with an old building and we have to make do. It is per requirements in their *Licence Condition Handbook* that we conduct inspections to ensure any upgrades to that building need to happen so that the codes and standards of today are met.

Mr. Julian Amalraj can maybe address the question of benchmarking.

MEMBER DEMETER: So I just want to reflect. What I'm hearing you say is that despite the age of the building it doesn't limit them from meeting current standards for building code and the safety measures that are required for their operations.

MS TADROS: That is correct.

Haidy Tadros, for the record.

MEMBER DEMETER: I'm good with that, thank you.

THE PRESIDENT: Dr. Berube.

MEMBER BERUBE: So we've covered basically looking at the difference between the two facilities in Peterborough and Toronto.

The question is for CNSC and I believe the intervenor actually referred to the release limits.

Are the release limits between the two buildings different and what would be the reason for this?

MS TADROS: Haidy Tadros, for the record.

I know this one will go to our environmental protection specialists who are sitting behind me.

MS SAUVE: Kiza Sauvé, for the record.

So yes, the release limits are different at the facilities. And again we are looking at the processes that are happening.

We are also looking at where the release is going. So in terms of liquid releases the receiving environment is different in Toronto versus Peterborough. So that would make a change for the release as well.

I would note that the current release limits are based on a 50-microsievert dose, so much lower than the one millisievert. And going forward we are looking at making those release limits even lower and base them on exposure-based release limits, so how they would impact the environment as opposed to just people.

MEMBER BERUBE: Just to expand on that idea, right now the operator here is asking to move the pellet production into Peterborough. Obviously that would

affect the release limits on that facility as well?

MS SAUVE: Kiza Sauv , for the record.

That is correct.

THE PRESIDENT: Anyone else?

A quick question for you.

How would you like to be informed of BWXT's operations and facility?

MS SATO: The method of communication you are asking?

I mean, I guess the earlier intervenor had suggested that they could have come to the door-to-door kind of, face-to-face kind of communication. But what I'm actually disappointed in terms of the whole process, how it went, was that we were given such little time to make an intervention, any meaningful intervention, hardly any time to educate myself. This is not my expertise in any way.

But I feel like a member of the public has been left without sufficient knowledge to make a meaningful intervention and that seems like it was not an accidental thing. It could have been prevented so that we would have the opportunity to make a more informed intervention, I guess.

But I mean maybe I'm just speaking for

myself because I've noticed that a lot of the previous intervenors do have considerable knowledge in this area.

But it feels like there has been a politics of disinformation going on. And despite the alleged openness, I never felt that way in the past ten years of residence here.

If the facility were to continue to exist in our neighbourhood, then the same kind of resentment will stay with me. I don't have means to move out of the area even though I'm very resentful of the fact that this facility exists in such close proximity.

Yes, door-to-door information session is sort of communication. But it doesn't mean that the better communication -- there is more collaboration we could provide. I don't mean it that way.

THE PRESIDENT: Thank you very much for your very thoughtful submission.

Any final comments?

MS SATO: No, I've said enough.

THE PRESIDENT: All right.

So we will move to our final oral presentation for today, and it is by the CANDU Owners Group, as outlined in CMD 20-H2.10.

Mr. Fred Dermarkar is here to make that submission.

Mr. Dermarkar.

CMD 20-H2.10

Oral presentation by the CANDU Owners Group

MR. DERMARKAR: For the record, my name is Fred Dermarkar. I am the President and CEO of the CANDU Owners Group.

I would offer some opening remarks focusing primarily on BWXT's activities with the CANDU Owners Group, and I will be available to answer questions from the Commission.

I would like to thank President Velshi and Members of the Commission for giving the CANDU Owners Group, or COG as we are often referred to, the opportunity to present our support for the renewal of BWXT's licence to operate their Toronto and Peterborough facilities.

COG is a private not for profit corporation whose mission is to achieve CANDU excellence through collaboration. It achieves this through the sharing of operating experience and best practices and

through collaboration in research and development, joint projects and training.

COG's funding comes primarily from its members, which are the operators of CANDU reactors in seven countries worldwide and Canadian nuclear labs.

Recognizing the increasing role suppliers play at CANDU plants, COG established a supplier participant program whose objective to help suppliers achieve the same high standards of human performance, product quality and nuclear safety culture as the utilities.

As I will describe in a moment, this program is built on the same foundations as programs targeted to the utility operators of nuclear power plants.

BWXT has been an engaged supplier to the CANDU industry and through its actions has demonstrated it is strongly committed to safety and quality. For example, they became one of the first suppliers to join the COG supplier participant program in 2005, and in 2014 BWXT challenged COG to enhance its program by providing opportunities to suppliers similar to those available to utility operators, particularly in regard to leadership training.

Starting in 2015 COG expanded its supplier participant program to include the sharing of operating experience between suppliers. Since the inception of this sharing of supplier operating experience BWXT has consistently been one of the top three contributors of its own operating experience.

Screening meetings to review operating experience are held approximately every two months and provide an opportunity for suppliers to review low level events that have occurred at their respective facilities.

The objective of this screening process is to allow other suppliers to identify actions they can take pre-emptively to prevent the reoccurrence of similar events. This in turn accelerates the pace of learning and continuous improvement across the broader supplier community, particularly with respect to nuclear safety and performance.

While it is not uncommon for industries to learn from high profile events, I am not aware of a forum similar to the one at COG that provides opportunity for discussion of lower significance issues that utilities and suppliers face on a day-to-day basis.

And that's because it is not intuitive for

suppliers to share with their competitors challenges they have experienced and lessons they have learned. In the world of competition such knowledge gained from experience would be viewed as competitive advantage.

The suppliers who participate in this exchange of operating experience have demonstrated by their actions that striving to improve nuclear safety at nuclear power plants is paramount and takes priority over competitive advantage. Through its commitment to nuclear safety BWXT is setting an example for other suppliers to follow.

In addition to these bi-monthly supplier participant meetings, COG hosts more than 100 events each year where industry comes together to develop new approaches for continuous improvement.

One series of such meetings focused on the development of principles and guidelines to guide the journey to human performance excellence at supplier controlled locations. BWXT was a major contributor to this initiative, together with other suppliers as well as utilities.

The document they produced will assist BWXT and the broader supplier community to monitor and

enhance human performance.

BWXT has demonstrated a strong commitment to building the leaders of tomorrow through their participation in a couple of COG leadership programs, and I would like to describe this a little further.

The first such program is a Nuclear Professional Development Seminar, or NPDS. This seminar is a three-week course for senior managers to benchmark and learn best practices in leadership and management. Through case studies and industry experience attendees review management issues and solve real problems encountered in nuclear plants. They are offered ongoing support and mentorship from industry leaders, along with their in-class learning and visits to high performing nuclear stations.

Since 2015 BWXT has put ten of their senior leaders through this three-week course.

Another leadership program offered by COG -- and this one was inspired by BWXT -- is the newly developed first line supervisor course which is targeted at supervisors who provide day-to-day direction to staff within a nuclear context. This three-day program uses elements of the three-week NPDS program I just described but targets the training to first line supervisors rather

than senior managers.

Three first line supervisor training courses were delivered in 2019 and BWXT enrolled 17 participants in this training.

In conclusion, BWXT has demonstrated a commitment to continuous improvement within its own organization and has been a leader in helping the broader supplier community to improve.

It has demonstrated a commitment to achieving high standards of performance in nuclear safety culture and has helped to build principles for other suppliers to use. And it has demonstrated a commitment to developing the leadership skills of its senior managers and first line supervisors.

It is through such commitments that suppliers like BWXT enable the CANDU Owners Group to help its members achieve CANDU excellence through collaboration.

In closing, the CANDU Owners Group supports BWXT's application for a licence to continue operations at its facilities in Toronto and Peterborough.

I would be happy to answer any questions that the Commission may have. Thank you.

THE PRESIDENT: Thank you.

Dr. McKinnon.

MEMBER MCKINNON: Thank you for your presentation. It is very interesting to hear of the sharing and documentation of experience.

My question is for the company.

As a result of membership and participation in the group, have you changed best practice in any instances?

MR. MacQUARRIE: I can't think of anything specifically off the top of my head.

It's John MacQuarrie.

Essentially we have a group of people who participate and go to these meetings and learn about low level events. They bring those back and they may change procedures and things like that, but I don't have a record of what we have changed because of those.

I do know that our staff particularly appreciates being part of that learning of hearing what other companies are experiencing. And I do know that our leaders who are in the senior management courses and the first line courses particularly enjoy learning from others who are in the industry but not part of our company.

So I get a lot of feedback from those

individuals that attend saying that's positive for them and that they take away a lot from that.

THE PRESIDENT: Dr. Demeter?

Dr. Berube.

MEMBER BERUBE: So this leadership training program that you are offering I find fascinating, and I'm just going to ask the operator what benefits to your management staff do you see coming out of that kind of a program?

Obviously it's expensive to send people there, so there must be some value in it. Could you just expand on what value you have seen come out of that program?

MR. MacQUARRIE: It's John MacQuarrie.

First of all, the senior leadership program is a fairly significant commitment of at least three weeks of actual away time from work plus preparation time.

We see actually tremendous value in developing our leaders. Actually BWXT has some very good internal leadership programs, but I would say that this particular COG program is as good as any that we have and perhaps better because it's so germane to what we do as a

business.

It's an opportunity to learn from others that are really good at what they do. It's an opportunity to spend time with colleagues who are in different companies and develop relationships and understand the challenges they face. We're a supplier but we're in a course with our customer who is a plant operator. To understand it from their perspective is good to help our people know how to be better at what we do.

We visit high performing nuclear power plants, at those, and we're able to be essentially you know sort of day in the life of a high performing group of professionals who operate power plants, watching plant of the day meetings, and things like that, and seeing how they operate. And then internalizing that and bringing it back into our business. So we find there's tremendous value in that.

And ultimately we are only as good as the people that are in our company and leaders are particularly impactful to the people that are in our company, so we view that as vital.

And if I can, and similar, I would say, applies to the first-line leaders, but that is, in our

view, an absolutely critical group for good performance, whether that be safety performance or meeting customer expectations, and so the first-line supervisory course, our goal is to get every supervisor through that.

You've heard about our participation there in a short period of time, and we're continuing to work through all of our supervisors because that is absolutely essential to have them walking the talk of what we expect. And they learn a lot from not just hearing it from us as leaders of our company but hearing it from the people that are leading these courses and hearing it from their peers that are in that program.

MEMBER BERUBE: Just one more question. Obviously you're an international group so how many international people attend these kind of programs?

MR. DEMARKAR: We actually have very strong international participation. Our members in China have been absolutely committed to putting their senior leaders on this program. And so, for example, the one nuclear plant at CNNO in Qinshan which operates nine units on a single site, they have put over 140 of their senior leaders through is three-week program, so you can imagine the commitment involved because they're flying over here

spending three weeks and then going back to their home base.

Our members in Korea have asked us to put on a shorter version of the course delivered in Korea. And this year we were planning on having a course in May/June, end of May, beginning of June and then a second one in July. Unfortunately -- well, I shouldn't say unfortunately, but we're revisiting whether or not we're going to put the course on in May/June at this point because of COVID.

In addition to that, there's a major association to which all nuclear operators belong, called the World Association of Nuclear Operators, and last October they audited our course and they found that the course met all their expectations. And so they are endorsing that course and we're expecting a broader membership beyond the CANDU Owners Group to participate.

We had already seen other non-COG members such as the United Arab Emirates participating actively in our course about a half dozen people from the UAE, from the nuclear plant at the UAE participated in this course. This is very powerful because you bring together people from not only from different utilities within Canada but from

different utilities from China, Romania, Korea, UAE, and so on, to participate, and that emersion amongst different operators with different backgrounds truly enriches the discussion.

We keep on -- the course only allows about 20 participants. We keep it small because interaction is important and we allow typically around one -- we save one seat for the supplier community and the BWXT has been regularly taking advantage of that seat.

THE PRESIDENT: Dr. Lacroix.

MEMBER LACROIX: I simply want to thank you for your intervention - very interesting. Thank you.

MR. DEMARKAR: Thank you.

THE PRESIDENT: Thank you for the intervention. This concludes the list of presentations for today.

We will take a break for dinner and reconvene at 7:30.

But before we do, Staff, do you have any updates to give us?

MS TADROS: Thank you. Haidy Tadros, for the record.

Yes, we have one update with regards to

the regulatory document on Safety Analysis for Class 1(b) Facilities. I believe the Commission asked of us certain dates, so the REGDOC is currently in development. It was actually presented not the REGDOC itself but the fact that the REGDOC was in development in our Regulatory Framework Update in 2019 in November.

We will have the REGDOC out for public consultation before the end of April of this year. And based on our regulatory document development process, once that is done we will post the comments that we hear. We will give the public an opportunity to see how we've looked at their comments and responses to it, and ultimately we will come before the Commission on the regulatory document before it makes its way through to our license condition handbooks.

THE PRESIDENT: Thanks very much. So back at 7:30 to start going through the written interventions, thank you.

--- Upon recessing at 6:42 p.m. /

Suspension à 18 h 42

--- Upon resuming at 7:28 p.m. /

Reprise à 19 h 28

MR. LEBLANC: Thank you. For those who were not here prior to dinner when we did the oral presentations, so we're going to proceed with the written submissions.

The way we're going to proceed is, I'm going to name the intervenor's name, one by one, and I will seek confirmation from the members if they have a question on each of those interventions.

CMD 20-H2.7

**Written submission from the
Canadian Nuclear Isotope Council**

MR. LEBLANC: So, I will start with the written submission from the Canadian Nuclear Isotope Council which is CMD 20-H2.7.

Any questions?

CMD 20-H2.11

Written submission from Nicolas Martin-Burtart

MR. LEBLANC: The next submission is from Nicolas Martin-Burtart CMD 20-H2.11.

CMD 20-H2.20

Written submission from Bruce Power

MR. LEBLANC: The next submission is from Bruce Power CMD 20-H2.20.

Madam Velshi?

THE PRESIDENT: Just a quick clarification, BWXT. In their submission, Bruce Power seems to imply that you may be planning on producing pellets at both the Peterborough and Toronto facilities. That's what the -- that's not the intent, right; when you talk about consolidation it's to stop in Toronto and start producing in Peterborough?

MR. MacQUARRIE: That's correct.

CMD 20-H2.21

Written submission from Adam Vicente

MR. LEBLANC: The next submission is from Adam Vicente CMD 20-H2.21.

Dr. Demeter...?

MEMBER DEMETER: Thank you. I think it would probably be good to get on the record the intervenor talks about the productions of weapons grade material and I probably need clarification from BWXT whether or not they produce weapons grade material, for the record.

MR. MacQUARRIE: We do not produce weapons grade material in our licensed facilities in Canada. We can only process natural uranium, and BWXT at the moment is not involved in any weapons activity in our business.

MEMBER DEMETER: And just as a follow-up, it's a question I had for later but it fits here, what is the utility or use for depleted uranium pellets?

MR. MacQUARRIE: So we do regularly -- this is John McQuarrie, for the record.

We do regularly make fuel with depleted uranium pellets, so this is part of our customer controlling the way the reactors operate and so at times

they want depleted fuel, for example in the case of the re-start of the Darlington Unit 2 Reactor that's been - is being refurbished, when they start that reactor up they want to, as I understand it, somewhat simulate a core of fuel that has been partially used and so, therefore, some of the U235 would have been fissioned and so they have a mix of depleted uranium fuel bundles and natural uranium fuel bundles in that core. So we do that regularly in our business.

MEMBER DEMETER: Thank you.

CMD 20-H2.22

Written submission from Aimee Ng

MR. LEBLANC: The next submission is from Aimee Ng, CMD 20-H2.22.

CMD 20-H2.26

Written submission from Ashlynn Foster

MR. LEBLANC: The next submission is from Ashlynn Foster, 20-H2.26.

THE PRESIDENT: I'll ask both BWXT and

CNSC. So many intervenors have said that the Toronto facility is one of its kind in a densely populated area with schools around; that no such facility exists anywhere else in the world. Is that true, do you know?

MR. MacQUARRIE: It's John MacQuarrie.

I suppose the proximity of our facilities to residential neighbourhoods and schools I think might be unique. I note that Cameco has their facility in Port Hope in an area that's not that far from residential properties but perhaps not as close as ours is.

I can't speak to anywhere else in the world that I've been where it's that close, so I guess it's somewhat unique, yes.

CMD 20-H2.27

Written submission from Murali Ganapathy

MR. LEBLANC: The next submission is from Murali Ganapathy CMD 20-H2.27.

CMD 20-H2.31

Written submission from Gavin Winter

MR. LEBLANC: The next submission is from Gavin Winter, CMD 20-H2.31.

CMD 20-H2.35

Written submission from Ontario Power Generation

MR. LEBLANC: The next submission is from Ontario Power Generation, CMD 20-H2.35.

President Velshi?

THE PRESIDENT: OPG in their submission talks about performing audits and on your high performance. What's the scope of their audits? Do they look at your safety performance, the environmental performance?

MR. LEE: Min Lee, for the record.

OPG normally performs audits of the scope of whatever they are purchasing. Generally its to the N-299 -- CSA N-299 standard or, N-286 standard if it is an engineering procurement or construction project. So, that includes -- N-286 includes some of the elements or the elements that their licensed activity quality system,

quality program is based on as well.

THE PRESIDENT: Let me ask more specifically, then, do they look at your safety programs, your environmental management programs, your emergency preparedness programs within that?

MR. LEE: Min Lee, for the record again.

It will deal with some of that but not necessarily into those specific aspects of it. They're more concerned about the product quality.

CMD 20-H2.56

Written submission from Corina McCoy

MR. LEBLANC: The next submission is from Corina McCoy, CMD 20-H2.56.

Dr. McKinnon?

MEMBER MCKINNON: Yes, I noticed Ms McCoy is a member of the community liaison committee. I remember you mentioned earlier in the day that when you're choosing members you make an announcement and see who would respond. So, there's probably kind of a self-selection process that people are probably quite comfortable you know working with you. Do you make any efforts to get people who might

initially be, you know, very skeptical to get a different perspective on your committee?

MS CUTLER: Nathalie Cutler, for the record.

We have in the past put out a call for new members in a blanket approach by advertising with our communities on our website, social media, mailers and fence banners. As I mentioned, we are now looking to ensure that those that may have concerns about our facilities -- as we have become aware in this intervention process for the public hearing -- that this is something that they should be aware of and we have in a lot of cases added intervenors to mailing lists who have been interested in finding out more and continuing to learn more, and those individuals have received invitations to consider joining the CLC -- for example the new CLC we are setting up in Peterborough.

So that is something that we are mindful of and we think will benefit us in ensuring that a broad range of views is represented within the committee.

MEMBER MCKINNON: I also had a look at one of the minutes of the meetings and it is a very small number of people, so how do you disseminate what is brought up at the meeting and discussed into the broader community?

MS CUTLER: Nathalie Cutler, for the record.

So we review agendas with our members and get suggestions at meetings for future meetings for agendas. For example, in some cases, we have had guest speakers on various subjects to come and inform and then we post those minutes of meetings to our website.

So we look for feedback from our members as to what would help them better understand our business, our industry, and we feed those into future agendas.

CMD 20-H2.63

Written submission from Stanley Yoo

MR. LEBLANC: The next submission is from Stanley Yoo at CMD 20-H2.63.

MEMBER BERUBE: Stanley Yoo makes a reference to a petition that is active to try and block the licensing.

CNSC staff, are you aware of such a petition and what are the contents of that, if you are?

MS TADROS: Haidy Tadros, for the record. We had heard of the petition today and in

some of the interventions.

Perhaps the licensee can speak to what's involved inside.

MS CUTLER: Nathalie Cutler, for the record.

We became aware of this petition in our media monitoring, which includes social media, of a petition that was formed on change.org to -- I think it's called "Stop BWXT" -- and that petition has been known to us. I am unclear as to how many signatures it has, but we are aware that it exists.

MEMBER BERUBE: Well, as of the date this particular letter they said they have over 1,400 people that have signed up this petition.

Do you have a response to that or what is their primary concern here?

MS CUTLER: Nathalie Cutler, for the record.

I think, you know, the primary concern is that it presents an opportunity for us to better inform our community about our business and that we operate safely. So it's a data mark for us to see that we have work to do to inform the community that has signed that petition, and

we are dedicated to doing that.

CMD 20-H2.65

Written submission from Janine Carter

MR. LEBLANC: The next submission is from an intervenor who was scheduled to intervene with an oral presentation earlier today and she was absent, so we are treating it as a written submission. It is from Ms Janine Carter and it's CMD 20-H2.65

CMD 20-H2.67

Written submission from Birthe Jorgensen

MR. LEBLANC: The next submission is from Birthe Jorgensen, CMD 20-H2.67.

CMD 20-H2.68

Written submission from Andres D'Imperio

MR. LEBLANC: The next submission is from Andres D'Imperio, CMD 20-H2.68.

CMD 20-H2.71

**Written submission from
Olivia Kwan and Anthony Murray**

MR. LEBLANC: The next submission is from Olivia Kwan and Anthony Murray, CMD 20-H2.71.

CMD 20-H2.78

Written submission from Nika Morisano

MR. LEBLANC: The next submission is another submission from an intervenor who was supposed to present verbally but indicated a few days ago that she would not be able to attend and to treat her submission as a written. It's from Nika Morisano, or Nika M., at CMD 20-H2.78.

CMD 20-H2.93

Written submission from Erin Howley

MR. LEBLANC: The next submission is from Erin Howley, CMD 20-H2.93.

CMD 20-H2.114

Written Submission from Jamie Chadwick

MR. LEBLANC: The next submission is from Jamie Chadwick, CMD 20-H2.114.

CMD 20-H2.119

Written submission from

Alejandra Gonzalez Jimenez,

Amira Mittermaier and Felix Mittermaier

MR. LEBLANC: The next submission is from Alejandra Gonzalez Jimenez, Amira Mittermaier and Felix Mittermaier, CMD 20-H2.119.

CMD 20-H2.124

Written submission from John Jared Irwin

MR. LEBLANC: The next submission is from John Jared Irwin, CMD 20-H2.124.

CMD 20-H2.140

**Written submission from
Ontario's Nuclear Advantage (ONA)**

MR. LEBLANC: The next CMD is from
Ontario's Nuclear Advantage -- or ONA -- CMD 20-H2.140.

CMD 20-H2.147

Written submission from Motion Canada

MR. LEBLANC: The next submission is from
Motion Canada, CMD 20-H2.147.

CMD 20-H2.151

Written submission from Rosemary Frei

MR. LEBLANC: The next submission is from
Rosemary Frei, CMD 20-H2.151.

CMD 20-H2.164

Written submission from

Hiroshima-Nagasaki Day Coalition

MR. LEBLANC: The next submission is from Hiroshima-Nagasaki Day Coalition, CMD 20-H2.164.

CMD 20-H2.165

Written submission from Doug Back

MR. LEBLANC: The next submission is from Doug Back, CMD 20-H2.165.

CMD 20-H2.170

Written submission from Maggie Robertson

MR. LEBLANC: The next submission is from Maggie Robertson, CMD 20-H2.170.

CMD 20-H2.171

Written submission from Cathy Tafler

MR. LEBLANC: The next submission is from

Cathy Tafler, CMD 20-H2.171.

CMD 20-H2.174

Written submission from Patricio Marinez

MR. LEBLANC: The next submission is from Patricio Marinez, CMD 20-H2.174.

CMD 20-H2.177

Written submission from Angela Bird

MR. LEBLANC: The next submission is from Angela Bird, CMD 20-H2.177.

CMD 20-H2.186

Written submission from Jonathan Minkarious

MR. LEBLANC: The next submission is from Jonathan Minkarious, CMD 20-H2.186.

CMD 20-H2.189

Written submission from Markus Piro

MR. LEBLANC: The next submission is from Markus Piro, CMD 20-H2.189.

Dr. Demeter...?

MEMBER DEMETER: Thank you.

I think that's the first time I have read this intervenor and it just brought up a couple of questions for me regarding your employees.

What sort of -- can you give me a sense of what your sort of entry point is for your employees? Are you looking for people who may have high school and on-the-job training, are you looking for B.Sc. with on-the-job training?

And secondly, what is your turnover rate?

MR. MacQUARRIE: It's John MacQuarrie.

So it's a mix. So, for our workers in the plants, so labour in the plants, typically they will come to us with a high school level education, in some cases college, and they will have typically some prior experience -- manufacturing experience, hopefully -- but we do provide them with a great deal of training so we are not

really counting on them having experience that they bring into the business.

In the case of professional staff, including engineering, health and safety, management, operations staff, many of them have degrees and have a technical background of some sort, including engineering. So those people, we find turnover with them is a little bit higher than people working in the union operation. Actual turnover in the union operation is extremely low; we have very few people that leave us. But in the professional non-union ranks we would have a slightly higher turnover, nothing -- actually, I am quite proud of the turnover, it's fairly low. So it's nothing that we are concerned about, it's sort of a normal -- typically in the early years of their career we will see people that want to try and do something else with their careers and so they may leave us, but typically, with longer-service employees, we see very low turnover there.

MEMBER DEMETER: And can you give me a sense of your -- for your typical on-the-floor employee -- their occupational health and safety training? Is it like -- the orientation, is it a day? Is it a week? What is the quantum for your standard radiation safety and

general occupational health training and orientation?

MR. RICHARDSON: My name is Ted Richardson; I am the Director of Fuel Manufacturing.

We have an extensive training program for anyone that comes into our plant, into any of our operations, and that involves them having a trainer that has already been through the program, and they go through an extensive classroom training first. So we have videos, we have different themes that we take them through that they need to understand before they go on the floor, and then they spend time with a trainer, they spent time with the quality people, health and safety people, as well as engineering folks.

So before they can actually get to a point where they can run the equipment, they've been with all these different groups that have expertise, and then, at that point, they will demonstrate that they can do the work to the trainer first. So the person that is responsible, saying, "I trained this person really well", they will say, "He is ready" or "She's ready." And then an audit happens.

So until that person has been fully audited to all the components of the procedure, and just procedure adherence, that person cannot work alone; they

are with a trained person.

A very extensive training program. OPG, that does come and audit us, at one point said it's best-in-class and it is something that we value a lot. In fact, we have integrated our training so that the trainers themselves later on can audit the work they have done with the operator that they have trained to see where they can learn from. So it's very exhaustive training and we take a lot of pride in that and we are proud that, when we turn an operator over, that they know what they are doing.

CMD 20-H2.193

Written submission from Sandra Lindgreen

MR. LEBLANC: The next submission is from Sandra Lindgreen, CMD 20-H2.193.

CMD 20-H2.195

Written submission from Joyce Hall

MR. LEBLANC: The next submission is from Joyce Hall, CMD 20-H2.195.

CMD 20-H2.196

Written submission from Marjorie Castro

MR. LEBLANC: The next submission is from Marjorie Castro, CMD 20-H2.196.

CMD 20-H2.198

Written submission from Tom Smarda

MR. LEBLANC: The next submission is from Tom Smarda, CMD 20-H2.198.

CMD 20-H2.208

Written submission from Megan Vincett

MR. LEBLANC: And the last written submission for this evening is from Megan Vincett, CMD 20-H2.208.

Dr. Berube...?

MEMBER BERUBE: So today we have had a number of questions as they pertain to human error and obviously this particular intervenor is bringing this up once again, so obviously there are, in your process -- in

the way you take in materials, process them, and put them out -- there are probably a number of sequences in that that are prone to human error. So could you please go through how you mitigate those potential issues?

MR. SNOPEK: Dave Snopek, for the record.

It is very similar to kind of the hierarchy of controls for health and safety, for example. To the extent that we can, we engineer out or automate out the potential failure modes. If we can't do that, then we look at operator training and qualification.

There are some things that we have independent verification of if they are critical. So one employee performs a task, another employee verifies that the task was performed as required. That is one way that we try and eliminate human error-type events for those things that are critical.

MR. LEBLANC: So this ends the session for today, for March 2, 2020.

The hearing will resume at 8:30 a.m. tomorrow morning in this facility.

Mr. Jammal?

MR. JAMMAL: Ramzi Jammal, for the record.

To answer Ms Velshi's question earlier

about if there are any similar facilities -- sorry, facilities in cities the same size as Toronto -- from our review emissions and international visits, there are almost identical facilities in China, South Korea, and in Japan.

For example, in China they have a fuel fabrication for slightly enriched fuel in Yibin, Sichuan -- just for the record. So it's not unique to Canada.

MR. LEBLANC: So if you did borrow some of those headphone devices and your ID card is at the reception, please don't forget to grab them.

Thank you.

--- Whereupon the hearing adjourned at 7:53 p.m., to resume on Tuesday, March 3, 2020, at 8:30 a.m. /
L'audience est ajournée à 19 h 53 pour reprendre le mardi 3 mars 2020 à 8 h 30