

And we've done that kind of independent verification of what happens very close to the facility in terms of air concentrations getting essentially the same numbers as SRB from their passive monitors, but using much more sophisticated techniques and looking in a very great deal of detail the differences between daytime and night time, one week to the next and so on.

THE PRESIDENT: Did you find the missing data?

DR. THOMPSON: Yes, we did.

THE PRESIDENT: Go ahead.

DR. THOMPSON: So I'll ask Ms Kiza Francis to speak to the data.

MS FRANCIS: Kiza Francis, I'm the Acting Director of the Environmental Compliance and Laboratory Services Division.

So I'll speak to the SRB data for 2014 for the produce monitoring results. I'm also going to tell you a little bit about our Independent Environmental Monitoring Program to help maybe give you another or a bigger picture.

So the 2014 produce monitoring results gave an average of 135 becquerels per litre for their produce; whereas 2013 was 91 and 2012 was 48.

In our Independent Environmental Monitoring Program we had -- ours ranged from 19 becquerels

per litre to 180 becquerels per litre. So their average was within what our results were.

And so just to tell you a little bit more about the Independent Environmental Monitoring Program, it's a program that CNSC has put in place since 2012 where we did a pilot at the Chalk River Laboratories and it's to verify that the public -- independently verify that the public health and environment around licensed nuclear facilities are safe.

The IEMP is separate from but complementary to our existing Compliance Verification Program and it helps confirm that licensees' environmental protection programs are working.

So CNSC staff take samples from public areas around nuclear facilities, like parks, farmland, homes, gardens, beaches and samples may be taken from the air, water, soil, sediment, vegetation or some local food like meat or vegetables. In SRB's case we also sampled the wine from the brew your own place beside the facility.

Some of the vegetation samples that we took at SRB in 2013 and 2014 are kale, tomatoes, potatoes, strawberries, carrots, zucchinis. The samples are then tested at CNSC state-of-the-art laboratory by qualified CNSC scientists that analyze them using industry's best practices. We compare the measured contaminant levels to

applicable guidelines for measuring safe levels in the environment, and we also compare to natural background levels if we have that information, and we also compare to a CNSC reference level and that's important to talk about because the reference level has been determined -- it's food specific.

So we look, based on the CSA N288.1 standard which tells us what the average Canadian consumes in a year.

So, for example, the kale CNSC reference level would be 104,000 becquerels per kilogram of fresh weight; whereas our Independent Environmental Monitoring Program showed that it was 180 becquerels per kilogram of fresh weight beside the SRB facility, or near the SRB facility.

So the reference level -- if you would meet the reference level, you would receive a dose of .1 mSv per year.

So hopefully that puts a little bit in perspective the result that SRB had of 135 for their produce.

THE PRESIDENT: Thank you.

Okay, anybody?

Okay. Any last thoughts?

DR. SEARS: Thank you very much. I

greatly appreciate this opportunity.

And I would just finally point out that the 2014 results that are on the SRB website indicate that the range which I was talking about was -- you know, it's not just the average that you have to be concerned about, but the range was up -- well over 400 becquerels per litre, so -- which you were talking about becquerels per kilogram, it's reported in becquerels per litre, but the range is from a few up to well over 400 that is reported.

So it is a very wide range that is being detected and when you have that kind of variability, then a few data points will never give you a fair representation of what's happening.

If your entire reference level is predicated on .1 mSv per annum, then, you know, naturally you're going to end up with higher reference levels, but if you want to compare with background levels, then you're going to have to have more data.

THE PRESIDENT: Okay, thank you. Thank you very much.

DR. SEARS: Thank you very much.

THE PRESIDENT: I think we're going to break for -- take a little break here for about 10 minutes.

--- Upon recessing at 3:10 p.m. /

Suspension à 15 h 10

--- Upon resuming at 3:22 p.m. /

Reprise à 15 h 22

THE PRESIDENT: Okay. I'd like to continue.

And we'll move to the next submission, which is an oral presentation by the First Six Years as outlined in CMD 15-H5.8 and H5.8A. And I understand that Mr. Castrilli will make the presentation.

Over to you, sir.

CMD 15-H5.8/15-H5.8A

Oral presentation by First Six Years

MR. CASTRILLI: Thank you, Mr. President, and Members of the Commission.

My name is Joe Castrilli. I am a lawyer with the Canadian Environmental Law Association in Toronto.

To my left is Dr. Ian Fairlie, a consultant and expert from the United Kingdom who will speak to the health effects or health risks of tritium emissions from the SRB facility.

At the desk behind me is Dr. Hendrickson, who's joined us again because he prepared a report on SRB

emission levels.

And we appear on behalf of First Six Years, a group that's based here in Pembroke.

As a final person who's with us or who will be with us in a moment, Ms Kelly O'Grady, who's the President of First Six Years, who's also with us for this particular presentation in case there are any questions that are asked that are better answered by her.

We've prepared written submissions that are before you. In my case, I do not propose to speak to mine any further than what is already in the written material subject to any questions the Commission might have of me, so at this point, I'm going to turn the microphone over to Dr. Fairlie.

DR. FAIRLIE: Mr. President and Commission Members, thank you very much for this opportunity to speak to you this afternoon.

I'm going to speaking about tritium. It's been the subject of my studies for at least 35, maybe 40 years. It's a fascinating radionuclide, and, unfortunately, it's also very hazardous, and also very misunderstood.

Let's go have a few introductory comments about how much tritium there is here at SRBT.

These are emissions from 2008 to 2014, but

before that, there were much larger emissions and which, in fact, resulted in SRB's licence being revoked for a few years.

These levels are very high in comparison with, say, Darlington or with Dungeness in the UK and all German nuclear power stations. It gives you a range there of the number of terabecquerels per annum.

And you can see that SRB is relatively high, even although it's not a nuclear power station.

When the plant is in operation -- and we've talked about air emissions in various models or so -- this is the result of an IAEA modelling exercise showing tritium exposures from inhalation of -- here one terabecquerel was emitted over a one-hour period.

And you can see that the exposures are -- come out -- from this power station happens to be Romania, and the winds were coming from the southeast to the northwest. And you can see a plume.

And this is what happens, of course, here at Pembroke. This is looking at organically-bound tritium doses from cow's milk and showing, again, a one terabec emission where the wind is light and variable. And you can see the doses are much higher.

We look at tritium concentrations in air near Canadian reactors, and this is -- the reason why I'm

putting this up it to show you the pattern of tritium concentrations near a variety of nuclear generating stations here in Canada.

The Y axis is logarithmic and the values range from .01 to about 30, in other words, a range of 3,000, which is very high indeed.

Just for a matter of information, the only figures that I could see for the tritium concentration here at Pembroke was 12 becquerels. And this fits in, if you look to the extreme left, the sort of mauve blobs -- that's from Pickering -- and you can see that it fits within what's happening -- what has happened or what has been measured at Pickering, also a very large tritium emitter.

However, we are really concerned to find out how much tritium gets into foodstuffs. And this graphic -- by the way, the previous graph on this year were, in fact, prepared for CNSC about 12 years ago by Dr. Osborne and his colleagues. I now have permission from him to use those -- these graphs.

And you can see here that the closer you get to the source of the emissions, the tritium concentrations rise exponentially and we see very, very -- some here are very, very high levels.

So what are the levels here in Pembroke?

Well, if you look at the third slide from

the right, you can see the range from about seven up to over 200. And this gives you -- this range here is indicative of -- well, it's not very good data because that is the only data that I've got that's been provided for by CNSC or SRBT. But they're enough to raise alarm bells, in my mind.

You see, what would be a background level? And the background level would be, say, for Lake Superior, about three becquerels per -- per litre.

Lake Superior is chosen because (a) we've got data for it, and (b) because it's not near any nuclear or tritium-releasing facility.

So we can use two, three as being sort of a background level. In other words, tritium does occur naturally in the environment from a number of sources.

In addition, if we also go on here to look at sewage sludge from a recent document published by CNSC, we can see that levels of tritiated water of 34 becquerels per kilogram, but more interesting and more alarming, in many ways, 400 becquerels of organically-bound tritium.

That means, to me, that the concentrations of organically-bound tritium in people are higher than this to produce, how shall I delicately put it, fecal in -- the citizens of Pembroke to have such high levels of organically-bound tritium means there are things going on

here which we really don't know about.

It means that the people are either eating organically-bound tritium -- because these are very high, almost 400 -- or they are making it themselves because we all make organically-bound tritium. In other words, the lipids, carbohydrates and proteins in our body actually use hydrogen from tritiated water to make organically-bound tritium and new cells which are laid down also create organically-bound tritium.

Alarm bells went off when I saw that figure of 400. It's only one figure, yes, it's true, but it's -- there was a previous figure the year before of 290. In other words, it's not going down, it's going up, if anything.

I'd like to see a lot more organically-bound tritium determinations made in people near Pembroke. You can do so with non-invasive bio assays using fingernails or using hair clippings.

It's true that OBT determinations are expensive and time consuming. However, I think they should be done.

Going on to the next slide.

People in Pembroke take in tritium by a variety of methods, by eating foods contaminated with tritium, by inhaling tritiated gas or tritiated water

vapour or by drinking tritium-contaminated water or by skin absorption.

In fact, it turns out that inhaling tritium and skin absorption are the two main methods of getting tritium in people near -- who live in Pembroke.

I've made an estimation based on the methodology of Richard Osborne of the annual intake values of tritium near SRBT, in other words, within a couple of kilometres. As you can see, air inhalation and skin absorption are by far the largest contributors, but there is a little bit from food and water and drinks.

And I came out with a total of, roughly speaking, two megabecqs, or 200,000 becquerels per annum. And this is -- I don't claim a great deal of accuracy for this. I'm using annual intake values from Health Canada and I'm using the tritium -- environmental tritium concentrations from the data that I've got from -- which was provided by CNSC and SRBT.

But I think that it's the best estimate that I can make. I would say that it's roughly accurate, at least to one significant figure, and I think that that is probably going to be occurring as an average across the whole of the 20,000 residents in Pembroke.

So just turning to tritium for a second, the problem is that tritium has very low doses for -- per

becquerel. It's one of the lowest of all radionuclides. And the estimated tritium doses by the various sources are very low, but if there's any error because of the huge tritium releases, then the consequences could be severe.

I'm going to have to go on to -- there's many, many official reports showing concern about tritium. And what's wrong? Basically, the wrong radiation weighting factor, wrong metabolic models that are used, and a refusal to acknowledge it's tritium.

My main conclusions are that tritium concentrations in moisture, food and water, near SRBT are high. We've got high tritium exposures to nearby residents which are likely to cause various levels of cancers and leukemias, but they're hard to pick up. And I make a number of recommendations, which you can read for yourself.

Sorry I'm over the time.

THE PRESIDENT: Okay. Thank you.

Questions? Who wants to start?

Dr. McEwan.

MEMBER MCEWAN: Dr. Fairlie, thank you for the presentation.

I just need a little help with one slide before I get onto the questions, the one where you discuss key problem, which is towards the end.

DR. FAIRLIE: Official dose per becquerel

for tritium is very low?

MEMBER MCEWAN: Yeah. So that is the absorbed dose per ingested --

DR. FAIRLIE: Becquerel.

MEMBER MCEWAN: -- becquerel. Okay.

DR. FAIRLIE: It's 1.8 times 10^{-11} sieverts per becquerel, 10^{-11} sieverts per becquerel.

MEMBER MCEWAN: Right. Why do you say that it's very low? Is that because of the organic bound piece or --

DR. FAIRLIE: No, this is the official figure.

MEMBER MCEWAN: No, no, no. But why do you say that it is very low and could be a mistake, which is the implication --

DR. FAIRLIE: Yes.

MEMBER MCEWAN: -- of the third bullet?

DR. FAIRLIE: Yes, that's right.

Basically because the official models used assume -- make a number of assumptions which there -- we don't really know.

For example, there's a very big assumption that tritium is uniformly distributed in the body after intake. Well, we don't know that.

It could well be concentrated in various

organs or various tissues, and where it is, is extremely important. A tritium becquerel, for example, in your urine sack wouldn't worry me very much, but if it's actually located next to your DNA, wham, you start worrying. So location is -- well, distribution is very important.

And by the way, may I add, that's the reason why I don't really use sieverts in my determination. I use becquerels because we can actually measure becquerels. We've got a fairly good handle with it.

Dose, it all depends on where it is, so it's tricky, so I don't really rely on dose.

MEMBER MCEWAN: I'm not sure I entirely disagree with you on that, either.

DR. FAIRLIE: You don't entirely disagree.

MEMBER MCEWAN: Yes.

DR. FAIRLIE: Well, I'm glad to hear that.

MEMBER MCEWAN: So let me just come back to this because, I mean, the whole -- that third bullet is basically the thesis for your whole presentation.

DR. FAIRLIE: Yes. If we've got the -- our dose estimates -- our risk estimates, is a better way of putting it -- wrong, then the consequences could be quite serious.

MEMBER MCEWAN: So if -- let me ask you the same question that I asked Dr. Ulsh this morning.

What are the data for the bio distribution or for the binding of ingested tritium? There must be data in the literature. I should have checked, but I --

DR. FAIRLIE: Well, I -- in fact, the reason why you didn't find it is because it's not on the web, it's so old. It goes back to the -- God, Pinsamt and Langham is 1958, and other studies in the late sixties, early seventies.

They're the only human data that we've got, and they're -- hand on heart, for me to say that data is absolutely correct is wrong because those were early days and tritium detection techniques have improved markedly since then.

But the data show that different organs pick up tritium at different concentrations, and there's no rhyme nor reason nor pattern except for this, that organs which have high metabolic rates, for example, liver and kidneys, seem to pick it up a lot.

And also, high -- organ cells which reproduce very rapidly also pick it up, for example, hair -- hair cells. And also bone marrow cells pick it up. And that's to be expected because there's a lot of cells generation going on.

So apart from those rough and ready general pointers, I can't really point you to anything

more. However, I'm more than willing to enter into correspondence with you and show you some of my older data and the -- the older references which I have got. I'm certainly willing to do that, yes.

MEMBER MCEWAN: Okay. So if we go to your sludge data --

DR. FAIRLIE: Yes.

MEMBER MCEWAN: -- your sludge data --

DR. FAIRLIE: It's not mine, by the way.

MEMBER MCEWAN: Well, the sludge data that you used in your presentation.

DR. FAIRLIE: M'hmm.

MEMBER MCEWAN: You -- am I right in thinking that you have assumed that all of the tritium in the sludge comes from excreta and not from the water being used to treat the excreta? That was the implication of what you said.

MR. LEVESQUE: They made two determinations of the excreta. One was of the water -- for the tritium in the water, and one of the fecal cakes. Yes.

That was of -- organically-bound tritium was in the fecal cakes -- dried fecal cakes.

MEMBER MCEWAN: Staff?

DR. FAIRLIE: Sorry. Did you just say staff?

MEMBER MCEWAN: Staff. Sorry, I just want --

DR. FAIRLIE: I beg your pardon.

MEMBER MCEWAN: There was agitation behind you, so.

THE PRESIDENT: Go ahead.

DR. THOMPSON: So Patsy Thompson, for the record.

Dr. Nana Kwamena will speak to the results of the sludge measurements that were done, but one thing we can definitely say is sludge is not fecal cake. It is definitely not fecal cake. It has nothing to do with fecal cake.

But I'll let Dr. Kwamena speak.

DR. KWAMENA: So Dr. Nana Kwamena, for the record, an environmental risk assessment officer.

So as Dr. Thompson has said, it is not the fecal matter. Basically, when the sludge arrives at the treating facility, there are different processes that can be used to process the sewage that comes in.

And so when the water is extracted, you get the liquid effluent, which is the numbers that are provided on the slide, as you can see, the HTO in becquerels per litre, but then you also get a more solid portion. And that's what we measured the OBT levels in.

And so it's not a representation of just the fecal matter that gets processed through the facility.

MEMBER MCEWAN: So simplistically because I'm struggling with this, in -- so the organically-bound tritium is made up of what?

DR. FAIRLIE: Good question. Normally, municipal sewage is made up of fecal matter.

I mean, sorry, maybe I'm being too simplistic here and I'm missing something very obvious. However, when -- I would like to find out from CNSC what exactly is in this sludge. What is it?

I can't think of anything that SRBT would be discharging which -- apart from fecal matter in the -- in the sewage sludge. It's -- I don't know.

MEMBER MCEWAN: It does seem simplistic to me that it's just --

DR. FAIRLIE: My analysis is --

MEMBER MCEWAN: Yes.

DR. FAIRLIE: -- simplistic?

Well, perhaps. I think that if you were to ask most people what's in domestic -- in municipal sewage, they would tell you output -- human output. And perhaps my assumption of that -- I could very easily be shown wrong, but what I've heard so far doesn't really convince me one way or the other.

DR. THOMPSON: So Patsy Thompson, for the record.

So just to put things in perspective, the sewage from, you know, essentially residential and elsewhere does contain fecal matter. There's no doubt about it. But once it gets to a sewage treatment plant, there are aerobic and other processes that will decompose the material and, essentially, you get a slurry that is then solidified and disposed of in various means, so the measurements are on the solid portion.

To essentially take the measurement of 400 becquerels per kilogram, for example, in sludge and say that this is equivalent to the quantity of organically-bound tritium in an individual is, I think, an overly simplistic information.

The -- there is essentially lots and lots and lots of data, and I'll ask Mr. Bert Thériault to come to the microphone.

There is extensive data that have been used to develop metabolic models that represent tritium intake, the formation of organically -- of organic matter, lipids, carbohydrates and proteins with tritium that become organically-bound tritium. Those metabolic processes are taken into consideration in calculating the doses and coming up with the proportion of organic matter in a human

body.

That information has been used, is being used and is represented in the dose conversion factors, and so to say that, you know, only the big number of becquerels intake in -- you know, the 200,000 becquerel intake per annum is the only measurement that matters is wrong.

Really, what matters is the health effect and the potential -- the association between the intake and the health effect. And we know that it takes orders of magnitude more tritium to cause any health effects, and even in some of the epidemiological studies that have been done, for example, when we talked this morning about the study on 42,000 workers where they were exposed to tritium for years at much, much higher levels, we see no incidence of cancer. And to that say, you know, we don't know what happens to tritium, we don't know how to deal with it and we don't know the health effects of tritium is simply wrong.

But I'll ask Mr. Thériault to talk about the metabolic aspects of tritium and how we take into consideration OBT and what the fraction of OBT is in the human body.

MR. THÉRIAULT: Thank you. This is Bertrand Thériault, for the record.

So in terms of the dose coefficient for

tritium, so just to be clear, these are factors published by the ICRP that represent the dose received by a person inhaling or ingesting one becquerel of a given radionuclide, so they're tabulated for many different radionuclides. They're tabulated for different age groups, for tritiated water, tritium gas, OBT as well.

For -- so for the intake of tritiated water in a biological half-time -- half-life, so the time to -- for the tritium to be removed from the body, tritiated water, is roughly 10 days, and it's based on a large amount of human data. For organically-bound tritium, it's taken to be 40 days, so a longer time.

Now, there are a couple of studies I'd like to draw your attention to. The first one has been published by Dr. John Harrison and colleagues in 2002 in the Journal of -- Radiation Protection Dosimetry Journal.

And what they looked at is they considered the parameters that are inputs into the dose coefficients for tritium and they looked at the variability of the data. They looked at the range, the variability in the half -- the biological half-life of tritiated water, organically-bound tritium, the RBE from one to 2.5, and they ended up with a range of dose coefficients for tritiated water and for OBT.

And what we did is we applied the range

that Dr. Harrison had obtained to SRBT's 2014 data for the dose, and we found that if we took the upper range that the dose coefficients, considering the variability in the biological half-life of OBT, varying it from 20 to 200 days, for instance varying treated water half-life from five to 20 days, RBE from 1 to 2.5, taking the upper bounds of those coefficients, applying to SRBT data we found that the dose for 2014 went from .007 milliSieverts, which we saw earlier today, up 2.02 milliSieverts, So perhaps it gives some context.

The other study is by Dr. Leggett and colleagues. We have the reference here. What they did is they compared the reliability of those coefficients for a number of different radionuclides based on the amount and type of data that was available to develop the biokinetic models for these radionuclides. They included tritium, cesium-137, other radionuclides which are less common such as antimony-125, ruthenium-106. And they found that for tritium they classified it as a Category 1. So the more reliable coefficient, the less uncertainty for tritiated water and the moderate to high reliability for OBT. So perhaps this gives some context.

Thank you.

THE PRESIDENT: Go ahead.

DR. FAIRLIE: Thank you. Ian Fairlie, for

the record.

For five years, from 2000 to 2005, I was the scientific Secretary of the U.K. government committee looking into precisely this. It was an exciting time, there were a range of views expressed, as you can imagine. We looked specifically at tritium and the committee couldn't agree. There were about five on each side, five who said we really have to look at this matter much more seriously and five who said no, everything is fine. So we had to agree to disagree. And that's exactly where we are now here.

Myself, I was persuaded that there were large uncertainties with tritium, larger than the ones mentioned by Leggett or Harrison, as mentioned by the CNSC staffer.

I would say that we should apply -- in the face of that uncertainty or difference of views that we should apply the precautionary principle. It's the best thing. If we are not sure, let's err on the side of caution, because essentially the duty of the Commission is to protect the health of Canadians. My understanding is that, and that means that I think we should look carefully at this matter and you know, say, well, we might be wrong here.

In particular, both of the people cited

mentioned doses and I think that dose estimations are highly unreliable, particularly for tritium, and I would rather go looking at a range of other things to get a handle on how to approach tritium.

If I may, Mr. President, with your permission, there is a slide further on which perhaps explains this. I had to rush through. Can I show this slide about what I was wanting to talk about? May I?

THE PRESIDENT: You can show it. We have read whatever you submitted to us. It was read very carefully.

DR. FAIRLIE: Of course, right. I'm just trying to -- right.

The reason why I think that the doses from tritium are wrong are threefold here. Because we apply -- our officials apply the wrong radiation weighting factor, which is, in loose terms, we talked about this, RBE, relative biological effectiveness, earlier on. At the present moment we use one unity and this is an important issue, because if we get it wrong on what the radiation weighting factor is, then it has important implications.

The United Kingdom's Advisory Group on Ionizing Radiation, it is the premier group in the U.K., which I advised and we had a joint report, says that we should really use a weighting factor of two. The United

States, back in 2008, recommended a weighting factor of 2.5.

However, the ICRP said it wasn't going to change from unity. And I can tell you that the reason for that is because the French government and its representatives on ICRP said no. No. Because they had a prize industrial application, a fusion research reactor, ITER in Cadarache and it puts out very large amounts of tritium, not petabecquerels, exa-becquerels in their estimate, and doubling the dosage from tritium would prohibit its construction.

But it's not -- and if you look at the RV values, and these are all different experiments, 1 to 23, and this is the best evidence that I can give to you, the panel, and these are in vivo studies, live animal studies, rats or mice in most cases. They are not cell studies. They are not in vitro. These are in vivo studies. This histogram shows you that if you line them up in their ascending order you can see that over on the left the RBE -- these are the experimental results of RBE. There isn't a single one which shows you a value of one. The lowest is 1.3. And if you rank them and put them up, you will see the highest is about 3.4. And this -- so we have got 23 experiments here which all show high values from RBES. That's pretty good evidence

MEMBER MCEWAN: Can I just ask you if that's justified by -- sorry. Can I just ask if these are stratified by whether it's Auger emission or in vitro emission?

DR. FAIRLIE: No, these are tritium HTO.

MEMBER MCEWAN: This is all HTO?

DR. FAIRLIE: All HTO.

MEMBER MCEWAN: Because that's not actually what you say in the -- I mean you imply that that's a mixture of Auger emissions and low --

DR. FAIRLIE: No, no. This is from my article that I wrote.

MEMBER MCEWAN: Okay.

DR. FAIRLIE: And my article was titled "RBE and wR for Auger Emitters in Low Range", but these experiments are HTO.

MEMBER MCEWAN: Yes, okay.

DR. FAIRLIE: It's good that you brought it up, however my article does go on to Auger emitters, mainly because the Cherry committee that I was on spent a lot of time on Auger emitters and tritium, as you know, has the same problems as Augers.

THE PRESIDENT: Look, as interesting as all this debate is between you two --

DR. FAIRLIE: Sorry.

THE PRESIDENT: -- just for the record, you cannot do it while we deliberate, but after we render our decision you two can bond for as long as you want.

DR. FAIRLIE: I beg your pardon. You have my humblest apologies.

THE PRESIDENT: However, we have to bring it down to something practical.

DR. FAIRLIE: Okay.

THE PRESIDENT: As regulators we are bound by some international convention and that includes dosage. And if I understood the argument, even on RBE applied to these low levels of tritium, the levels are so low that it is protected. Somebody correct me if I'm wrong.

DR. FAIRLIE: Okay, that's very true.

May I go back a couple of -- with your permission, Mr. President, I would like to go back a couple of slides and show you that it was one of three things. It's the wrong radiation weighting factor, but there are two other things which are wrong as well.

Do I have your permission to very briefly discuss those?

THE PRESIDENT: Very briefly because we have --

DR. FAIRLIE: Very briefly, okay. Two sentences.

When you have about, say, a Becquerel of tritium inside you, you have to convert that to some sort of -- well, what's the official dose -- to a dose and that's where you use metabolic or some people call it dosimetric models and these models can be very wrong. There are studies which I could send you which shows uncertainty ranges from 200 to 20,000 in metabolic models. It all depends on which data and which studies you use for modelling the output or the excretion rates of tritium. The previous evidence is that there is a half-life of 10 days for water, for tritiated water. I would go along with that, but when it comes to OBT it's much more tricky.

There are three excretion equations which can be applied showing excretions lasting -- or half-lives, biological half-lives going out to three or four years for the long-lived components. So there is a lot of uncertainty when it comes to the dosimetric models.

I'm sorry, that's more than one sentence.

The third is that tritium has a lot of very strange properties. I have not been able to discuss them, but following the slides the ability of tritium to jump from molecule to molecule within a 10 to the $-15/2$, i.e. exchange reactions, is incredible. It boggles the mind. You say, "Well, why does tritium do this?" because hydrogen is the lightest atom and so it's much more

swappable than the heavier items. But it means that tritium gets everywhere and it is not taken into account.

THE PRESIDENT: But the bottom line still is health of the population.

DR. FAIRLIE: Yes.

THE PRESIDENT: You know, I don't care how it goes, your hypothesis is that it is unsafe. If I understand correctly, you listed Pickering as a high emitter and presumably it has been running now for 30 years. We should see some significant impact on the population. We see none. That's the presentation that we get here.

So how do you square -- so first to you, how do you square that and, staff, how do we bring it down to something that we can use as a regulator?

DR. FAIRLIE: Is that question to me or to the staff?

THE PRESIDENT: Both of you.

DR. FAIRLIE: May I go first?

THE PRESIDENT: Go ahead.

DR. FAIRLIE: Thank you. There are some epidemiological studies -- I beg your pardon -- near in Canadian facilities. They are not very good. Some of them only borderline statistical significance, others don't have any statistical significance. In my formal written

submission I say that we should not -- we should lower our expectations when it comes to what we can get out of epi studies. They are not a very good true for digging the truth, unfortunately. I wish they were, but they are not.

What you need to do is look at really big studies which have high levels of statistical significance, where the protocols used in the epi studies are very good, which are case control studies rather than ecological. When you do look at those -- they are not in Canada; they are in other countries -- we seek different patterns emerge. We see large incidences, for example, of childhood leukaemia near all German nuclear power stations.

This is a German government study. It's called the KiKK study, K-i-K-K. I recommended to you, because if that is going on in Germany where the tritium exposures are quite low, what's going on here?

THE PRESIDENT: We have been presented with a finding of this study at least half a dozen times.

So staff, can you bring your latest understanding of that particular study?

DR. THOMPSON: Patsy Thompson, for the record

A lot of the information that Dr. Fairlie presents in terms of the RBE, the metabolic differences, the CNSC in one of our reports, the report on health

presents all of that information and we do make statements that our understanding is the RBE is probably between two and three. That is one of the reasons, as Mr. Thériault explained a few minutes ago that we do sensitivity analysis and we do use those numbers when appropriate and when we looked at the range of metabolic factors, the range of RBE, including a high RBE factor for the people around the Pembroke facility, the doses are still low.

But to bring things back to protection of health, Dr. Fairlie is right in terms of we should not just be looking at epidemiological studies. That is why in the tritium study report we looked at all of the evidence from effects on cells, effects on organs, effects on whole animals. And so we looked at the weight of evidence from the laboratory analysis as well as epidemiological studies and all of that evidence indicates from laboratory studies that it takes orders of magnitude higher than 200,000 Bq per kilogram, Becquerel's of intake to have any effect even on cell cultures and on whole animals. So using the weight of evidence, it clearly does not support Dr. Fairlie's position.

In terms of protection of health, we do take this seriously. We have done a number of studies and we systematically look in every community where the CNSC has facilities what the situation is.

So I will ask Ms Rachel Lane, the CNSC's epidemiologist, to talk about in her discussions with the Medical Officer of Health here what the situation is and then perhaps she can talk about the findings of the RADICON and other studies that have been done around the NPPs where there is tritium exposures.

MS. LANE: Rachel Lane, for the record. I am the CNSC's epidemiologist.

I actually spoke to the Renfrew County and District Health Units' Medical Officer of Health in preparing for this presentation and she told me that they are planning on updating their cancer report this year. However, if you go to Public Health Ontario, it provides updated data on cancer incidence by health unit in Ontario. So I went to that website and I looked at the community.

Overall, all cancers, lung cancer and breast cancer incidence in Renfrew County was similar to the rest of Ontario and colorectal cancer was significantly higher in Pembroke -- sorry, in Renfrew County, and prostate cancer was significantly lower than the rest of Ontario. When speaking with the Medical Officer of Health, she and I had the discussion of chronic diseases and leading causes of -- leading factors that are related to chronic diseases and the main risk factors for chronic disease are unhealthy eating, physical inactivity, harmful

use of alcohol, tobacco use, and so on. so one cannot -- so one has to take all of this into consideration when looking at cancer rates in a community.

Now I would like to talk about the epidemiological studies that have been conducted in Canada. First of all, in Dr. Fairlie's submission, he stated clearly that all of these studies were ecological studies and commented on their blunt nature and then in his presentation today he went on speaking about that cohort studies and case controlled studies are far better methodological designs. This is correct.

There have been two cohort studies and two case control studies looking at the health effects of radiation among people living near or working in a nuclear facility in Canada that have been conducted relatively recently. What's important in Canada is that we have CANDU nuclear facilities, so tritium of course is a concern. So if one were to find effects one would expect to see likely effects in Canada.

When we look at 42,000 nuclear energy workers looking at their cancer mortality, from the 1950s to the late 1999, we see no evidence that they have increased risks of cancer due to their radiation exposure. When we look at tritium specifically, it has no impact on this relationship. This is key.

Secondly, when we look at children living around nuclear facilities, we looked at the nuclear facilities in Ontario. We found no childhood leukaemia clusters. Now, whether you use an RBE of one, two, 20 or what have you, it basically comes to level and if you -- no matter what the level of radiation that these people have been exposed to in Canada, which we believe we know very clearly, the bottom line is we do not see health effects.

We also have looked at case controlled studies of people who had preterm -- sorry, parental preconception exposure to radiation and specifically to tritium. In those case-controlled studies, the children of those workers had no evidence of increased childhood leukaemia or congenital abnormalities. There have been numerous ecological studies in communities near nuclear facilities and there is no consistent evidence of any reason to think that people living around nuclear facilities are any different than other communities in Ontario or in Canada.

Thank you.

THE PRESIDENT: Just very quickly, does that include the KiKK in Germany?

MS. LANE: No. KiKK is in Germany, not in Canada.

However, there has been extensive work on

KiKK's study and it has been clearly stated among international respected experts, the SSK, which was the group that looked in detail at that study, and so on, that it is very clear that the increased childhood cancer among children 0 to 4 within 5 km of the nuclear facilities was not due to the radiation emissions coming from the plant. That study looked at distance, not doses.

There have been two studies that have looked at doses rather than distance from a nuclear facility and those two studies, one is in France and one is in Canada, shows that the dose's distance is not a good indicator of radiation exposure because of wind patterns and eating habits, and so on and so forth. So distance is not a good indicator of dose. Those two studies found no relationship between radiation exposure among people living near facilities and childhood cancer.

THE PRESIDENT: Thank you. We have to move on. Questions?

DR. FAIRLIE: I would like to --

THE PRESIDENT: You will get your chance. Does anybody want to add anything else? Go ahead.

MEMBER MCEWAN: So as I went through your submission I went to some of your references and in one of your references, the 2014 Journal Of Environmental

Radioactivity paper, hypothesis to explain childhood cancers, you actually mentioned in that paper the 2011 Comare study in the U.K.

DR. FAIRLIE: I'm sorry, the what?

MEMBER MCEWAN: The 2011 Comare study in the U.K.

DR. FAIRLIE: Comare study.

MEMBER MCEWAN: Yes, Comare, sorry.

DR. FAIRLIE: I beg your pardon, yes.

MEMBER MCEWAN: That again suggested that there was no association -- that the KiKK study was wrong in that association.

So I was disappointed that in this document you make the overt statement that the German study is correct and none of the caveats that you discussed in that manuscript that the German study may be wrong. So I was disappointed.

And I'm going to make two more comments and then I will shut up, too.

The first is I make the same comment that I made before, I think your recommendation eight on page 22 of your submission is irresponsible in the way it's written. I think that you are creating fear among the population that is probably unjustified and you have certainly written it in a way which I think is not

commensurate with our responsibilities.

The second thing is, I have some good friends in the ICRP and I think they would be very offended of your characterization in the document of it being a self -- I can't remember what it was, a self-serving trade organization.

DR. FAIRLIE: Self appointed was the word.

I don't know where to begin here. I will go back now and I will deal with your first, if you don't mind.

Ian Fairlie, for the record.

My recommendation that pregnant women and women with young, very young families should consider moving elsewhere was not made lightly. I thought about it long and hard and I know that obviously it would raise concerns amongst families concerned, very much so; however, it was based on very good evidence, in my view. Very good evidence. In the sense that there are now over 60 studies worldwide showing increased leukaemias amongst families who live near nuclear power stations. That's not one-six, six-zero, and the best of which is still the KiKK study, although there has been -- a number of governments have tried to object to that.

So faced with the evidence that there are raised increases of childhood leukaemias near facilities

putting out large amounts of tritium, a precautionary approach is to say, look, you may want to think about this. Not in a declamatory or inflammatory way at all, it's basically saying this is what the scientific evidence shows. There's good evidence showing this and, therefore, you may wish to consider it. It's with a heavy heart that I made that recommendation; however, I have -- my scientific imprimatur on this was that the evidence was strong enough to make that recommendation.

Now, the third point was your ICRP. Well, they are self-appointed.

What was the first one?

MEMBER MCEWAN: The COMARE study, that you don't actually discuss --

MR. FAIRLIE: Oh, yes, the COMARE study.

MEMBER MCEWAN: -- in a very lengthy --

MR. FAIRLIE: In 2011, yes, in the U.K., yeah, right. That study was probably one of the worst studies that I have ever seen in my life. The government, the Department of Health, had asked COMARE to do a study which updated a previous study, with more recent data, and they did it but at the last minute they yanked the more recent data and said we couldn't present the data because it was -- there were too many difficulties with it. However, the press release accompanying the report talked

about the increased database, but it wasn't there. Secondly, the study arbitrarily included non-Hodgkin lymphoma as well as ALL into the study even though there were no cases of it. So that meant the study diluted the data. Now, these are no-nos when it comes to doing epi studies; you shouldn't be doing that. You should set out what you aim to do, do that. Instead what they did was they looked at the data and said, no, no, no, no, we're going to have to change it around a bit, and that is unconscionable, it really is, and, therefore, that's why I don't refer to it. And, by the way, you may say, well, where do you get these opinions from. I got this opinion from a number of people who were on COMARE and were ashamed at the actual report that was had and they disassociated themselves from it.

Now, to answer Dr. Lane's comments about epi studies, the first study that she mentioned was worker studies. And everybody knows that there's a healthy worker effect and I didn't include workers because it's such an unreliable way of looking at effects. You have to compare workers with workers rather than workers with the general population.

The other studies that she mentioned were extremely poor methodologically speaking. I don't really count them as real case control studies because the method

for choosing the controls were not elucidated at all and the number of controls were very small. So, they were very poor studies and I didn't rely on them in making my overall conclusions. You may say, Ian, you're picking and choosing here. But what does one do? You have to look hard at the various studies and figure out whether they are worth the paper they're written on in many cases.

Now, you may say I -- you know, it's all your personal opinion. Perhaps. I have given you the evidence on which I base my opinions and I think the evidence is very good. I could go on to discuss a number of reports which have validated the KiKK study, including websites from the German Bundesministerium, which actually back up with the KiKK study and explain to you why the German Nuclear Control Commission didn't like the KiKK study and said, no, they didn't like it. I should say to you that -- that one of the main reasons why the German government has backed off nuclear power stations, and the Swiss government and the Italian government, et cetera, is because of the KiKK study.

THE PRESIDENT: Okay. Very quickly because we've got to move on.

MS LANE: The -- the healthy worker effect, Dr. Fairlie is correct; however, the study that I am referring to does look at dose response relationships

and that is only within the nuclear worker. So when we look at dose response relationships, we're only looking at those with low doses within the group versus high doses, and we found no relationship between dose or exposure and cancer.

Secondly, the case control studies, what you do is you look for cases, first of all, those newly diagnosed. We use the Canadian Cancer Registry, which is national. We also use the Congenital Abnormalities Database, which is a national population control database. We look at those cases and -- and controls and we see if cases and controls have parents who had radiation exposure, and we did not find that relationship. The reason why there were so few cases and so few controls was because there were so few childhood leukaemias and so few congenital abnormalities, so there was absolutely nothing wrong with either one of those studies.

And then finally with respect to the KiKK study and other studies that have looked at children living around nuclear facilities, there has been a recent workshop, and you may read the article by Laurier et al, 2014, that has looked at all of the studies of these children and they have concluded that there is absolutely no evidence suggesting that it's to do with the radiation exposures; however, all of these experts do feel that the

understanding of childhood leukaemia is not well-known and that there needs to be a more collaborative effort between physicians, epidemiologists, biologists and so on to understand the etiology of childhood leukaemia much better so that we can address the childhood leukaemia issue better. Thank you.

THE PRESIDENT: Okay. Final word, sir.

Obviously we're not going to resolve --

MR. FAIRLIE: No.

THE PRESIDENT: -- some differences here.

As a regulator, as you know, we have to listen to medical authorities, international bodies, and this is not a place to get a consensus. Obviously it's a difficult issue. We've got to listen to all the input and decide to follow forward on it. But you do have the last word here.

MR. FAIRLIE: Okay, my last word. Thank you very much.

I agree with the dilemma you're in. I mean, I appreciate it, I really do. And if there's any way in which I can help more, I will.

There is a moral issue here that nobody has talked about and there is an ethical dimension and to me it's important. We are -- we are deliberating whether these tritium emissions should be allowed or not and -- or licensed or not, and my heart goes out to pregnant women

and families with very, very young children. They're worried about that, they really are. We know that embryos and fetuses and infants are very highly radiosensitive and we -- I think we should be doing our best to try and protect them. We know that tritium emissions float through grade school and through children's classrooms. I think we should be trying to protect them. We know that -- that the people who work at these facilities, many of them are youngsters and clearly teenagers from the photographs that we see. These kids shouldn't really be exposed to high levels of tritium. And there is -- what about the 20,000 people or so who live in the Township of Pembroke? We should really be thinking about them as well. We're really putting a blight on them.

So for those reasons, I think that we should adopt the precautionary principle and we should look long and hard at whether we give a licence to them. Thank you.

THE PRESIDENT: Thank you.

The next submission is an oral presentation from Ms. McNeill as outlined in CMD 15-H5.9 and 5.9A.

--- Pause

CMD 15-H5.9/15-H5.9A

Oral presentation by Ms Janet McNeill

MS McNEILL: I always wind up going off script a little and I guess I'm going to start right from the to going off script. I mean, I have this all written and carefully timed it, five minutes.

Just off the top, if a person was at their first CNSC hearing, something they would notice is that it takes an awful lot of managers and complex management to manage this supposedly non-problematic substance. That's something you would notice right away. Okay, back to the script -- script.

Good afternoon, CNSC commissioners and staff, SRB personnel, members of the public, and all those watching via webcast. I do appreciate the opportunity to speak to all of you at this public hearing. As you know, this is not the first time I have spoken at a CSC -- a CNSC hearing. In fact, I have done so several times now: in Ottawa, in Curtis, in Port Hope, in Toronto. My first presentation to you, in fact, was the SRB hearing five years ago, May 2010, in Ottawa.

Many people believe Albert Einstein defined "insanity" as doing the same thing over and over and expecting different results. Sometimes I wonder about

myself appearing at hearings over and over apparently expecting different results, yet never seeing them. As it happens, it actually wasn't Einstein who coined the phrase, you can look that up, but he did say that using nuclear energy is one hell of a way to boil water. This is not a *non sequitur*, since it is in the nuclear reactors in Southern Ontario that Pembroke's problematic tritium originates, a fact, I believe, not everyone in Pembroke is aware of.

Full disclosure and no surprise to you, Commissioners, I'm an antinuclear activist, though becoming one took me by surprise and was definitely not part of any plan on my part; it just kind of happened. I have been antinuclear ever since as a young university student I read this book, *Hiroshima*, by John Hersey.

It was the tritium situation here in Pembroke, however, that finally propelled me beyond being quietly antinuclear into antinuclear activism. I spent more than six years living up in Renfrew County, in Deep River mostly, and then some time in Pembroke. I loved and still love it up here and feel a strong loyalty and connection to this area and to the people here.

Being aware that many people are intimidated at the idea of speaking to a CNSC tribunal and seemingly able to get past my own reluctance and fears

about doing so, I feel more or less obliged to take part, as I know I am not just speaking for myself but also for others who find they simply can't do this. So it may be insanity, but here I am.

As I appointed out to you previously, I do not have a technical, scientific or mathematical mind. I am, on the other hand, very well attuned to language, everything associated with language. I have learned how to dig and decipher my way through the language used by the nuclear industry. Many of us call it "nukespeak".

Over the past several years I have read a lot of books that have informed me about the way the nuclear industry operates. I have a pile of them here. There are some really well-told personal stories by people who grew up in nuclear towns: This one, *Full Body Burden - Growing Up in the Nuclear Shadow of Rocky Flats*, is the story of Kristen Iversen's experiences growing up in Rocky Flats, Colorado, where nuclear weapons were being made in such incredible secrecy most people in the community had no idea what was going on, and where there were plutonium, fires, spills, and also tritium inexplicably present and never satisfactorily explained, as well as a lot of cancer.

Welcome to Shirley - a memoire from an atomic town tells of Kelly McMasters' growing-up years in another nuclear town, Shirley Long Island, where the

Brookhaven National Laboratory was leaking massive amounts of tritium into the groundwater. People were getting sick with cancer and children were developing and dying from an exceedingly rare brain cancer at frightening rates.

I also recommend *This is my homeland - Stories of the effects of nuclear industries by people of the Serpent River First Nation and the north shore of Lake Huron* for a snapshot of the earlier piece of the nuclear fuel chain, uranium mining, the Elliot -- the Elliot Lake story.

Pat McNamara's book *Port Hope - Canada's Nuclear Wasteland* is another, a book I know I mentioned to you at the Port Hope hearing. A story so mind-blowing I still marvel at what I learnt about Canada's role in the world's weapons trade and the cooperation of our governments at all levels, municipal, provincial, and federal, ever since the 1940s. It shattered many illusions I had held and, to tell you the truth, pretty much broke my heart, and I'm not making that up.

Of course we all live downstream from nuclear operations, even those who profit so hugely, but Pembroke, with its elephant in the room, is disproportionately affected.

Tritium and the SRB story: Not well enough understood by enough people. Sometimes I wonder if

it's the GTE instead of the GTA, the Grand Tritium Experiment.

Health impacts: As part of my supplementary submission I sent in a document that explains the 1959 deal between the World Health Organization (WHO) and the International Atomic Energy Agency (IAEA) in 1959. I already said that. IAEA is the global body that exists paradoxically to both regulate and promote nuclear energy. This 50-plus-year-old document lays out that WHO would need to get IAEA's agreement on any research it wanted to do. Why would the Nuclear Promotion Agency choose to support research demonstrating the health impacts of nuclear operations? But, never mind, even without the participation of WHO there is plenty of scientific research available, proving that exposure to radioactivity harms people, damages DNA, and sends its poisoned arrows into generations to come. Another of the presentations here today has focused on health. We just had it, so there's no need for me to say any more about tritium and health impacts here in Pembroke.

Regarding CNSC science: I think it's important for the people of Pembroke to understand that the CNSC is not as scientific as it lays claim to being. While the language of the nuclear industry can at first appear too technical for the average person to understand, one

learns pretty quickly that the CNSC staff's language is actually often surprisingly full of unscientific claims and conclusions. Remember, I have been involved in a lot of CNSC hearings by now.

I've heard the CNSC's Dr. Patsy Thompson say, in an apparent attempt to dismiss the industry's responsibility for exposing hundreds of workers at the Bruce Plant to alpha radiation during refurbishment activities in 2009, quote, "Bruce Power has a healthy safety culture for the following reasons: the alpha-event was unforeseen for reasons that I don't have right now; there was no evidence that there was a potential for this event, so it's not something that Bruce Power or its employees decided to ignore," end quotes. Her line of reasoning appears to be: Since we did not think it would happen and did not predict it or find it probable, we cannot, therefore, be held responsible if it does.

In response to a question from the CNSC Tribunal at the 2014 Pickering Hold Point hearing regarding potential risk of a catastrophic accident at the Pickering Nuclear Generating Station, CNSC staffer Dr. Rzentkowski said, "... we can --" quotes, "... we can say the risk is zero, because there was never a significant accident in the CANDU fleet." Really? This is a science-based prediction?

Okay. I'm going off script again here.

Spills and nuclear industry terms: When you get used to this stuff, spills are always said to be small; doses are always very low; releases are always below regulatory limits, and then there are DRLs. I haven't time to speak about the very unscientific concept of derived release limits, but I did address it in my supplementary submission. DRLs are used to convey a false reassurance that omissions are not a problem.

SRB's request for a 10 year licence: I find SRB's request to be unsupportable. This company has on innumerable occasions proven itself untrustworthy, unreliable, dishonest, and has been guilty for 25 years of blanketing the citizens of Pembroke with tritium via air, groundwater, and releases to the public sewer system. It isn't safe for people here to eat the produce grown here because of SRB's operations.

So, given that, can anyone in this room really believe the company ought to be given a 10 year licence? A 10 year licence would vastly reduce the already insufficient scrutiny of the company's activities. We saw what happened with SSI in Peterborough, 18 years of false data and yet the endorsement of CNSC staff for a 10 year licence. There is a similar pattern here with SRB with 15 years of unreported -- underreported emissions. Happily, SSI has been shut down because of public pressure, I might

add. Good news for Peterborough, bad news for the Pembroke environment, with SRB having taken up SSI's slack. SRB needs/has always needed a shorter, tighter leash, not a longer, looser one.

To conclude, I ask you to deny this licence request. I ask you to really listen to, digest, and then act on the evidence presented here today as well as that received by written submission, by organization and individuals who have nothing to gain financially from SRB's continued operations, but I don't really anticipate your shutting down SRB, the CNSC is a licence-granting body. I have never known you to not grant the licence the proponent was asking for. I am aware that there is more to this tritium and nuclear waste business than meets the eye. I believe there are big elephants in the room here. So instead of you asking to shut down this company, much as I wish you would do so, I ask you -- I ask that you order SRB to relocate to a place where there is a reasonable buffer zone, so the Pembroke population and environment can be protected from being subjected to any more years of tritium emissions. Pembroke does not need a tritium emissions factory nor does it need a storage facility for nuclear waste, and its nearby landfill site should not be used for the dumping of nuclear waste either. Since we know the radioactive burden that already exists here is not going to

disappear magically overnight, the only solution is to stop adding to it. I've heard it said it's never the wrong time to do the right thing. I beseech you, please do the right thing for the people of this community. Twenty-five years is long enough.

THE PRESIDENT: Thank you.

Questions. Mr. Harvey.

MEMBER HARVEY: Yes, I would like to refer to the written submission, the additional written submission that's H5.9, the -- there's no pagination on that, but it's about the release limit. I don't know if you can find that -- that page. It looks like the first page. No. There is -- at the beginning there is seven pages -- or eight pages. That's after that. The -- I would like the staff comments on --

UNIDENTIFIED MALE SPEAKER: Page 9.

THE PRESIDENT: It's H5.9A. If you go down -- there is no page numbers, but if you go to section B, derived limits, is that what we're seeing?

MEMBER HARVEY: Yes, that's right.

THE PRESIDENT: "Derived Release Limits".

MEMBER HARVEY: That's right, the first page. It's -- at the beginning it's "... absurd release limit for tritium". I would like the comment -- the staff comments mainly for the second paragraph, and, "When --"

the "'CNSC has currently set [derived limits] ...," it's for SSI, but I would -- I would like to have the comments even about that paragraph.

That one here.

MEMBER VELSHI: It's this page.

MEMBER MCEWAN: It's this page and this paragraph.

MEMBER HARVEY: It starts "This is over 200 times higher than the total global natural tritium production rate".

THE PRESIDENT: You found it?

MR. RINKER: Yes.

THE PRESIDENT: Okay.

MR. RINKER: So, we found it. I can provide a general answer, maybe not comparing it to the global natural tritium production rate, but the limit here at SRB was established not by the DRL model but more to protect groundwater as a resource, and, in contrast, there wasn't that same groundwater issue to the magnitude that we observed at SRBT. The licence limit, when SSI was operating many years ago, was the traditional DRL-type model of 1 milliSievert per annum was their licence -- was the DRL for that -- for that facility.

MEMBER HARVEY: But what about this -- this "over 200 times higher than the ... global"? Is that

correct or it's ...

DR. THOMPSON: Patsy Thompson for the record.

I would say it's really not relevant. Like my understanding is this refers to tritium production from cosmic reactions, and it's really not relevant in terms of --

MEMBER HARVEY: Not relevant for the --

DR. THOMPSON: -- regulating a facility. What is important in terms of regulating a facility is taking into consideration essentially the population around the facility and making sure that there are controls in place such that exposures remain below the appropriate limits.

And in all cases -- and SSI I would agree is an exception -- but in all cases the public has continued to be protected from discharges to the environment. The release limit is one factor, but you know there are action levels and administrative levels on licences that essentially prevent discharges from reaching the release limit. And there's a reporting requirement when an action level is exceeded. And usually the action level is set very much lower than the release limit.

MEMBER HARVEY: Mrs. McNeill, would you like to comment to it?

MS McNEILL: Well, DRLs are a measure that are used to reassure the public. And I'm not reassured, because what your staff has just said is that they're not really relevant. So this is a measure the industry uses, and now the industry is dismissing it. So this is the sort of thing that, you know, I mean you just don't have any -- it doesn't lend you credibility to say that, Well, it's inconvenient for us to talk about this now, so we've got something else going on.

DR. THOMPSON: Patsy Thompson, for the record.

What I said is that the limits are based on one millisievert per year, taking into consideration site-specific characteristics in terms of if there are schools, residential areas, and other characteristics. And then we back-calculate, essentially, to make sure that there is one millisievert to the most exposed critical group in the area, and then we set a limit on emissions. On top of that, there's regulatory controls in terms of action levels and administrative levels to make sure that the facility is controlled appropriately and the discharge does not reach one millisievert per year.

MEMBER HARVEY: So you didn't say that the derived limit was not relevant, but the text -- the comparison was not relevant.

DR. THOMPSON: Patsy Thompson for the record.

That's correct. What I said is that comparing a release limit of one millisievert in terms of how many becquerels of tritium it is to the global production of tritium from cosmic reactions, for example, is not especially useful or not relevant.

Thank you.

THE PRESIDENT: Question, Ms Velshi?

MEMBER VELSHI: I have a question for staff on page 3 of the intervenor's submission.

There's talk of years and years of false reporting of tritium emissions. It's the fourth paragraph down. And I know we heard from SRBT this morning that even when they had the high emissions they was still working within their licence base.

Has there ever been issues of false reporting deliberately by SRBT? I'll ask staff and then you can comment on it, Mr. Levesque.

MR. RINKER: Mike Rinker for the record.

We're not aware of any false reporting. I'm not sure where that information comes from. SRB did report they were within their licence limits. When we did some extra monitoring around 2006, when we realized there

was a groundwater issue, we tightened their limits very tightly. And they're still within those limits.

MEMBER VELSHI: Maybe I'll ask Ms McNeill, do you have evidence that would have led you to make that statement?

MS McNEILL: Unfortunately it's not with me. I gave the piece of paper to somebody else this morning.

My understanding is that monitoring wells were not being properly reported on. Is that correct, Kelly?

MS O'GRADY: Missing.

MS McNEILL: Missing?

MS O'GRADY: They weren't in their compliance reports.

MS McNEILL: Monitoring wells were missing from ...

MEMBER VELSHI: Missing is quite different than false reporting ...

MS McNEILL: Under-reported.

MS O'GRADY: They didn't report that their monitoring wells were built overtop. It wasn't in their compliance report. It wasn't on their website. It wasn't in the staff CMD. It wasn't mentioned anywhere. You actually had to drive to the site and see for yourself, and

you would have to know that there were monitoring wells in that location and just put two and two together.

MEMBER VELSHI: Mr. Levesque, comment on that?

MR. LEVESQUE: Stephane Levesque for the record.

I'm not understanding, because we've never falsely reported any numbers or withheld any numbers from the public or the CNSC. So I really don't understand the accusation. And might I say that in addition to reporting these numbers that we've had third parties come in and verify our emissions to verify that they were in line with what we had been reporting, and all those numbers were successful.

MEMBER VELSHI: And did that apply pre-2008 as well?

MR. LEVESQUE: Stephane Levesque for the record.

Yes.

MEMBER VELSHI: Thank you.

THE PRESIDENT: Anybody else? Okay.

Any final comments?

MS McNEILL: An analogy came to me this morning, which was the company says, Well, you know, we've cleaned up our act now, so you can trust us now. The fact

is the reason the company has cleaned up its act is because of the public pressure from my colleagues here in Pembroke. And the company's been going for 25 years, so they seem to be suggesting that because they behaved better in the last five.

The analogy that came to me was an abusive partner. A woman is, say, getting beat up by her husband, and he keeps saying every time, I'm going to get better; I'm going to get better; I'm going to get better. How many times do you let the partner come back? You know, it's is this really a trustworthy company, I guess, is my point. Do you really feel you can trust them given the various things that have gone on in the past. That's it.

THE PRESIDENT: Thank you.

I'd like to move on to the next submission, which is -- sorry, I'm skipping here -- which is an oral presentation from Ms O'Grady as outlined in CMD 15-H5.10, 5.10A, and 5.10B.

CMD 15-H5.10/15-H5.10A/15-H5.10B

Presentation from Kelly O'Grady

MS O'GRADY: Good afternoon.

My name is Kelly O'Grady. I live in Pembroke. And I want to thank the Commission for holding

the hearing here in Pembroke. It's really important. We have people that are attending this hearing today that normally wouldn't be able to go to Ottawa to see it. So it's a really good experience for them to see just exactly how licences are decided upon.

I also wanted to thank Dr. Thompson for doing the OBT-HDO ratio study. I think that was really important work that you did, and I'm glad to see that there are some studies going on in Pembroke, because we are so unique because of our very exceptional tritium levels in human, in biota, in air, in water moisture, et cetera.

So my presentation is mainly going to look at physical changes to SRB over the last 20 to 25 years. So I'll just update this slide. I'm going to be looking at the differences between Zone 1, Zone 2, and Zone 3. Because I don't think the public really understands and I don't think I really understood until I actually got a full copy of the 2007 systematic analysis of tritium sources. Because the copy we got back in 2007 was redacted and it had important diagrams on there that really do explain a lot.

So Zone 1 is the waste storage area, to my understanding. Zone 2 is the waste packaging area. And Zone 3 is where waste processing was going on. And by "waste processing," I think that means that they were

actually crushing the glass, releasing the tritium, and then having the glass go back to waste storage. You may correct me when you have a chance to speak.

MR. LEBLANC: Excuse me, Ms O'Grady, are you going to follow with the slides?

MS O'GRADY: Oh, sorry.

MR. LEBLANC: Okay. Thank you.

MS O'GRADY: Okay. So SRB is one of three tenants occupying the Butler Building located at 320 Boundary Road. The building is owned by Michael Harrington. Michael Harrington recently applied for a building permit for an expansion of 812 metres. We're curious about that.

We know that SRB occupies approximately 40 per cent of the building as is, and with the new addition, we're not exactly sure how much that will change.

So the facility is divided into three zones. Each zone is determined by its potential for tritium contamination due to handling procedures. And this is according to the systematic analysis. Each zone has ventilation systems specific for the type of work being performed.

Yeah, so what we're looking at here at this slide, this is the changes to the facility from 1990 to 2007. There's three slides. So if you can see, Zone 1

is the white area here. Zone 1 is the administrative office area, shipping, receiving. Zone 2 is where they do the silk screening and the painting. And then this is Zone 3, this is the active area. These are the stacks. This is a little garbage shed that was there, a little -- they used to store their waste in. You can also see that shipping came to the front of the building during this time. Total square-foot area was 6,700 square feet.

So then between 1996 and 2001, SRB added on another 3,000 square feet. And that looks like it mostly went to the Zone 1, but there was this little area added on here to Zone 2. So this is the new addition, right here. And if you want to compare with the year before, you can see the difference. So it expanded. Now it's 9,766 square feet. You can see that they've added a waste room here in the corner to Zone 3, but there is no other changes to this zone. Most of the changes are expanding this area.

And then between 2001 and 2007, they expanded Zone 1 again by another 3,000 square feet. So you can see this area right here is all new, built on. That's a lot of space for an administrative area, I think. Now the total space is 12,766 feet.

These areas are curious. We're not exactly sure what the ventilation system is for Zone 1 or

Zone 2. It's not really discussed. We found a document showing the Zone 3 ventilation area. Stephane tells us that that's confidential information. And I disagree with that. I think that should be public.

So if you look, there's the changes from 1996 to 2001. So this is the new area, here.

And then in 2011, SRB dismantled this area here. So it's my understanding that there's nothing going on right there. There's a number of fume hoods in that area, and there's fume hoods in this area as well.

During our tour, I asked Jamie where the -- I asked Stephane as well -- where the actual breakage occurred, the October 28th incident. And he said it happened right here in Zone 2. So this is where the breakage caused the alarms to go off. So definitely there is tritium exposures there. There should be some sort of monitoring. We've never seen any kind of reporting for that. And that's the first time we've heard today that there was actually another stack -- there was a third stack at SRB. New to us.

Okay. So the other point is since the birth of SRB, since its arrival in Pembroke, Zone 3, which is their active processing area, has never expanded. There have been no changes except to add that one little storage room to it -- a storage room which, by the way, isn't

sealed. It has an open door to the outside. And how convenient is that? You can put your stored waste in there, take the lid off. It won't be monitored in your stacks. Sorry. I had to throw that in.

Okay. So this is SRB's footprint. They claim to be adding another 180 square metres to Zone 1 again. And again, I've already told you Zone 3 is the smallest and it has remained relatively unchanged.

And so 815 square metres for the Michael Harrington Butler Building actually translates to about 8,772 square metres [sic].

This is the floor plan that they give to the public, and this is what they tell the public, that this is where the expansion is going to go, this little area right here, right in front of their shipping area. It makes me wonder how they're going to get their trucks in there. And there's really no driveway that comes in here. It doesn't even look like a truck drives across the lawn, because they'd have to go through Med-Eng over here to travel down a little kind of a hill and get over here to deliver their shipments. It's a very curious set-up.

So there's issues around transparency. I have difficulty with this graph. I think it's just done to show the public that there's a downward trend. There is definitely an upward trend in the amount of tritium waste

that they're processing. And they also claim that they did no measures except maybe change the diameter of their piping, yet their emissions have gone down to levels that you would expect to see when they are not processing, which is very curious as well. And I haven't seen anybody explain that satisfactorily.

And that again raises the question: Are they actually monitoring releases? It raises two questions, actually. Are they actually processing? Are they actually manufacturing lights in Zone 3? Because that's where they would be manufacturing and that's where you would expect to see at least 5,000, 6,000 gigabecquerels of tritium released from the rig stack alone, not this number. It just makes me curious why the number is so low if they're still doing 400-and-some rigged cycles per month.

The other thing is that we're concerned about monitoring, whether they're actually capturing all the tritium releases. And we know that Zone 2 -- that's where the accident occurred, that's where the alarm was persistent, and that's where you had to actually carry the damaged tubes that you were shipped into Zone 3 to let it exhaust underneath the rig stack hood to the atmosphere.

So the stack ventilation system, that was another point that we raised. I thought that their

ventilation system, their bulk and their rig stack numbers should be reported separately.

So I really am not in favour of a licence for this facility, given that they are not disclosing their true activities to the public. It definitely seems to me that they are a nuclear waste facility. We've come across invoices from the U.S. that show us that indicate that this is SRB's main activity right now, and it is very profitable, let's say.

The other concern is the licence application guide, which tells licensees that they can release solid waste under three tonnes per year per building. They can also release liquid waste per year under the total amount per building. So my question to the Commission is, and to CNSC staff, is: SRB is building on another addition are they going to be allowed to have two release limits?

Thank you.

THE PRESIDENT: Thank you. Questions?

Mr. McEwan.

MEMBER MCEWAN: Thank you for the presentation. And I must say, thank you for the plans. I used them a lot as I was reading it. I was grateful for them. Thank you.

I'm still not sure what you're saying, though. Forgive me. I listened very carefully to what you were saying. Did I hear you correctly that what you're saying is that in fact they're not manufacturing signs, but they're functioning as a waste facility? Is that what -- that's what I think I heard you say.

MS O'GRADY: It's what I'm putting together, just like we had to put the well stuff together.

The emissions in Zone 3, which is their active area, are not elevated at all. They're like a non-processing. That's enough -- that's what you expect if the equipment itself was off-gassing. So either that and the processing is going on in other areas of the facility and they're not monitoring it, or they're monitoring it and they're not reporting it -- that's the other explanation -- or they've come up with some system of capturing the tritium. And they haven't. They don't have a secondary containment system. They haven't done anything to their processes since 2006. They changed the diameter of whatever tubing it was and whatever width it was, was it a quarter-inch, was it three-quarter inch? Nobody knows.

So yeah. That's what I think is happening. And the public really needs to be aware of this. This is something, if it is happening, this should be public information. And this hearing should be a little

bit more elaborate. There should be a very active engagement with the public because of the changes to this facility.

MEMBER MCEWAN: Staff?

THE PRESIDENT: Let's start with this. First of all, I want to ask a question in reaction to this, and then I want to hear from staff whether it's possible to hide emissions in this plant somewhere without it being discovered.

Go ahead.

MR. LEVESQUE: Stephane Levesque for the record.

And like I said, I'm a little disappointed, because we in good faith actually gave an hour-and-a-half plant tour to Ms O'Grady just recently in March during work hours, and showed her the facility and went through as much as we could. And I been forthcoming with all the information, including things like the ventilation diagram which she refers to, which is actually in her intervention.

I'm actually a little confused. A lot of the things that are in her supplementary submission and presentation are falsehoods, and I can address them right now.

Regarding the one you're speaking about specifically, regarding the emissions from the facility, there's a table in her presentation and statements that are made that are releases from the waste room. I'll address the main one: releases from the waste room are not monitored. But yet in the document that the floor plans were taken from, which is the sources document, which is dated March 29, 2007 -- and I know, because that's the only document that we put the changes in the facility from what it was to 2001, because it hasn't changed since 2001. In this same document, it states that there are releases from the waste room and that they're monitored. It says it clearly in black and white. And again, there's the sources document from March 29, 2007.

And that's the same for a number of other things in the presentations. And I can address them one at a time, but no, the emissions regarding the waste room, regarding the stub crusher fume hood, they're all monitored. And we actually discussed that during the plant tour on March 16th. So if somebody asked me, Are the emissions from our facility monitored? Yes, they are. And I think I mentioned, you already heard that if there's something that comes in the facility -- a broken sign or lights that are broken -- and there's some small emission in Zone 1 while it's transported to Zone 3, there's a

possibility for a fraction of emissions to be resulting from that. But that's a very rare occurrence that that's happened.

THE PRESIDENT: So you mentioned some false information in her presentation. I mean, what are the false information you're talking about?

MR. LEVESQUE: There's lots. Lots.

THE PRESIDENT: Well, give me another one or two.

MR. LEVESQUE: Okay. It is we are not a waste facility. We showed that during the tour. The only something that someone would define maybe as waste that we take back is we take back, as I mentioned earlier, old product that's expired. And that only represents, like I said, nine per cent of our revenue in 2014 and six per cent so far in 2015. So it's entirely false to say that.

We are processing in Zone 3. We are not doing any operations in Zone 1 that creates any significant release of any sort. So that's entirely false and it's totally misleading. And we actually went through this during the plant tour with Ms O'Grady and Dr. Hendrickson.

Regarding wells that we're not reporting, I also don't know what we're talking about. I'm sorry, I can't speak to something I don't know.

THE PRESIDENT: Staff? Can somebody hide emissions?

MR. RINKER: Mike Rinker for the record. I will give a first answer and then pass it back to Dr. Steve Mihok.

We do inspect and visit this facility. It is not a large facility. You can look in every room and every corner to understand where is the material and where is the work that's being done. So there isn't any possibility for hidden material that could compose a release.

And I will pass the question back to Dr. Mihok.

DR. MIHOK: Steve Mihok.

It's a bit of a jigsaw puzzle. We have all sorts of lines of evidence that tell us whether what is being reported is factually correct. We have air monitoring, slow monitoring, precipitation monitoring, stack monitoring, produce monitoring.

And one of the reasons corrective action was taken many years ago was some of those numbers actually didn't match and they didn't match because there was a mistake essentially in the amount of tritium that was being reported, relative to what was actually leaving the stack and it was essentially a spreadsheet error. It was one of

those annoying things that crept into the data.

Now, when some of these things came to light many years ago we had various crosschecks on whether or not fugitive emissions were occurring. That was one of the ways of understanding why things didn't match up and one of the better ones was the roof runoff, so the times when SRBT was not processing, and so on, what did the roof runoff look like? If there were large fugitive emissions then there would be a lot of tritium in that water running off the roof. Well, there wasn't, so that was a very good line of evidence.

We have done other studies on and off, but the most important one is the one from 2012 when we worked with the University of Ottawa to monitor the air on a very fine scale. So we have lots of data from that summer on weekends and so on, when again we knew no processing was going on and what we found in that study was essentially that the levels of tritium in the air near the building are very, very close to background. So it's like the tap gets turned off when SRBT is not operating.

So there are some fugitive emissions and we have that data from 2007 when they weren't processing tritium. They were just handling it in light tubes. We have a very good understanding of those numbers and how they contribute to the overall total.

So I just worked up those numbers literally days ago, cross-comparing across years and something on the order of maybe only about 10 percent or 20 percent at most represents other processes going on in the facility when they aren't actually operating the rigs or splitting the tritium, something like that.

THE PRESIDENT: Thank you.

Questions? Ms Velshi...?

MEMBER VELSHI: Sir, there have been a number of allegations they are becoming a dumping ground for waste and you said 9 percent of your revenue comes from the taking back of used light. How much of your processing volume is from that, your processing volume of tritium so, you know, you're 30,000 terabecquerels or whatever? How much of that would be from these returned fix --

MR. LEVESQUE: Stephane Levesque, for the record. Thank you for the question.

When we talk about processing we talk about taking tritium from a bulk container and putting it into a light source, so taking back an expired life source doesn't count as part of processing whatsoever.

MEMBER VELSHI: Okay. So your actual business volume has gone up of production rather than -- I mean in addition to probably taking back. Okay, thank you.

Mr. President, if I can ask another

question, unless someone else has one?

This is to staff. The intervenor talks about differences in U.S. requirements, regulations and hours when it comes to these devices and inventory management. Can you explain what the differences are and why and are we less rigid in hours and, if so, why?

MR. BUHR: Rob Buhr, for the record.

In the United States all manufacturers or distributors of radioactive signs are required to follow the regulatory requirements and those are considered general licensees. However, they go on a little bit further for people who purchase the signs. They are called specific licensees and they don't have a specific license, but they are expected to follow certain rules around handling these signs. One of the main differences is that these industries or people who purchase the signs have to keep an inventory of how many signs they have in a building and they have to account for where they go. So if the sign is sold or given to another facility, they have to account for that and show tracking records of where that inventory went.

In addition to that, there are also requirements are around how they dispose of that sign, so they are not allowed to send the signed directly to landfill. It is supposed to be disposed of in a proper

manner.

In Canada it's slightly different. We have kind of two thoughts on the waste. So somebody like SRB who manufactures the signs is under a license and therefore they are required to dispose of it at a proper disposal facility. On top of that, they are also supposed to provide like a procedure for how to dispose of the sign properly when they sell the sign and give options on how to retrieve the sign back after it is no longer useful. So SRB does this.

The second kind of waste option is when SRB sells the sign, or any manufacturer's sells a sign in Canada. That person who purchases a sign, there is no requirement on how to dispose of the sign so they are given the option to return it to SRB or to a proper disposal facility or they can dispose of it in the landfill. Those are the main differences between U.S. regulations and Canadian regulations.

MEMBER VELSHI: So from the way you have described it, ours seem a bit more lax than the U.S. ones, where if I were to get one of these lights I can go and throw it in my local landfill site; correct?

MR. RINKER: Mike Rinker, for the record. Yes, that is correct.

It is generally not homeowners who have

exit signs. It is businesses who may have a number. So it's in their interest to send it back to SRB.

Nevertheless, some do end up in landfills and there is no regulation that would require them to do otherwise. There is data about what are the tritium levels around landfills. We have had CNSC subject matter experts look at that data in the U.S. and the U.K. It is generally -- leachate from landfills, I believe, is in the order of hundreds to a couple of thousand Becquerels per litre. So there is certainly a signature of these things in landfills, but there is a signature of many contaminants that are together with that leachate.

MEMBER VELSHI: So is the U.S. regulation driven by landfill contamination a concern or is it anything other than that?

MR. RINKER: Mike Rinker, for the record.

So we believe there was an issue some time ago with Walmart that had many signs. I think some were unaccounted for, and it was that -- well, the NRC did not have a concern -- I think there was on the order of 15,000 signs -- about the health consequences. They felt maybe it was prudent to put in a requirement to respond to public interest, public concern, and also to deal with this issue.

THE PRESIDENT: What happened to the Walmart? I remember there was an order to all equipment

older -- to report back in what was the end result?

MR. RINKER: So I don't know the complete story. I know some of those signs were -- it was a company called Isolite who took over control of those signs and at the time Shield Source, who was also required to collect signs, did retrieve some -- had the import license from Isolite. So they may have been returned in that case.

THE PRESIDENT: So as the intervenor argues that Isolite has some relationship with this RBT -- in other words, did all this stuff come back to Canada?

MR. LEVESQUE: Stephane Levesque, for the record.

Thank you very much for the questions because this is one of the things I was going to bring up that's very important to me personally, is on page 3 of Ms O'Grady's H5-10A, if you wouldn't mind bringing that up, please? I think in red it says:

"In retrospect, it is apparent that SRBT was involved in some way with the Walmart tritium light inventory through their partnership with Isolite. SRBT..."

That would be me in this case:

"... should be held accountable for misinforming the Commission and for

their lack of transparency."

I was asked those same questions back in 2008 and '10 and I stand on what I said then. We did not have at that time any knowledge of what happened to those signs, nor do we today, nor did we have at that time any relationship with Isolite.

Their relationship began after Shield Source, who is a sister company of Isolite, started getting into some issues with the monitoring of their emissions and we had a meeting, I believe in January 2013, where we discussed supplying them. We supplied them samples in February 2013, so several years after this happened. So we are actually not aware of what happened with the large number of signs from Walmart, nor were we involved.

So we can't answer the question for you. I'm sorry, I don't know if they came back to Canada. I have no idea.

THE PRESIDENT: Just so I understand what Ms Velshi just asked, in the U.S. how do they dispose of those signs nowadays?

MR. LEVESQUE: Stephane Levesque, for the record.

I know that we take back some signs and apply for import permits, take back some signs from customers in the U.S. So that is a route.

I know there are other routes that they go to waste brokers, none of which are sister companies of hours. We do know them because some of them come to us for quotes to want to get rid of those signs, some of them have other means of getting rid of them other than SRB Technologies.

THE PRESIDENT: But waste broker, it could be a municipal waste?

MR. LEVESQUE: There are private companies out there that just handle various types of waste, including tritium signs.

THE PRESIDENT: I'm still trying to come to grips with here you don't need any intermediary. You can go and throw it away in the local dump; is that correct?

MR. LEVESQUE: Stephane Levesque, for the record.

Yes, an end user is allowed to throw it to the dump, but we offer the service of taking it back.

THE PRESIDENT: So do you know if some do that in volumes? Some users actually dispose of them in municipal dumps?

MR. LEVESQUE: Stephane Levesque, for the record.

Not to my knowledge, no.

THE PRESIDENT: Ms Velshi...?

MEMBER MCEWAN: So can I just be clear that I understand? For the expired signs you contract with a company to take them back. You bring them back to your facility and you are really just acting as a transit point to then go to Chalk River; is that correct?

MR. LEVESQUE: Stephane Levesque, for the record.

No, not exactly. There is the case that companies come to us to dispose of signs that are in their possession, but there are also end-users that come to us to get rid of signs for replacements. And we just don't take the signs and send them to waste disposal. We take the signs, we log them in our inventory, we assess whether there are parts that can be reused.

In certain cases we reuse the entire sign because it hasn't expired yet. It's still well within the luminosity required to meet building codes.

In certain cases we take the lights out and we use them for totally different applications.

And, yes, in some cases we take the lights out, repackage them and send them to AECL or another licensed waste facility, but never to landfill.

MEMBER MCEWAN: Okay. But you are not actually processing the tritium in the signs?

MR. LEVESQUE: Stephane Levesque, for the record.

No, we are not. That's an operation that ceased when we went for our license as requested by the members of the public.

MEMBER MCEWAN: So the complete light is either reused or sent to Chalk River?

MR. LEVESQUE: Stephane Levesque, for the record. Exactly.

MEMBER MCEWAN: Thank you.

MEMBER VELSHI: I just want reassurance from staff that we have actually assessed the potential risk of us not monitoring what happens to these signs at the end if they are not returned for disposal at a proper facility.

DR. THOMPSON: Patsy Thompson, for the record.

So at the risk of getting Mr. Binder a little bit upset I'm going to quote a document from the AECB days. So there is a regulatory document that was created probably in the early nineties on exemption of essentially fire detection and such equipment and that -- essentially, that regulatory document did a number of assessments looking at the health consequences of disposing of fire alarms and light signs and things like that and the

assessment at the time was that those would be below -- would be de minimus and de minimus was defined as 50 microSieverts.

And on that basis the regulatory document allowed for disposal to landfill of essentially those pieces of equipment on the basis that it would be unlikely that several large numbers would be disposed of at the same time. On that basis, I know that a number of years ago there were issues with OPG trying to send material to Ontario landfills. Essentially it was contaminated soils, and there were some measurements of tritium in landfills and then some discussions.

My recollection of that data is that the concentrations were in the hundreds of Becquerels per litre in certain landfills, but certainly not to the levels where we would see a risk and, as was explained earlier, leachate from landfills is handled then appropriately.

THE PRESIDENT: So is there a number? Is there a number now that defines the release limit and therefore you can do this under that particular release limit?

DR. THOMPSON: Patsy Thompson, for the record. My understanding is that individuals can dispose of such things through regular garbage essentially to the landfill, but for bulk material there is a requirement to

send the material to a CNSC licensed waste facility. We could come back perhaps -- I don't know if there is a break -- with more details, I know it is in some of our regulations in terms of the cut off, but I don't have that number with me.

THE PRESIDENT: Okay. Thank you.

Go ahead, Monsieur Levesque.

MR. LEVESQUE: Thank you very much.

DR. THOMPSON: Oh, we just have the information. Sorry.

THE PRESIDENT: Go ahead.

MR. RINKER: It's in the *Nuclear Substance and Radiation Device Regulations*.

"A person may dispose of a tritium safety sign without a license as long as it contains less than 925 gigabecquerels of tritium."

THE PRESIDENT: So how do you make sure that everybody follows this up? Okay, let me ask it differently. When you put yesterday the sign originally, what is it's -- what level is it when it's new?

MR. LEVESQUE: Stephane Levesque, for the record.

For the signs produced for Canada, they are below that tritium content of 925.

THE PRESIDENT: So from the get-go they are disposable? Is that the way I can understand it?

MR. LEVESQUE: Stephane Levesque, for the record.

Yes.

THE PRESIDENT: So if somebody wants to be really malicious and accumulate them, then you get into a different issue. Can you? Is it cumulative? Can I buy 100 of those things and I am above my release limit?

MR. RINKER: Mike Rinker, for the record.

According to the regulation, one sign with 925 gigabecquerels of tritium activity can be disposed of and if you had 10 of such signs you could dispose of them.

THE PRESIDENT: I think the AECL document requires review.

DR. THOMPSON: Patsy Thompson, for the record.

I know a number of years ago there was an issue that there were some buildings being dismantled in Winnipeg where a number of signs were disposed of with the garbage and I know there was some review at this CNSC, or AECB at the time, but my understanding is that when the *Regulations* were updated it took into consideration the potential outcome of disposing of signs when there are a number of signs in industrial buildings.

THE PRESIDENT: Okay. Questions?

All right. By all means, it is your turn now.

MS O'GRADY: Mr. Rinker made a comment about SRB is a small building and you can't hide anything, but I can show you the slides of the layout. There is one area of this building that we have never been through and it's this area right here. It's never been on our tour. Zone 1. We have maybe seen part of this area, but this has never been -- Zone 1 has never been part of our tour.

And we have never actually seen inside the waste room. We understand it is high level waste in there, so we were happy that you didn't actually open the door. I'm a little bit worried when you say you can open the other door but you don't because it's sealed.

My other comment is Mr. Levesque says that he doesn't know exactly what happens to these lights, but the U.S. does. The USNRC really strictly regulates their lights and in fact there is a mediatory. They are called Lampmaster and they give the client the packaging instructions. So you are only allowed to pack 10 lights per box and if you pack eight and you pack 10 in another and then two in another one you are going to be dinged \$100 or \$150. It is \$150 per light.

If you send SRB more lights than you told

them that you were going to send them, that's another fee of \$50 or \$100. If you send them a damaged light, they have the right to send it back to you or refuse your order. So they definitely have a very nice setup here, so if you were to relook at that AECB document, I mean you are going to be putting a little bit of a dinge into their very handy little business.

I think I just wanted to ask Stephane. When you say your waste lights go to a licensed waste landfill, are you referring to yourself?

THE PRESIDENT: Go ahead.

MR. LEVESQUE: Stephane Levesque, for the record.

No, we are referring to a CNSC licensed waste facility, not SRB Technologies, typically CNL.

MS O'GRADY: (Off microphone).

MR. LEVESQUE: Stephane Levesque, for the record.

Not ourselves included.

THE PRESIDENT: Anything else? But just talk about this top-secret little zone here. What are you hiding in there?

MR. LEVESQUE: Stephane Levesque, for the record. Thank you very much for the question.

This is one of the -- and if I can address

a couple of them you asked me and gave me the opportunity at the falsehoods that I was talking about.

Ms O'Grady and Dr. Hendrickson actually finished their tour in Zone 1. If you look at the yellow, right where you see the blue saying "Main Floor", just over 1,100 square feet, these were where all the offices were where she met a number of staff, including our project engineer here, Courtney Sinclair, and this is where the tour ended. So she saw that facility.

So I am baffled. I'm sorry but --

THE PRESIDENT: Is there any secured zone that you wouldn't let the public in?

MR. LEVESQUE: Absolutely none. We showed Dr. Hendrickson and Ms O'Grady everything.

Ms O'Grady, when she came to Zone 3, I wanted to show her that we didn't store waste, because you are looking at a room that is 7 x 6. I said, "And I will show you the waste room." I was going to open it, and she didn't want to. And Dr. Hendrickson was okay with me opening the room, so I did and showed it to him. I believe he is still here today.

And, you know, the tour was not just with me. It was with our Vice President, Ross Fitzpatrick. Jamie MacDonald and Doug McNab joined us for part of the tour and Courtney as well.

THE PRESIDENT: It sounds to me like you need to ask for another tour.

MS O'GRADY: Yes.

THE PRESIDENT: Right. Anything else?

MS O'GRADY: No. Thank you very much.

THE PRESIDENT: Thank you.

MR. LEVESQUE: I'm sorry. I just had a couple of things quick that our -- I just want to make sure that people realize that with the expansion there is again nothing hidden and what we are looking to do is to store plastic parts to use in our signs.

We apparently have three trailers. If you can see -- if you drive by tonight you will see three trailers at the back of SRB. There is no waste stored in the trailers. There are brand-new parts to use for our signs in our other products and we are looking to add that area to add parts into it.

Another thing that was said is the number of employees at our facility. I think that we have been open. I see on the presentation here how many people actually work and live in the Pembroke area. Other than Mr. McNab who lives in Arnprior, all of us live in the Pembroke area.

There is nothing misleading about what we do. We still do silk screening, unlike what it says in the

presentation, and no waste is stored off-site. We don't have another building that we store waste into, so that's a falsehood as well.

Thank you for the opportunity.

THE PRESIDENT: Okay, thank you.

We need a break for 10 minutes -- 15 minutes. 15 minutes. We are getting tired.

--- Upon recessing at 5:24 p.m. /
Suspension à 15 h 24

--- Upon resuming at 5:43 p.m. /
Reprise à 17 h 43

THE PRESIDENT: Okay, we are ready to proceed.

I would like to move to the next submission, which is an oral presentation by the Canadian Coalition for Nuclear Responsibility as outlined in CMD 15-H5.11.

Dr. Edwards, the floor is yours.

CMD 15-H5.11

Oral presentation by

Canadian Coalition for Nuclear Responsibility

DR. EDWARDS: Thank you very much, Dr. Binder.

Can you hear me okay? Hello, can you hear me?

THE PRESIDENT: Yes, go ahead please.

DR. EDWARDS: Okay, fine.

First of all, I would like to congratulate the licensee and the CNSC staff for reducing greatly the emissions of tritium into the environment. I think that is certainly something to celebrate.

On the other hand, I think we have to acknowledge that it was through interventions that these problems were brought to the attention of the CNSC, which lead to the monitoring and the work that has subsequently been done to lead to these improvements. And this monitoring is really the direct result, I believe, of citizen intervention.

As a result, I think that a 10-year licence is way too long. I think that there is no way that this plant should be granted, in my opinion, more than a two-year licence at a time so that we can see what is

feed for heating.

Does it mean that should this nuclear waste tritium be stored or under severe regulatory conditions it could be reused, recycled?

DR. EDWARDS: Yes. My answer to the question is that I think in the case of radioactive materials recycling is an inappropriate concept.

The three Rs do not apply in the opinion of the Canadian Coalition for Nuclear Responsibility to radioactive materials; reducing and reusing does make sense, but recycling does not make sense if it means putting it into general commercial distribution, and especially if it is going to end up in landfills.

We have talked about the hazards to the Pembroke environment from crushing the glass and letting the tritium escape. Well, imagine what happens if these things end up in landfills. I do hope that the CNSC will revisit those regulations and see to it that landfill disposal of this size is not allowed.

THE PRESIDENT: M. Harvey?

MEMBER HARVEY: Dr. Edwards, one of one of your points is to move the facility. But at the end of the day, what would be the difference if we consider that the releases are controlled, the damages are very limited to the nearby facilities. And supposing that the same people

would work there, so at the end of the day what would be the difference?

DR. EDWARDS: Well, I think the difference is that it is recognized that in the early days it was always emphasized that there should be no unnecessary exposure to atomic radiation unless there is a benefit to the people who are being exposed.

These people in Pembroke are mostly not being benefitted by being exposed to the tritium. Whereas, you could argue that at CRL, at Chalk River Laboratories, you do have people who are earning their living as employees of the nuclear establishment and they are always being subjected to radioactivity, which the general public is not being subjected to, as part of their job.

We have to bear in mind that the effect on pregnant women can be quite severe. I was present during the select committee on Ontario Hydro Affairs hearings that took place in 1979 and 1980 when tritium first came to public attention.

And one of the people who testified there was Dr. Edward Radford who was also one of the chairmen of the BEIR committees. And he pointed out that if there is a sudden spike of tritium release such as has occurred, for example, I know in Peterborough at the SSI Institute there was quite a substantial release at one particular moment.

In five minutes they released a tremendous amount of tritium.

If this happens during a certain stage of pregnancy the fetus, especially if it is a female fetus, can be severely affected by that because the damage she will carry for the rest of her life.

And so we want to get these kind of facilities away from ordinary, you know, day to day families who are just living their everyday lives. They shouldn't have to be subjected to this.

MEMBER HARVEY: Maybe I would like to have the Staff comment about moving the facility. What would be the difference? What would be the advantages, would there be some?

MR. RINKER: Mike Rinker, for the record.

So we have a facility that is safe, emissions are under control, public dose is exceedingly low. It is difficult to think of an advantage other than it may reduce the fear or preoccupation that some neighbours may have.

MEMBER HARVEY: Mr. Levesque?

MR. LEVESQUE: Stephane Levesque, for the record.

Yes, I think you can understand I have been asked this question once or twice. And I can give you

a major disadvantage for moving the facility. Because now we have a network of 46 monitoring wells, we have a weather station that we monitor all the environmental data, and I have been doing it for almost five years now. And we understand that ecological system, we understand that system, that environment.

And to move, to pick-up the facility and just to move it somewhere else, you are starting all the way over again. You know, so there is a lot of work and a lot of data that you can see that we have done in analyzing the environment, and how the environment responds to our emissions. And that would be to start all over again, and I don't think in anyone's benefit.

DR. EDWARDS: On the other hand, the fact that those installations are there is only for one purpose, and that is because of the hazards posed by tritium. If you moved it to Chalk River, you wouldn't have to worry about that particular environment that you are dealing with now and you wouldn't need those monitoring wells and so on. You have got a different situation at Chalk River. They are used to dealing with these materials.

THE PRESIDENT: If I understand correctly, there is all kinds of monitoring in Chalk River, all the buildings, and the Ottawa River, is that not correct, Staff?

DR. EDWARDS: Absolutely.

THE PRESIDENT: But the intervenor made another point, and I would like to hear your view. If you are going to stay or like to stay in this facility for a long time, looks like you got an increasing business, what about zero emissions? Can you become an hermetically sealed organization?

MR. LEVESQUE: Stephane Levesque, for the record.

Obviously that is our greatest goal. Because if we could have zero emissions, there would be very little discussion today. It would just be historical. So it is something we have been working hard on. As you can see, I think that we have reduced the ratio of what is released. But that is why we want to dedicate 5 per cent of our revenue to finding emission reduction initiatives.

We are not aware of any technologies right now that could reduce it to zero, it would be to trap it and move it somewhere else, and there are dangers associated with that. But over a long licence term we can definitely put our heads to that and dedicate our time to try to hopefully come back to you and be as close to that as possible.

THE PRESIDENT: Thank you.

Questions?

The intervenor mentioned the famous mistake of SSI that was going on for quite a significant amount of time, both by SSI and Staff.

How can we assure it doesn't happen again?

MR. RINKER: Mike Rinker, for the record. So there were some regulatory oversight lessons learned. With that, there was some -- and industry has also learned from that event, what happened at Shield Source.

And I think we can see that what SRB was required to do, but they voluntarily increase the frequency to have a third party annually come in and make sure that they are their stack is performing and their monitoring of their stack is being then as they expected it and as they are reporting.

In addition to that, we now have a IEMP, Independent Environmental Monitoring Program for which we have two years of monitoring data, which we have done independent to the SRB program and we will probably be back in Pembroke again later this year to relook at this facility.

And the third line of evidence is the research that was done on tritium cycling in the environment often focused on the SRB facility in the past and in more recent years. SRB has been very cooperative to allow us to grow vegetables and grass next to their stacks

and to really try to understand how tritium is cycling in the environment in this area.

So I think as a regulator we have a body of knowledge that has improved. As a licensee they have taken lessons learned from that experience and the independent monitoring by both the CNSC and that SRB is employing will avoid this sort of mistake.

THE PRESIDENT: Thank you. One other question. The intervenor on his page 5 argues that SRBT is exporting material all over the world, including to such countries as Iran, and do not seem to be carefully tracked or accounted for.

So first question is, are you shipping to Iran? And secondly, would you track this?

MR. LEVESQUE: Stephane Levesque, for the record.

No, we used to have a permit to ship to Iran when it was part of the community, and we did ship some lights that were used for compasses. But that was a number of years ago. And since then, the relations with Iran has ceased, and we haven't made an application to renew that permit, as we are not looking to supply them anymore.

THE PRESIDENT: Staff?

MR. AWAD: Raoul Awad, for the record.

Actually in 2005 we issued a licence for SRB to export to Iran about I think 70,000 signs. And these 70,000 signs have almost half gram of tritium. But, as I said in the beginning, this tritium in dispersed form is not useable for nuclear weapons. You need a lot of technology to remove it and make it available. And the threshold really to be useable is beyond three grams of...

And for the question, yes, we are monitoring every shipment, we have prior shipment notification, we have -- depending on the licence, sometimes we have -- after the licence report we have annual report and we are tracking all the shipments that SRB is doing.

DR. EDWARDS: So I gather that CNSC knows exactly where those 70,000 signs are inside Iran?

MR. AWAD: Raoul Awad, for the record.

No, it is not what I said. I said, we send 70,000, but we are tracking by country where the export is happening.

THE PRESIDENT: You are also saying that you do not have a security or a weapon concern about that shipment. Is that what you are saying?

MR. AWAD: Exactly. Because .5 grams is very low. And in dispersed form, which makes it unusable for any nuclear weapon application.

DR. EDWARDS: I would like to challenge that statement just on the record. I don't have a reference for it, but tritium is tritium. There is no such thing as enriched tritium or non-enriched tritium. Tritium is tritium.

MR. AWAD: Raoul Award, for the record. There is a difference between the dispersed form of tritium which is used in the light sources and the pure tritium used in the nuclear weapons.

To get the pure tritium from the dispersed form there is a very complicated technology which is still theory, nobody did it until now.

THE PRESIDENT: Okay. Questions anybody? Okay, Dr. Edwards.

DR. EDWARDS: Thank you very much. And so I will just conclude by saying one thing.

THE PRESIDENT: Okay. Just one minute, I think Mr. Levesque wants to say something here.

MR. LEVESQUE: I am sorry, I just want to make sure I clarify something, I am sorry, but they weren't exit signs, they were small lights, basically the end of your pencil eraser, and they were used in compasses. I just want to get that clarified because that is actually what it was.

Thank you.

THE PRESIDENT: Dr. Edwards, over to you.

DR. EDWARDS: Okay. I do believe that in order for the public to have confidence in nuclear power and in the Canadian Nuclear Safety Commission, I think they have to see that the Staff is not speaking the same language as the licensee.

And unfortunately time and again, and today is a good example once more, it seems that the attitudes of the Staff towards chronic exposures to radioactive materials is virtually identical to the attitude of the licensee. What does it matter? It is just a chronic exposure to a carcinogen. What's the problem?

I don't think that is an appropriate attitude for a body which is supposed to be representing the public health and safety. I think that their attitude should be this is a problem, we don't want to have chronic exposure to -- unnecessary exposure to a carcinogenic material.

So I think that until the public can see that there is a clear distinction in attitude between the regulator and the licensee that the CNSC will continue to lose ground as a credible regulator.

THE PRESIDENT: Thank you. We would like to continue and move on to the next submission.

MR. LEBLANC: Yes. So we just want to

verify if Dr. Judith Deutsch is in the room. We've been trying to reach her all day, she was the next intervenor. If not, her intervention will be treated as a written submission.

We are now at the stage of going through the 38 written submissions that we have because that also includes one from Mr. Zach Ruiter who had been scheduled to present today and who informed us that he was not able to do so and that we should consider his submission as a written submission.

But if you allow me, Mr. President, I understand that Dr. Newland wanted to clarify a statement he made earlier with respect to the Participant Funding Program.

Am I right, Dr. Newland?

MR. NEWLAND: Yes.

MR. LEBLANC: Please proceed.

MR. NEWLAND: Thank you. Yes, I would just like to clarify my remarks regarding the availability of PFP funding for the review of CNSC's annual reports.

Currently PFP funding is not available for those reports, however, we are undertaking on an ongoing basis evaluations of the PFP Program to ensure we are improving the Program and we are considering the possibility of using the program for such annual reports.

Thank you.

THE PRESIDENT: It was my understanding, however, that any time somebody can apply for a research/analysis kind of application to the Program and it will be considered, because I thought at one time we were imploring some university faculties to apply to the Program.

Am I right?

MR. NEWLAND: Dave Newland, for the record. To date we have not permitted that for our annual reports.

THE PRESIDENT: No, but for any study of some sort, not necessarily associated with an application. You're not familiar with that? Okay. Anyhow...

MR. NEWLAND: Yes, I think you're right.

THE PRESIDENT: You'll have to review that.

Okay, Marc...?

MR. LEBLANC: Yes. If you allow me, I'm going to go through the list of written submissions starting with the one from Mr. Zach Ruitter, that would be 15-H5.5.

THE PRESIDENT: I have to find it.

CMD 15-H5.5

Written submission from Zach Ruiter

MR. LEBLANC: And ask the members if you have any questions for staff or SRBT on this intervention.

THE PRESIDENT: Go ahead.

MEMBER VELSHI: Question for SRBT. Is this, as the intervenor says, a technology that is quite obsolete or is this a growing market with a whole lot of potential applications? Where do you see your company going in the future?

MR. LEVESQUE: Stephane Levesque, thank you very much for the question.

We obviously see it as a growing market. There's a lot of applications that used to use LED lights or electrical lights that have problems with having condensation due to water and things like that where they don't want to use any power source or create a spark, like in an airplane.

There's also a lot of military applications for illumination where our product doesn't generate any heat so it can be detected by heat-seeking equipment.

We're only a small company so we don't have a lot of marketing behind us, but we see that if we

were able to spend more on that it would be a much more growing company.

MEMBER VELSHI: And so what are you constrained by right now from growing; is it just your natural growth rate or is it trying to find new markets, is it your production capacity and equipment constraints?

MR. LEVESQUE: Stephane Levesque, thank you very much for the question.

It's a lot of that. We don't have enough resources to be able to put it in marketing, to be able to go to the market anymore and it's steps that we're making, small steps, but we're one application away from finding a new way to use tritium light sources, like tritium exit signs.

Thank you.

THE PRESIDENT: Anybody else? Mr. Tolgyesi...?

MEMBER TOLGYESI: Just one. Can you just tell me, just estimate, in the world market, are you a big player, small player because it will determine also if you have potential to grow?

MR. LEVESQUE: Stephane Levesque, for the record. I understand and in the -- we have three parts to our business.

We have the emergency lighting, which is

the exit sign. From what I understand, we're about three per cent of the market in that respect in North America. We're relatively untapped in Europe for signage.

Regarding aerospace, if you talk about emergency or evacuation exit doors, we're probably at about 75 per cent of the market, but still a little bit to grow with new. So pretty well next time you fly in a plane, more than likely it will be our signs and ones that were made by our competitors are no longer in business.

Regarding military, it's new applications that come every day and it's really hard for that one for us to quantify how many more illumination devices there is, how much proportion of the market we have.

MEMBER TOLGYESI: And who are the main, I'll say, competitors, from where?

MR. LEVESQUE: Stephane Levesque, for the record. Competitors, in each market they would be different. They would use either a photo-luminescent based product and there's been problems associated with that, a LED product or an incandescent light product.

So there's different technologies, but they all require either wiring, battery. And you can think of applications like in a mine where it's really hard to get wiring into, a place that handles chemicals where a spark could generate a major fire, or like I said, the

military generating heat, you can be detected, or aerospace to have more wiring runs just creates more problems in qualifying the plane.

So there's different technologies other than the competing ones and sometimes when people have been using those and find out about our product, they say, I didn't even know this existed because maybe to us today we've been talking about tritium lights and it seems familiar to us, but when you talk to people in the general population about tritium lights, there's not many people out there that are aware that that technology exists.

THE PRESIDENT: But I thought the question was, are there any other company that produces tritium-based lights.

MR. LEVESQUE: Stephane Levesque, for the record. Sorry, I didn't understand the question.

There's a company in Switzerland that produces tritium lights, but their market is focused more on using tritium lights for applications like watches and gun sights. They're not producing any exit signs, aircraft products or products for the military.

THE PRESIDENT: Where do they get their tritium from?

MR. LEVESQUE: My understanding is they get it from Canada.

MEMBER TOLGYESI: You were saying that you're quite present in the aerospace -- in the airplanes. Lots of airplanes in North America, they are maybe half Boeing and half they are coming from Europe. Are your products used also in the airplanes fabricated in Europe?

MR. LEVESQUE: Thank you for the question. Stephane Levesque, for the record.

About 90 per cent of our products are shipped outside of Canada, mostly to the U.S. and U.K. If you just look at the aerospace products which, again, is about a third of our business, I would say that Bombardier is pretty well one of the only Canadian manufacturers, De Havilland, the rest is sent all over the world.

THE PRESIDENT: Okay, thank you.

MR. LEBLANC: So the next submission would have been a submission from Science for Peace or Dr. Judith Deutsch. It's at CMD 15-H5.12.

CMD 15-H5.12

Written submission from Dr. Judith Deutsch

THE PRESIDENT: Monsieur Harvey...?

MEMBER HARVEY: Well, there was only one sentence. In the third paragraph, the middle of the third paragraph at the end:

"There is evidence that the CNSC failed to regulate, to report tritium levels, to adhere to subsequent scientific findings...", et cetera.

So could you just comment on that?

MR. NEWLAND: Dave Newland, for the record. I think the evidence is there that we did regulate and that we took regulatory action, as we showed during our presentation, at various points during the life cycle of the plant.

So I reject that.

THE PRESIDENT: Okay. I've tried to avoid it a couple of times, but I think I'd like some staff view about the ongoing, where we hear a conspiracy theory between the IAEA and the World Health Organization, this is in the fourth paragraph.

"...the IAEA effectively gagged WHO on matters of health in the presence of ionizing radiation."

We've been hearing this idea that the WHO is controlled by the IAEA.

DR. THOMPSON: Patsy Thompson, for the record. There's actually an earlier intervention that has actually, has put in the agreement, it's intervention 15-H5.9A and essentially it's an agreement for

collaboration between the IAEA and the World Health Organization.

I wouldn't qualify this as a conspiracy. The CNSC and many other organizations have memorandum of understanding or agreements. We have one with Health Canada, for example, Environment Canada and others.

WHO has done a number of studies on the health effects of radiation. The IARC, the International Agency on Research for Cancer is under the WHO, they have declared radiation to be a carcinogen. They've done studies on Chernobyl, on Fukushima, on radon and on many other aspects.

So I think the WHO has played the leading role in terms of science in relation to radiation effects.

THE PRESIDENT: Thank you.

MR. LEBLANC: So the next submission is from Mr. Jeff Brackett, CMD 15-H5.6.

Any questions?

--- Pause

MR. LEBLANC: So the issues raised have already been addressed with earlier interventions.

The next submission is from Cheryl Gallant, MP for Renfrew, Nipissing, Pembroke at 15-H5.13.

--- Pause

MR. LEBLANC: The next submission is from

Terry Lapierre, Chief Administrative Officer, the City of
Pembroke, CMD 15-H5.14.

--- Pause

CMD 15-H5.14

Written submission from

**Terry Lapierre, Chief Administrative Officer, the City of
Pembroke**

THE PRESIDENT: I'd like to hear from SRB
whether the Municipality and the water and the sewage
section and the health has ever expressed any concern with
you people.

MR. LEVESQUE: Stephane Levesque, for the
record. Thank you for the question.

In 2010 there was an individual that
worked at the water waste facility for Pembroke that
expressed some concerns and the concerns were heard by I
think the Ministry of Labour for Ontario and although we
weren't asked to go in the proceedings, we took part and we
proposed to actually do additional monitoring to show this
individual that he wouldn't be exposed to any significant
risk.

We did that and it satisfied the Ministry
of Labour and the City of Pembroke.

And we also had an information session with all the workers at City Hall back around the same time in 2010 and there hasn't been any concerns expressed since.

THE PRESIDENT: So when you make a presentation to the Pembroke Council, is it open to the public?

MR. LEVESQUE: Sorry, Stephane Levesque, for the record. Yes, it is and we always do it also when it's televised on a local television channel and they do that, you know, at certain intervals and we make sure that it's televised.

We advertise it on our website and, yes, it's open for members of the public to take part.

THE PRESIDENT: Thank you.

MR. LEBLANC: The next presentation is from the Mayor of the City of Pembroke, Mr. Michael LeMay, CMD 15-H5.15.

--- Pause

MR. LEBLANC: The next presentation is a written submission from the Security Company, CMD 15-H5.16.

CMD 15-H5.16

Written submission from the Security Company

MR. LEBLANC: Dr. McEwan...?

MEMBER MCEWAN: Sorry, just the mock fire scenario that he mentions. You briefly alluded to it in your presentation. How much of a stress of the whole emergency system do you think it was; was it very rigorous, was it -- did it bring up any major flaws?

MR. LEVESQUE: Bring up any...?

MEMBER MCEWAN: Major flaws or major issues?

MR. LEVESQUE: Thank you very much. No, it didn't. Our response and regulatory requirements we met, but we identified -- we had a lot of staff that were involved who also had been independent evaluators for the City of Pembroke and we identified 38 minor areas of improvement and a lot of those have already been completed, but there's nothing major in it, we can say it was a success.

MEMBER MCEWAN: So a couple of examples of the minor areas?

MR. LEVESQUE: Stephane Levesque, for the record. Yes, I think one of the main ones was during the exercise people that were at the facility, myself, the incident commander and others that were at the facility handling the emergency were communicating back with others that were being directed to a marshalling area through cellphones and in case there was a problem in

communication, we realized and the CNSC staff also made that recommendation that we should use two-way radios instead. So we since purchased two-way radios to do that.

Another thing was, as we were leaving the facility we didn't have with us a map of the facility to be able to show the responders. Although these responders had toured the facility on several occasions, it would have been easier to show them to a map, it's right here.

And that's two of the main ones I can say.

MR. LEBLANC: The next submission is from the Algonquin College, CMD 15-H5.17.

CMD 15-H5.17

Written submission from Algonquin College

THE PRESIDENT: What is the nature of your support to the Algonquin College Radiation Program?

MR. LEVESQUE: Stephane Levesque, for the record. We do various initiatives with them. If you don't mind, I'll pass this to Jamie MacDonald.

MR. MacDONALD: So Jamie MacDonald, for the record. Our partnership with Algonquin College is long standing.

We've had a member on the Advisory Board for the Program for Radiation Safety. It's a unique

program at the College and so we've worked collaboratively with Algonquin College to make sure that issues pertaining to radiation safety for a facility such as ours are considered when they're developing their programs.

We've also hired summer students that have graduated from the Program. And as you can see with the submission, we've even gone to the length of donating scintillation counters.

MR. LEBLANC: The next submission is from Colleen Sauriol, Planning and Building Department, City of Pembroke, H5.18.

--- Pause

MR. LEBLANC: The next submission is from Josef Allen, CMD H5.19.

--- Pause

THE PRESIDENT: This intervenor has a very strong view about some of the criticism. In here they -- go ahead.

MR. LEBLANC: The next submission is from the Pembroke Fire Department, H5.20.

--- Pause

CMD 15-H5.20

**Written submission from
City of Pembroke Fire Department**

MR. LEBLANC: Mr. Tolgyesi...?

MEMBER TOLGYESI: It's related to fire department. When you do your fire drills and emergency exercise what you did, in the building there are some other enterprises, you are not the only one. So are these other ones included in your emergency drill or fire drill and to what extent, because you have 250 metres there are private two houses, to what extent -- how it extends, your emergency exercise?

MR. LEVESQUE: Stephane Levesque, for the record. Thank you very much.

I'll answer in two parts. First, the fire drills. Regarding the fire drills, there's no involvement from any other members of the community, but the next fire drill that we have, we will be posting it on the website so that people are aware in the community, if they see a fire truck at the facility, what's happened.

Regarding the emergency exercise that we had, it was our first one. What we did is Vice-President Ross Fitzpatrick and myself went and met all the agents and businesses in the community to discuss with them that we

were going to do this.

We also mailed and went door-to-door to the homes within -- the homes and facilities within 500 metres of the facility and basically put out a public notice to say that we were going to do an emergency exercise. We posted it on our Facebook page and obviously everyone within the Fire Department was aware.

So for this first involvement we didn't require anyone else to evacuate their facilities, we just made them aware that we were going to conduct it on that day.

MEMBER TOLGYESI: So they were informed but not participating?

MR. LEVESQUE: Stephane Levesque, for the record. That's correct, for this first exercise.

MEMBER TOLGYESI: Do you expect that you will involve them eventually?

MR. LEVESQUE: Stephane Levesque, for the record. Yes, it's something that we've talked internally about and we think that the next exercise that we plan, we will involve our neighbours as part of the exercise.

MEMBER TOLGYESI: Did staff participate or observe some of this emergency exercise?

MR. CALLIGHEN: Hello. Mike Callighen, for the record. I am a Licensee Emergency Program Officer

with the CNSC.

Yes, we actually had a large contingent of CNSC staff there, as typical for exercises so we can observe from several vantage points. So yes, we did observe the exercise and I concur with the statements of Mr. Levesque.

THE PRESIDENT: While I'm on the subject, did anybody also check to see that the security of the facility is adequate?

MR. AWAD: Yes. We had a security inspection recently. There was an arrangement between SRB and the local police. Now, this arrangement is moving to SRB and OPP, Ontario Provincial Police, because there is no more Pembroke police and they are now I think negotiating, them or you, which governs the intervention of the police in their facility.

Maybe Mr. Levesque could give more information about it.

THE PRESIDENT: Go ahead, please.

MR. LEVESQUE: Stephane Levesque, for the record.

It's important to understand this transition. A lot of the police officers for Pembroke actually moved over to the OPP. So a lot of these officers are familiar with our facility.

Nonetheless, we recently met the staff sergeant for the Pembroke contingent. He visited our facility and had a full plant tour. We asked him if we could have an MOU with them as we did with the Pembroke police before. A couple of weeks ago we were told that they had a draft that was going to be sent to us any day. After we see that draft we will be working with them on completing that, after which we will give a tour to all the officers, including those that have been at our facility before.

MEMBER TOLGYESI: In case of a real fire, not a drill fire, the firefighters, they are using high pressure water jets. Could it break or make damage to your tubes and eventually have a radiation or could they be exposed to radiation?

MR. LEVESQUE: Stephane Levesque, for the record.

The firemen, when and if they were to fight a fire at our facility, they would use a self-breathing apparatus. So the dose that they would get as a result of fighting a fire would be little to zero.

But nonetheless one of the actions that we have identified during the emergency exercise is that as the fire department entered and they noted that there were a number of lights that people had been working on to glue

on our signs, and so on and so forth. And it was noted by one of the firemen that if they were to combat a fire that could break some of the light sources. So one of the actions that we took was to basically have storage units where the least amount of lights possible would be left on the floor while we are working, so it's something that we are looking at.

CMD 15-H5.21

Written submission from Isolite

MR. LEBLANC: The next submission is from Isolite, H5.21.

THE PRESIDENT: So what is the nature of the relationship between you and Isolite?

MR. LEVESQUE: Stephane Levesque, for the record.

To understand the relationship, first I have to explain that Isolite and then Shield Source are owned by the same group. So when Shield Source had their problems at their facility we had a meeting with the management and owners of Isolite and Shield Source to basically discuss that there was a possible way that we could supply them or their sales organization the exit signs that they required. One of the conditions and things

that were discussed is that what we wanted to make sure is that everything that happened with their decommissioning activities would be handled through all the regulations where they didn't leave the country. They had no intention of doing so anyway, but that was one of the conditions.

And also that they would basically open their doors and show us actually what went wrong had Shield Source so that we could learn from it, for example these emission discrepancies so that we could basically learn from that and incorporate that in our facility as lessons learned.

So basically if you look at today what the relationship is, they are just one of our very good customers and we have a great relationship with them because they actually know the business inside out having operated a facility for a number of years and sold those products.

THE PRESIDENT: Ms Velshi...?

MEMBER VELSHI: Did you hire any of their staff?

MR. LEVESQUE: Stephane Levesque, for the record.

The offer was there, but I guess being in Peterborough and far away from Pembroke it wasn't a possibility.

CMD 15-H5.22

Written submission from Main Street Community Services

MR. LEBLANC: The next submission is from the Main Street Community Services, H5.22.

THE PRESIDENT: Dr. McEwan...?

MEMBER MCEWAN: Thank you, Mr. President.

Sorry, I guess this sort of leads to a slightly broad question. How involved are you in community activities? As we go around we hear of sort of fairly broad involvement. Do you see that as part of your mandate, social mandate with the city and the region?

MR. LEVESQUE: Stephane Levesque, for the record. Thank you for the question.

I think that since Mr. Fitzpatrick and I have purchased the company from the then foreign owners, I think that we are two individuals that live in the Pembroke area. We have a vested interest in helping as many people as we can, you know, in as many different fronts as we can and if we can, you know, afford to do so we will do so and continue to do so in the future. It's not really related to us having a good profile in the community because we release a quantity of tritium, but it's just something that is dear to us, being guys from Pembroke and we wanted to

help us much as we can.

CMD 15-H5.23

Written submission from

Peter Emon, Warden of the County of Renfrew

MR. LEBLANC: The next submission is from Peter Emon, Warden of the County of Renfrew. It was probably Peter Emon. I apologize for that.

CMD 15-H5.24

Written submission from

Ron Gervais, Deputy Mayor, City of Pembroke

MR. LEBLANC: The next submission is from Ron Gervais, Deputy Mayor, City of Pembroke.

CMD 15-H5.25

Written submission from

John Yakabuski, M.P.P., Renfrew-Nipissing-Pembroke

MR. LEBLANC: The next submission is from John Yakabuski, M.P.P., Renfrew-Nipissing-Pembroke, CMD H5.25.

CMD 15-H5.26

Written submission from Harrington Mechanical Ltd.

MR. LEBLANC: The next submission is from Harrington Mechanical Ltd., H5.26.

CMD 15-H5.27

Written submission from A. Bucholtz

MR. LEBLANC: The next submission is from Mr. Bucholtz at H5.27.

THE PRESIDENT: So this intervenor argued that it should not be in a residential neighbourhood and I understand there is a whole new development being proposed nearby. Are they all aware of your operations?

MR. LEVESQUE: Stephane Levesque, for the record. Thank you for the question.

Yes, we have done a lot to notify, especially people within 500 metres of our facility. They have had on two separate occasions our pamphlet that I have discussed today.

They also would have been given that notice during the emergency exercise and we actually did some door to door activities to see as many people as we can and that is something we are going to continue to do in the future.

THE PRESIDENT: So the developer who is building the new residential subdivision, if I understand there is a new subdivision going on, are they informing everybody that, you know, you exist nearby?

MR. LEVESQUE: Stephane Levesque, for the record.

I'm not sure what discussions happen between the city and the developer.

THE PRESIDENT: The developer himself is aware?

MR. LEVESQUE: Stephane Levesque, for the record.

I'm not sure, to be honest. I don't know.

THE PRESIDENT: Thank you.

CMD 15-H5.28

Written submission from Garry Amyotte

MR. LEBLANC: The next submission is from Garry Amyotte, CMD 15-H5.28.

CMD 15-H5.29

Written submission from Steel Fire Equipment

MR. LEBLANC: The next submission is from

Steel Fire Equipment, 15-H5.29.

CMD 15-H5.30

Written submission from Monika Schaefer

MR. LEBLANC: The next submission is from Monika Schaefer, 15-H5.30.

THE PRESIDENT: Okay. Well, I guess I will bite.

So there is a statement, the fourth paragraph, a cucumber sample 4.8 km from SRB contained 117 Becquerels per litre OBT. How significant is that number?

DR. THOMPSON: Patsy Thompson, for the record.

Dr. Kwamena is just behind me. I believe she has it.

DR. KWAMENA: Dr. Nana Kwamena, for the record.

So that number comes from the info report that we put out from a research study that we did near SRB in 2008 and 2009 and we published that in the Environmental Fate of Tritium in Soil and Vegetation and in that report we calculated the dose as a result of this OBT to HTO ratio of 15.4. The doses that we calculated are a fraction of the public dose limit. It was .004 milliSieverts and so

this is well below the dose limits that are known to have healthy effects. This is obviously a theme that we have said a number of times throughout these hearings, that although we have these higher than expected ratios, the dose consequences are much below the public dose limit.

THE PRESIDENT: Okay. Would you eat this cucumber?

DR. KWAMENA: So as I stated, the dose consequences from eating this cucumber is well below the regulatory dose limit and, therefore, I would feel comfortable eating the cucumber.

THE PRESIDENT: Thank you.

CMD 15-H5.31

Written submission from

International Physicians for the Prevention of Nuclear War

MR. LEBLANC: The next submission is from the International Physicians for the Prevention of Nuclear War, CMD 15-H5.31.

MEMBER VELSHI: I just want to get this correct for the record. The second sentence in there says that this company on numerous occasions has imported more radioactive tritium waste from Britain, Russia and the U.S. than was allowed. Can you comment on that, please?

MR. LEVESQUE: Stephane Levesque, for the record.

I got the same thing, Mark. Thank you very much.

The things that we have imported from Britain and Russia and the U.S. were all done with import licenses describing exactly what we were importing. I don't -- I am assuming that the reference to radioactive waste means product that's expired. I know that from the British Ministry of Defence we have received product from their military that was expired and that we have replaced and used the parts that we could. Russia, I don't ever remember importing any products from Russia. The only thing that we have ever imported was a tritium container because that is another supplier of tritium.

In the U.S., yes, we have imported, you know, expired exit signs and product from the U.S., but never have we ever gone over any of those import licenses and we have reported that to CNSC, based on what the requirements were at the end of the year or at the end of the license term.

Thank you.

MEMBER VELSHI: Staff, do you have anything else to add to that?

MR. AWAD: Raoul Awad, for the record.

No, but just to mention that all the imports and exports are very carefully monitored.

THE PRESIDENT: You know, that really causes me a problem. This is an Associate Professor of Clinical Science at the Northern Ontario School of Medicine, so where does he get this stuff? Any idea?

MR. AWAD: Raoul Awad, for the record.

We usually publish in our annual report how many export and import licenses we have and SRB publishes from time to time what they are importing and exporting and just looking to all this information you can construct pieces -- from this information you can construct any theory.

THE PRESIDENT: Dr. McEwan...?

MEMBER MCEWAN: And again, just to be absolutely clear that I understand this correctly, in the last paragraph, the first sentence of the last paragraph he says:

"SRB should not be recycling or reclaiming tritium gas." (As read)

I am clear, you are not reclaiming the gas. You are perhaps recycling the lights themselves?

MR. LEVESQUE: Stephane Levesque, for the record.

That's correct. If you don't mind, if I

can maybe answer a bit your question of where this individual may or may not be getting this information is -- and I brought it with me today if you want to have it on record, but this is the type of pamphlet that is being distributed in the neighbourhood right next to SRB that makes these same type of claims and it's signed and it's listed by, you know, "Contact Ms Kelly O'Grady". And I would welcome the Commission to have a copy of it so that they can see it.

THE PRESIDENT: Well, since you mention it, it will be part of the record I assume. So is it stated exactly the same kind of --

MR. LEVESQUE: It's very similar. So if I give you a copy of it, because I like to --

MS O'GRADY: (Off microphone).

MR. LEVESQUE: -- I would like to retain the original, but it is -- it does say "For more information contact Kelly O'Grady".

So I didn't ask directly if she sent it out to the neighbourhood, but I know that her name is on it. You can have a copy. I don't think it's totally different than what the submissions you have been given.

MS O'GRADY: The information is (off microphone).

THE PRESIDENT: We have the CMDs right in

front of us.

MS O'GRADY: (Off microphone).

MR. LEVESQUE: Stephane Levesque, for the record.

The pie chart is actually exports, not imports. That is actually in our annual compliance report and discussed at length. It talks about our exports and it's actually our products. This talks about importing waste.

THE PRESIDENT: Okay, thank you.

CMD 15-H5.32

Written submission from Ken Collier

MR. LEBLANC: The next submission is from Ken Collier, CMD 15-H5.32.

CMD 15-H5.33

Written submission from James Deutsch

MR. LEBLANC: The next submission is from Dr. James Deutsch at 15-H5.33.

CMD 15-H5.34

Written submission from

Coalition for a Nuclear Free Great Lakes

MR. LEBLANC: The next submission is from Coalition for a Nuclear Free Great Lakes, CMD 15- H5.34.

CMD 15-H5.35

Written submission from Kelly and Roger Goldberg

MR. LEBLANC: The next submission is from Kelly and Roger Goldberg, CMD 15-H5.35.

MEMBER MCEWAN: So Johnson Meadows, is that that subdivision that is immediately behind and across the -- I think it's called the International Road?

MR. LEVESQUE: Stephane Levesque, for the record.

Yes, it is.

THE PRESIDENT: Well, they claim they have been living -- they say they have been living there for 15 years, so that's not a new subdivision; right? So they have no concern with living there for 15 years. Okay.

CMD 15-H5.36

**Written submission from
Community Living Upper Ottawa Valley**

MR. LEBLANC: The next submission is from
Community Living Upper Ottawa Valley, CMD 15-H5.36.

CMD 15-H5.38

**Written submission from
Canadian Nuclear Association**

MR. LEBLANC: The next submission is from
the Canadian Nuclear Association, 15-H5.38.

CMD 15-H5.37

Written submission from Darlene Buckingham

MR. LEBLANC: I probably missed one. I
missed 15-H5.37, which was a written submission from Ms
Darlene Buckingham.

So were there any questions with respect
to the submission from the Canadian Nuclear Association?

CMD 15-H5.39

Written submission from Seiler Instrument & Mfg Co., Inc.

MR. LEBLANC: The next submission is from Seiler Instrument & Mfg Co., Inc., 15-H5.39.

CMD 15-H5.40

Written submission from James Penna

MR. LEBLANC: The next submission is from Mr. James Penna, 15-H5.40.

CMD 15-H5.41

Written submission from Ed Jacyno

MR. LEBLANC: The next submission is from Mr. Ed Jacyno, 15-H5.41.

CMD 15-H5.42

Written submission from BETALIGHT B.V.

MR. LEBLANC: The next submission is from BETALIGHT B.V., 15-H5.42

CMD 15-H5.43

Written submission from Gilles Provost

MR. LEBLANC: Le prochain mémoire a été déposé par M. Gilles Provost, CMD 15-H5.43.

CMD 15-H5.44

Written submission from Dorothy Goldin Rosenberg

MR. LEBLANC: The next submission is from Dorothy Goldin Rosenberg, CMD 15-H5.44.

CMD 15-H5.45

Written submission from Siegfried (Ziggy) Kleinau

MR. LEBLANC: The next submission is from Mr. Ziggy Kleinau, CMD 15-H5.45.

MEMBER MCEWAN: Again, I just want to be absolutely clear, perhaps from staff, paragraph 4:

"Much of the company's production is exported with those ... lights eventually falling into the wrong hands."

Is there any evidence that that is happening, if indeed there are wrong hands?

MR. AWAD: Raoul Awad, for the record.

There is no evidence. There is no -- and we know who -- what the end-user -- it's one of the conditions of the license, the end use of it. And, as I said in the beginning, it is dispersed form. Even if it will go to the wrong hand there is no use for it.

MEMBER MCEWAN: Thank you.

CMD 15-H5.46

Written submission from Jo Hayward Haines

MR. LEBLANC: The last written submission is from Ms Jo Hayward Haines at CMD 15- H5.46.

So, Mr. President, you may want to proceed with the last round of questions.

THE PRESIDENT: Okay. So we will move to the final round and starting with Ms. Velshi.

MEMBER VELSHI: Thank you, Mr. President.

So over the last few years, the last licensing period, you have hired a whole lot of new people. There have been a number of changes to various programs. In fact, pretty much your entire program seems to have gone through massive changes and I just wondered how you were managing the change. And would you term that your whole managed system and the programs underneath, at what stage

of maturity are they today?

MR. LEVESQUE: Stephane Levesque for the record. If you -- if you look, I think, on the submission of -- I'm sorry, on our written submission on page 9 of 72. And you can see there our -- all our document and management systems. There is a number of those programs, I would say about half, that have undergone significant changes in the last couple years, but the other half, I would say, are really mature and have been there for a long time. The half that's undergone significant review is mainly as a result of the -- the new regulatory standards, the CSA standards, and new regulatory documents that have been issued.

MEMBER VELSHI: Right. And I know, so in slide 17 you actually list all of those that -- that have changed and my question was how are you managing the change given also all the new staff that you have brought on board in the last little while?

MR. LEVESQUE: Stephane Levesque. Thank you for the question. We have a number of core staff that have about 20 years' experience at the facility and those staff have really mentored and helped with the new staff coming on board. And I think I mentioned in my submission that we have a lot of committee meetings. A lot of the new staff have an integral part in each committees, to

basically be part of the change. So staff at all levels is basically involved with the changes, but we always have somebody with a lot of experience with them to help them through it.

MEMBER VELSHI: So my experience has been that you actually go through a formal change management process, part of your management system to make sure that nothing falls through the cracks and I just wondered if you were approaching this in a systematic manner.

MR. LEVESQUE: I'll ask Jamie MacDonald to complete the question.

MR. MacDONALD: So, Jamie MacDonald for the record. One of the key CSA standards that we're moving towards implementation is obviously N286-12. We performed a gap analysis against our current management system at that time against those requirements and submitted to CNSC staff actually as part of the licence application an implementation plan in order to comply with all the clauses that apply to us. That plan currently takes us out till, I believe, the end of 2016, when we expect to have closed all those gaps.

We do, for the list of programs that are undergoing change right now, virtually the same strategy. So for the training program, it's the -- the same principle. We look at the new regulatory document 2.2.2.

We assess where we're at as a company and where the gaps lie, and we develop a plan in order to close those gaps in the most controlled and safe fashion that we -- that we can.

MEMBER VELSHI: Staff, do you have anything to add to the changed management discipline?

MR. NEWLAND: Dave Newland for the record. I just make the observation that they are transitioning to the CSA standard. The rate at which they have changed for a small company I think is appropriate. And I would also add that where they brought in people, they have been at relatively senior positions, and so it wasn't being sort of like a major reorganization that would really require such a formal methodology such as that.

MEMBER VELSHI: Thank you.

THE PRESIDENT: Monsieur Harvey.

MEMBER HARVEY: Just one question, it has been touched a while ago. It is about the monitoring equipment to perform a validation of the tritium-in-air sample collection system (bubblers). "For the next licensing period, SRB has committed to annual third party validation as a result of operating experience from industry peers." So is it a new request from the staff or you decide that by yourself to add yearly independent validation?

MR. LEVESQUE: Stephane Levesque for the record. As a result of the issues that happened at Shield Source with respect to monitoring your emissions, we're the ones that basically developed a plan that included those yearly verifications. We were always doing it every two years, but we thought that doing it yearly will probably add another level of certainty on our emissions.

MEMBER HARVEY: It hasn't been initiated by a request from the staff?

MR. LEVESQUE: Stephane Levesque for the record. No.

MEMBER HARVEY: Comments about that?

MR. RINKER: Mike Rinker for the record. It's correct, there is a number of areas throughout SRB's programs where they have voluntarily gone the extra step. One of those examples we've put in our CMD where we put, "Their Fitness for Service is fully satisfactory," where they have implemented a CSA standard for nuclear power plants in a graded approach way that was not a requirement but -- but certainly is a step forward to try to do the right thing and this is another example.

MEMBER HARVEY: Merci.

THE PRESIDENT: Dr. McEwan.

MEMBER MCEWAN: Thank you, Mr. President. On slide 21, I don't think you need to

look at it, you identify all your committees, and you have a Workplace Health and Safety Committee. Do you have people from all across the company represented on that committee? Sort of people from the shop floor all the way up.

MR. LEVESQUE: Stephane Levesque for the record. Yes. Yes, we do. We have people that are at all different levels of the organization.

MEMBER MCEWAN: So if -- if one of the people who work in your facility feels that they are being asked to do something unsafe, that -- or something that they're uncomfortable with, are they able to refuse that job until it's been discussed with either you or with the Health and Safety Committee? Do they have the ability to rapidly escalate an issue if they don't feel it's been resolved? Recognizing you're a very small company.

MR. LEVESQUE: Stephane Levesque for the record. I say definitely and that's part of the reason why we've had only one lost injury incident. We started ourselves working on the shop floor and we understand the -- how important it is for us to be listening to the staff because they're the ones doing the job every day, so, yes, they have full means and autonomy to do that as part of the committee.

THE PRESIDENT: Thank you.

Monsieur Tolgyesi.

MEMBER TOLGYESI: Merci, Monsieur President.

On page 15 you are saying that you decided to create a new position of compliance manager, who is reporting directly to the president. Now, on page 13 is organizational chart, he is not responding to the president but he's responding to the vice president, as any other director. Is there something which is ...

MR. LEVESQUE: Stephane Levesque for the record. I'm sorry for the confusion in that. That's a mistake on my part. When I say directly to the president, I -- I actually meant senior management, which is comprised of myself and Ross Fitzpatrick, the vice president. So, she reports directly to the two of us.

THE PRESIDENT: We're going in a circle here. Ms Velshi.

MEMBER VELSHI: Is your operation, like, a 40 hour week operation? Like ... What are your operating hours?

MR. LEVESQUE: Stephane Levesque for the record. Each employee works 39 and a half hours plus overtime if need be, but there's different -- there's three different shifts at the facility that make it so that from Monday to Thursday people operate between 7:00 a.m. and

7:00 p.m. On Friday currently during summer hours, we call it, we operate from 7:00 to 4:00 p.m., but during the winter that would go back 7:00 to 6:30, I think - it's 6:30? Yeah, 6:30 on Friday.

MEMBER VELSHI: And you shut -- you shut down your production when there is precipitation. So how many hours a week on average would that be or hours a month?

MR. LEVESQUE: Stephane Levesque for the record. That's probably why it was easy for us to ask customers to give us letters of support and they understand basically our operations because we've had some orders late because we've had to stop operating during periods of precipitation. There's been some weeks where we've had very little processing occur. It's happened sometimes during certain periods, but we can manage to meet all our requirements over the course of the year. Originally when we imposed that we weren't sure where it was going to lead us, but we're definitely able to manage it.

MEMBER VELSHI: But if you were to track that as your percentage of time you're shut down because of weather, what percentage of your regular operating hours would that be?

MR. LEVESQUE: Stephane Levesque for the record. We don't track it like that because it's really

not a concern of us right now. But if I was to just give you a gut feel, I would say 75 percent, prorating of the time. And that's just a gut feel really.

THE PRESIDENT: Thank you.

Monsieur Harvey.

MEMBER HARVEY: You're a small company, and reading your submission, you -- you hold something like 91 committees last year, which make every three -- three days, and I suppose the same people appears to many of those committees. And how do you manage that? And do you have minutes produced for each committee, and to what extent some of those minutes can be open to the CNSC staff?

MR. LEVESQUE: Stephane Levesque for the record. Thank you for the question. We've been able to manage having the increased number of committee meetings simply because we've actually looked at it. We try to not have one person on too many committees, as to not overburden them with it. We have somebody that's fully dedicated to taking minutes on the committee and that's their -- part of their full-time job is to do that. The minutes are very extensive. They include findings from the previous meetings, discussions from that meeting with actions. Everyone gets to sign and review those meeting notes afterwards to make sure they're acceptable to them before they're formally issued. And they're posted on the

board within the facility for everyone to see. And that's the first thing we grab when CNSC staff comes for inspection because a lot of the things we discuss in improvements or problems are all documented in those meeting minutes.

THE PRESIDENT: Dr. McEwan.

MEMBER MCEWAN: Thank you, Mr. President.

Again, just on staffing, to keep -- to keep the theme, on page 15 you note that you created a new position of Manager of Health Physics and Regulatory Affairs. I'm surprised that that position came so late and I'm surprised that you weren't demanding a position like that much earlier in the process given the issues of the past.

MR. LEVESQUE: Stephane Levesque for the record. When I spoke about committees, one of the things I spoke of initially in the presentation was the Health Physics Committee. And I think Mr. Harvey was asking me how many people were looking after health physics issues and I answered seven. Initially I would say not this licence but the licence before, seven years ago, we had four people on this committee that had the most experience working at the facility and most experience in health physics, including myself, the vice president, and two other members of our staff with experience, one of which is

the compliance manager. I think that what we found is that as the company started growing we added a fifth and a sixth member, and we basically as senior management, Ross and I, saw the need to really have somebody that would act more as a coordinator between the tasks that these seven people were performing. So there's still tasks performed between the seven of us, but really Jamie really acts as the coordinator. It's something that I or Ross wasn't able to do anymore as part of management. It was better to have somebody solely dedicated for that. So, that's why we were able to manage it for so long in that way.

MR. MacDONALD: Jamie --

MEMBER MCEWAN: Do you have the independence you need to do the job?

MR. MacDONALD: Jamie MacDonald for the record.

Thanks for the question, and, yes, I certainly do. Stephane and Ross' door is open all the time and they have taken any suggestion that I have ever put forth in the realm of health physics, and the team as a whole have complete licence to make recommendations and changes where we see fit to make that radiation doses are as low as reasonably achievable.

MR. RINKER: Mike Rinker for the record. So I would concur that the -- the work -- or the job of

what Mr. MacDonald does now was shared and was completed in the past, but, as in a number of areas, SRB did an organizational chart review a number of years ago and recognized some key positions that would supplement how they would implement their programs and what you see here is a result of that.

THE PRESIDENT: Mr. Tolgyesi.

MEMBER TOLGYESI: On page 17 you -- you are talking about committee meetings, 91 altogether, but -- so you mentioned specific committees, but there is something other and that is the highest number of meetings. What's that other?

MR. LEVESQUE: Stephane Levesque for the record. I totally understand the question. It's these meetings that really don't fall in another category. Because sometimes we sit there and we say -- because it's four of us, it's not necessarily about waste, it's not necessarily about this, let's call this a other committee meeting. It's one that doesn't really fall within the other categories, but it's more or less controlled in the same way, with meeting minutes taken by the same individual, as discussed, having actions and having reviews just like all the other ones, and they're also posted.

THE PRESIDENT: Ms Velshi.

MEMBER VELSHI: In your slide on

performance assessments, you mentioned that in the last licence period OPG conducted three audits. So as your supplier, what was the scope of their audit? And does it overlap with what the CNSC may be looking at as well?

MR. LEVESQUE: Just one moment.

Stephane Levesque for the record. Sorry for taking a little bit of extra time. I didn't want to miss anything. During those three audits what was reviewed is listed on page 21 of our written submission. It was our operating licence to make sure that we had a valid operating licence to process and possess tritium; our operating procedures involving tritium; our inventory control records; the storage, use and handling of the isotopes; the training activities; the physical security measures that we took at the facility; the staff monitoring procedures, and the instrument calibration and tritium accounting. So, yeah, all lot of these things are also verified by CNSC staff, but they do a different way; they don't look at it as a safety control area.

THE PRESIDENT: Monsieur Harvey.

Dr. McEwan.

MEMBER MCEWAN: So one question related to the 5 percent that you're going to commit to research, I -- that's clearly a laudable goal and -- and there are obviously opportunities for you there, both for

improvements and for innovation. How are you going to do it? You're a small group. You're a small firm. Are you going to do it internally, you're going to contract with universities, colleges? Are you -- I'd just be interested to know how you -- if you have a plan for building that.

MR. LEVESQUE: Stephane Levesque for the record. We were hoping that if we were issued a 10 year licence based on those numbers, that we would have no problem having a minimum of 5 percent, and we were looking at using a combination. I think we spoke about we have an individual that's an independent contractor that works at the facility that has over 30 years' experience. He was going to visit different establishments to see what they knew. He was going to do that with our Manager of Health Physics and Regulatory Affairs to see what those people knew about different technologies on how to reduce emissions, and that was going to include, you know, people like the University of Ottawa, who are heavily involved in -- in tritium monitoring, and it was going to involve different contractors and different government facilities.

THE PRESIDENT: So, can we get periodic updates on progress on this? Because one of my questions would be what can we expect -- when is the next annual report for SRBT?

MR. RINKER: Mike Rinker for the record.

The scheduled date, there's two days, the agenda is not published, but September 30th to October 1st.

THE PRESIDENT: September the 30th.

MR. RINKER: Or October 1st, two days.

THE PRESIDENT: Okay. So at that time we would expect, I guess, updates from a lot of things we've been discussing here. I would -- sure would love to hear periodically about how you're doing on this research.

MR. LEVESQUE: Stephane Levesque for the record. Yes, for sure that was something that was planned is to have as part of our Annual Compliance Report and obviously we want to share that with members of the public who have concerns, so we'll definitely highlight anything that we found or was able to develop during each year.

THE PRESIDENT: Thank you.

Monsieur Tolgyesi.

MEMBER TOLGYESI: On page 25 you are talking about training and you are saying that there are written tests conducted following an annual radiation protection training. And what happens to those individuals who are not obtaining the pass criteria of 75 percent, that's what you are demanding?

MR. LEVESQUE: Stephane Levesque for the record. I'll pass that question to Jamie MacDonald.

MR. MacDONALD: So, Jamie MacDonald for

the record. During the annual training session we administer testing. Should an employee fall below the pass/fail criteria, typically with the annual training it's an all-day event and they wouldn't get that feedback immediately, but the next opportunity that employee, we would sit down, go over the parts of the test that would have been missed, reinforce to make sure that the understanding of the concepts are there, and re-administer testing to have confidence that this person is fully qualified to continue on working in the capacity that they do.

MEMBER TOLGYESI: And are you testing only the fields which he missed or you administer a new full exam?

MR. MacDONALD: Jamie MacDonald for the record. That hasn't happened yet, I guess I should say. We've tested this year was the first year that I conducted it in this room actually and we had a 100 percent pass rate. So, we haven't explored whether or not we would test with a new test. Yeah. So, we would -- I'll just pass it to Stephane.

MR. LEVESQUE: Yeah, if can just add for a few more years of information, thank you, before that. When we had people that didn't meet the 75 percent failure rate -- I'd like to add that the test is given to all

individuals, even those that don't work with tritium. And why we do that, because there are some people that will never work in the areas with tritium, is because we think people are interested in knowing, it's good for us to know and they're ambassadors for our company. So, they can go elsewhere and tell people and meet other people that can teach people in the community. But we've had some people in the past that weren't working with the isotopes that failed the test and I basically give them a new test, but testing roughly the same things but a completely different test. So, not the same question.

MEMBER TOLGYESI: And these tests are restricted to those in the radiation protection or in all other fields?

MR. MacDONALD: So, Jamie MacDonald for the record. The annual radiation safety training that we administer is given to 100 percent of the staff that work with our facility, from Stephane's level all the way down.

MEMBER TOLGYESI: It's only regarding radiation protection, there's no other test?

MR. MacDONALD: There have been elements that we have tested questions in quality management, for example, testing on knowledge and awareness of our nonconformance process, but the lion's share of the test questions that we would administer are relevant to

radiation protection in our facility.

THE PRESIDENT: Thank you.

Ms Velshi?

MEMBER VELSHI: There was a question asked earlier that we didn't get around to getting to the answer, which was the level of effort required for you to prepare for these licensing hearings, if you can share that with us along with any benefits that come as a result of participating in one of these. I'm sure there must be some.

MR. LEVESQUE: Thank you very much.

For the record, well, one of the benefits I can see is that we notice that some members of the public don't seem to express themselves until the licence hearing, and we're hoping to change that. And that's something we're going to try to promote and to push people, say do you have any questions, do you have any concerns, so that's one positive.

And regarding the effort required for a small company like us to go through licensing, it's really a lot of work. It's astronomical.

There's a lot of us that have to dedicate our time to being able to produce the documents that you see in a way that's presentable to yourselves, to members of the public who may not have all the information on the

facility, so there's a lot of thinking involved, a lot of revisions, a lot of things to do.

If it was just a matter of rehashing the same data as our annual compliance report, it wouldn't be so bad, but the application process and the putting together the specific documents for people to see, I think, is really time consuming.

MEMBER VELSHI: Can you put a number of full-time equivalents to that?

MR. LEVESQUE: It's Stephane Levesque, for the record.

It's in the hundreds of hours. And if -- if you look at we hired, I would say, about a year and a half before today Mr. MacDonald as a manager of health physics and, at the same time, coincidentally, Mr. McNabb as a consultant, we could not have done it with the five of us that were in the health physics team. You know, we definitely needed those two individuals to be able to do all the paperwork required to go through the licensing process to relieve me to do other things like public relations, so on and so forth where before I would have been involved in doing that.

And that's why I'm saying that with the time that, hopefully, we would have with a longer-term licence, we could dedicate that to finding ways of reducing

emissions which we do all the time anyway, but it would give us a lot more time to do that.

THE PRESIDENT: Monsieur Harvey?

MEMBER HARVEY: One last question.

When establishing the financial guarantee, are you taking into account the groundwater contamination and the -- some reclamation that could be required and will the -- all the wells will stay there and will be followed for a certain number of years?

MR. RINKER: Mike Rinker, for the record.

So reclamation of tritium in the groundwater is not considered in the cost estimate, but decommissioning of all of the wells would be, yes.

THE PRESIDENT: Or is there enough funds now in the kitty or about to be replenished to do the job of decommissioning?

MR. RINKER: Mike Rinker, for the record.

The short answer is yes, and their preliminary decommissioning plan was recently reviewed. How the cost estimate was determined was determined accessible to staff.

MEMBER HARVEY: But the money is not there yet. I mean, it will be there during the next three years.

THE PRESIDENT: Well, 500 -- I don't remember the exact number now -- is already there.

MEMBER HARVEY: Yeah, yeah, that's right. But the \$100,000 is not there -- not yet there.

MR. RINKER: Mike Rinker, for the record. That is correct, so the majority of the money is in place and, with some lessons learned from a facility that went through a similar decommissioning, I would -- you know, it's hard to say what would -- if it was to close tomorrow and all the money wasn't there what would happen, but I think considering the performance of this facility and the fact that more than enough money is available to put the facility into safe state and to restore it, it's a reasonable plan.

MEMBER HARVEY: Merci.

THE PRESIDENT: Dr. McEwan?

MEMBER MCEWAN: Thank you, Mr. President. Again, final question, I think for staff. This is a sort of question that we skirted a little bit earlier.

This is a relatively complex facility in small volume in a leased facility. Does the fact that it is a leased and not an owned facility create any licensing or regulatory issues, and is there any linkage in any way to the actual owner of the facility, Mr. Harrington?

MR. RINKER: Mike Rinker, for the record. So this does not raise a concern with

staff. There are many licensees that do lease their facilities.

Should there be an issue that SRB leaves town, they live here, unlikely, but the landlord is -- ultimately would be responsible and we have powers of order to ensure that they would take over.

MR. LEVESQUE: Stephane Levesque, for the record.

I just want to add that our landlord's been intimately involved with our licensing throughout the years. They've been the landlord for a number of years. They realize that there's a financial guarantee that's in place, that we're looking to replenish, to top up.

They've been at the facility. They understand. They wrote that letter of support for the licence hearing. They're well aware of their responsibilities.

THE PRESIDENT: Mr. Tolgyesi?

MEMBER TOLGYESI: My last question is, I'm going back to the fire protection.

In the building -- you are sharing a building with some other ones -- is there a fire wall between you and your neighbours so if it's a fire in your place it doesn't expand or it delays the expansion of a fire so the firefighters could intervene?

MR. FITZPATRICK: Ross Fitzpatrick, for the record.

Yes, there is a fire wall in place and also, with the new expansions coming in place, the whole building is now sprinklered.

THE PRESIDENT: Ms Velshi?

MEMBER VELSHI: My last question to staff.

There's a lot of concern, misinformation about the facility and the waste management aspect of it. So in the annual report -- and I don't know if it normally includes that, but I think it would be helpful if there's more detail provided on not only the number of shipments, but at the volume both from the processing as well as from signs that had been received and how much of that has resulted in waste.

I think it may bring in more light to exactly how much of the business is waste as opposed to actually producing the inspections.

MR. RINKER: Mike Rinker, for the record.

I think we recognize that the purpose of the annual report is to explain performance to the Commission but also to the public, so we've heard the need to make sure that our understanding of groundwater is recovering, so we'll increase the data presence in that and also, I think, on the waste inventory.

THE PRESIDENT: So on that particular item, on the groundwater, you know on your page 32, you have one of those charts that I really like. I'd like to see in the annual report continue.

To me, this is measuring all the wells all the way to the Muskrat River and, as you know, I like those little blue almost invisible little numbers that, as far as I was concerned, look like gradients, movement, plume movement.

I'm reading into it all kind of things.

So over time, hopefully, that will allow you to refine your model as to whatever happens, it's the outcome at the river that matters, right. So we want to know not only the surface, but also deep what goes into the river.

And hopefully, we can model that a little bit more and keep track of it as we get more and more data.

Is that reasonable?

MR. RINKER: So Mike Rinker, for the record.

We agree, and last year's report did contain this, so we'll continue to update this figure, but we'll also show some explanation that those lines are groundwater contours, not tritium contours, so they show the direction of which groundwater is flowing if you're a

hydro geologist, so we'll put some explanation around what those lines mean.

THE PRESIDENT: But if that's where the water is slowing, I assume the tritium flows with the water.

MR. RINKER: We need to put some context there because it's flowing so slowly that by the time it would reach the Muskrat River, it's likely going to decay to near -- to almost immeasurable numbers.

THE PRESIDENT: But that's your safety argument.

MR. RINKER: That's our safety argument. And -- but it's not just surface water that we're concerned with. It's actually the groundwater itself should somebody put in a well, access it for some reason in the future for drinking water or something. We want to make sure the groundwater itself is protected.

THE PRESIDENT: So you will keep us updated on -- in the annual report on this.

MR. RINKER: Yes, we will.

MEMBER MCEWAN: Could I just --

THE PRESIDENT: Go ahead.

MEMBER MCEWAN: It would have been very, very helpful on this map also to clearly identify where that housing development is to -- I'm not sure where it is

other than sort of looking, I think, north is to the left. Southwest. Looking southwest of your facility.

It would be very helpful to have that put on the map, too.

THE PRESIDENT: Okay. Whose turn is it now?

Anybody has any other question? No?

Okay. I have just two quickies.

Are all employees undergone by us a testing -- urine tested, all employees? How frequently do you do this?

MR. LEVESQUE: Stephane Levesque, for the record.

Yes, all employees go urine test. It's every week for those that work in Zone 3, so that's the zone where tritium is processed, and every two weeks in the other zones.

THE PRESIDENT: So they have -- you ever find any detectable numbers? I noticed that in the LCH there is 1,000 becquerel per millilitre for any sampling period. This is the action level.

Has that ever been exceeded?

MR. MacDONALD: Jamie MacDonald, for the record.

That action level has not been exceeded as

far back as I can go. I know for sure it was not exceeded during the previous licence period.

Routinely, of course, we will detect tritium in our employees that work in the active area, and that is the input into our dose calculations that we've reported to you here today, so we do see positive tritium in urine, but the doses that result from that are very controlled and very low.

I'd like to say, you know, if we can -- our goal as health physics team is to try and have everybody at peak production fall below the public dose limit, so that's kind of what the team has decided to strive for.

THE PRESIDENT: Go ahead.

MR. LEVESQUE: If I can just add a little bit of history, we remember that the last time somebody exceeded the 1,000 was in the late nineties, so just to put some perspective in it. It hasn't happened since.

THE PRESIDENT: So my last question, just out of curiosity, on your Licence Condition Handbook on 39 of 61, there's something called chart recorder measurement, 10,000 microcurie per metre cubed. What is this?

MR. MacDONALD: Jamie MacDonald, for the record.

So as well as doing sampling of our

emissions through our bubbler systems, which is the emission of record that we use -- we sample those each week -- we also have a system that we call the real time stack monitoring system.

And so in real time, we have tritium air monitors monitoring the concentration of tritium that goes out our stacks. And those outputs are hooked up to chart recorders.

On the chart recorder that the action level of 10,000 microcurie per cubic metre, that's basically at the top of the scale. And so if we were to be in the condition where there was an emission of that concentration exceeding a duration of an hour, we would have exceeded an action level and that would require us to perform an investigation, perform a root cause analysis and address the problem and also report to CNSC staff all of those items.

THE PRESIDENT: But since we've been told there is no dosimeter for tritium, how reliable are those monitoring? Are they immediately they will detect an exceedance, or is it a period that you have to go -- do bells ring, something rings, flashing light? What goes on?

MR. MacDONALD: Jamie MacDonald, for the record.

During our processing operations, it's

part of the procedure for staff to be continually checking those emissions. They aren't necessarily hooked up to a physical alarm system, but they respond very quickly to any process upsets that we'd have within a matter of 10, 15 seconds.

And so the responsiveness of the people that are doing the processing is very speedy, but if --

THE PRESIDENT: Is it visual or is it -- there's no alarm. Why are there no alarms?

I mean, I thought human beings did not tend to look at devices, et cetera, et cetera.

MR. MacDONALD: So Jamie --

THE PRESIDENT: That's why co-pilot has alarms.

MR. MacDONALD: Yeah, Jamie MacDonald, for the record.

It is a visual system that we utilize, and it doesn't have an alarm hooked up as it is today.

THE PRESIDENT: Staff?

MR. LEVESQUE: Sorry. If I could just add a little bit on that.

So our operating procedures, as our process takes place, requires the staff actually to look at the chart recorder on numerous occasions. And the process that they perform, they know right away if something

happened within the system and they look right away at the chart recorder.

THE PRESIDENT: Well, again, my observation is that you've got so many monitoring spots from stack to et cetera, et cetera, I don't rely on human being interface. Human-machine interface is the cause of most failures.

It would be nice if there was some trigger that alert them.

MR. LEVESQUE: Yeah. Thank you for the suggestion. That's something we can definitely look into.

THE PRESIDENT: Okay. Any other -- staff, you want to comment on that, by any chance?

MR. RINKER: Mike Rinker, for the record.

I think just in general, there are -- our radiation protection program for workers is quite good, but that's a reasonable suggestion for improvement.

THE PRESIDENT: Somebody going to disagree with us.

MS MacDONALD: Sheri MacDonald, for the record.

I'm not sure this is the information that you're looking for, but in terms of worker protection, there are tritium and air monitors in the facility that continuously the air concentrations of tritium, so they do

alarm if the concentrations are elevated so workers are aware and react accordingly, so they are protected.

I'm not sure if that's the same --

THE PRESIDENT: How are they alarmed? Is the alarm --

MS MacDONALD: They are alarming. They are alarming.

THE PRESIDENT: Because I was told they are not.

MR. LEVESQUE: It's Stephane Levesque, for the record.

That's a room monitor for the area that they work in, and I think what we're referring to is it's monitoring the actual stacks for the emissions, so it is two different things.

MR. MacDONALD: Jamie MacDonald, for the record.

And I'll certainly say that Sheri is correct. We have monitoring throughout the facility, and they have alarm set points set very low that can tell us very quickly if there's an upset condition at a very low level so that all of our staff can react according to their training.

MR. JONES: Hi. Mike Jones, environmental project officer, CNSC, for the record.

I just wanted to point out that the action levels that do correspond to the release limits for the facility are actually linked to the bubbler system, so in addition to what we're discussing now, there are fixed action levels that are -- you know, we -- they are looked at on a weekly basis when the bubbler values are obtained. And the chart monitor would be like a secondary way of determining whether an action level for the air emissions exceedance had occurred.

THE PRESIDENT: Okay. Thank you.

I think that this concludes the hearing.
Right?

You have the last word.

MR. LEVESQUE: Thank you very much for your time and the opportunity to be able to answer some questions and make additional comments, but thank you.

THE PRESIDENT: Okay. Thank you.

So Marc, any closing remarks?

MR. LEBLANC: Just if anyone borrowed some interpretation devices, please return them so you will have your driver's ID returned to you.

Thank you, and safe travels.

--- Whereupon the hearing adjourned at 7:43 p.m. /

L'audience est ajournée à 19 h 43