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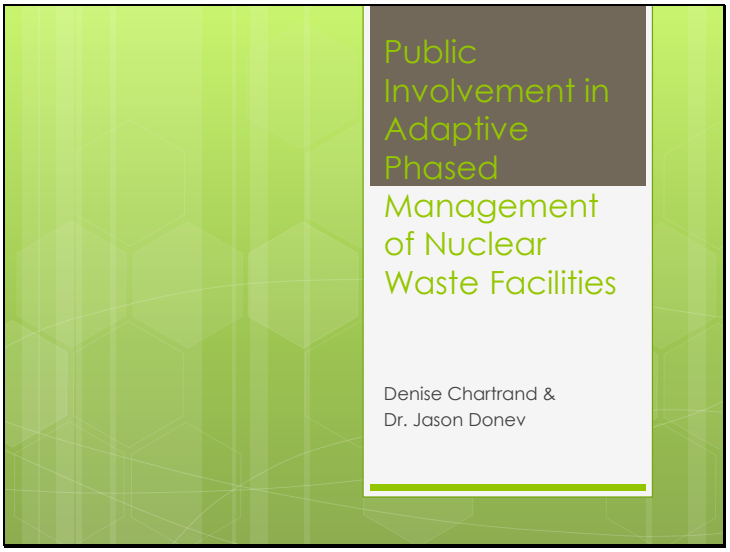

Introduction

Denise Chartrand is a Masters student at Royal Roads University studying conflict analysis and management. She has 20 years of business experience working mostly in oil & gas where she held a non-technical role. Being of Metis/Cree descent she has an interested in managing conflict in human systems to help develop sustainable, innovative, collaborative results. Denise is radically driven to do what is right for all stakeholders. She chose the topic of nuclear waste disposal in Canada as her practicum project and although she won't be speaking directly about that project she will be discussing what she sees as the potential leverage points for developing public buy-in for nuclear energy and nuclear waste disposal.

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Agenda

Today we're here to talk about PUBLIC INVOLVEMENT (PI) in APM of NW facilities. This talk is not a technical talk, it's a talk about communication.

Now, this discussion might be about PI in APM but it's actually about more than that. This discussion touches on what I believe to be the fundamental challenges for gaining public buy-in on any subject, in this case nuclear energy and nuclear waste disposal.

Building on our past… Building for the future is the theme for this year's CNS Conference and I'm going to talk about the communication aspects of that, communicating for the future of nuclear.

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Notable Terminology

Typically, I wouldn't choose to segregate myself from anyone, but in this case I'm going to, to make a point. Most of the people in this room have worked in the nuclear industry in some capacity. I believe that this means you have become comfortable with various topics related to nuclear energy. For me, I'm new to nuclear in that I began my nuclear journey about 8 months ago when I decide to research the aspects around public buy in for spent fuel disposal in Canada.

My job is to understand conflict and interactions in human activities, to find ways to transform challenging situations into viable opportunities. It can be complicated and it's very much an art. How do you transform deeply rooted human perspectives in order to achieve a shift that will lead to outcomes that will benefit all of us? We are different and because of this we need to communicate differently with each other.

The terms I'm going to use are simple. They are PLM and PLU.

When I say PLM what I mean is people outside of the nuclear industry, often with little or no understanding of how nuclear technology works, outside of what we see on the Simpsons of course.

When I say PLU what I mean is people who are comfortable with nuclear terminology and have a level of comfort of what the risks actually are around nuclear energy. PLU who know just how far fetched the Simpsons really are.

Many people in the nuclear industry are engineers, scientists, and technical gurus or if they are not, they often have connections to people who are. People who can answer your questions when you become uncertain. I believe provides you with a certain level of comfort. What often gets forgotten, and this happens in every industry even in mine, is that when a person has a certain level of knowledge about any subject they often don't realize that their knowledge is not necessarily a common knowledge.

When you think about common knowledge with all things nuclear please understand that …

PLM typically have very little knowledge to draw on, many of us don't understanding things like electricity, radiation and the properties of nuclear waste.
PLM know that people die from radiation and that the word nuclear means that there is the potential for mass annihilation and imminent death.
PLM know fear!

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Getting back to our topic of nuclear waste or more specifically, Spent Fuel.

What is Spent Fuel exactly?

When I started my journey in nuclear about 8 months ago, the picture of the green goop flowing into the rivers wasn't far off. I could picture the potential for waste seeping into the ground, contaminating my drinking water, causing cancer and deformities to myself, my family and my community. Causing our animals to suffer and our plant life to die.

I would think of nuclear waste as something that had the potential to destroy all of life. And when I pictured this stuff, I wondered to myself what it would take for PLU to convince me that it was all okay and that I could rest knowing that I was going to be safe. And what I couldn't picture? I couldn't picture what it was that you could possibly tell me that would ease my fears.

I've since learned that my previous assumptions about nuclear waste as it relates to spent fuel are just plain wrong. Not only that, I've come to wonder where the pictures of the green goop came from in the first place. You might find my ignorance humorous but I'm going to put it out there anyway. Eight months ago the cartoons of the Simpsons were a picture of reality. I didn't know that spent fuel didn't have the same properties as liquid so that it couldn't actually ooze into our rivers. I didn't know that lighting a match couldn't explode spent fuel, or that the impact from a traffic accident couldn't do the same. How could I? Why would I?

PLU know the difference and you might even think that PLM should take your word for it, but both, PLU and PLM have become accustomed to living in a world where a handful of people make a healthy profit by taking advantage of PLus and PLM need to defend ourselves from PLThat because we don't have the nuclear background that you have and we don't know who to trust.

I was recently reading the book Half-Lives by Tammemagi and Jackson and to be clear about what spent fuel waste is, they say that, "Spent fuel has three important characteristics. First, it is highly radioactive. Second, it is very small in volume comparatively speaking to other forms of energy waste especially burning coal, (and) Third, the waste is contained; it is not emitted into the environment."

We'll talk about the radioactive piece in a moment but first I'd like to touch on the other two characteristics. The totality of what we are talking about completely surprised me. I know that every form of energy produces wastes and I know that some of that waste is substantial. I also know that much of that waste isn't contained, that is actually emitted into the atmosphere and into the air that we breathe. And I've even come to accept that as a given for enjoying the standard of living that I've become accustomed to.

What impresses me about spent fuel waste is learning that it is 100% contained from the atmosphere and the air that I breathe and is very low in volume. How low? I've heard a few different numbers over the past 8 months but they were all relatively close. Basically all the spent fuel in Canada right now would fill five hockey rinks to the height of the boards. The expectation, as I understand it, is that the waste is expected to double by the time our current nuclear reactors are decommissioned. What we are talking about here is approximately 10-hockey rinks worth of spent fuel, to the height of the boards over the entire lifetime of nuclear energy in Canada.

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Exploring Public Buy-In: The issues

When exploring the issues for public buy-in, it's here that I think there is a disconnect between PLM and PLU

Nobody denies that spent fuel is highly radioactive. In fact, the NWMO states that, "the used fuel will remain a potential health risk for many hundreds of thousands of years."

Although I appreciate the honesty, my gut reaction to this is O.M.G! What have we done by allowing the development of nuclear energy? This fact actually scares me. It scares me because I can't imagine how radiation can possibly be contained. Radiation is like a gas, isn't it? Doesn't it dissipate into the atmosphere when it's subjected to air? These are the issues that PLM don't comprehend.

One of the academically published articles I read about six months ago discussed transportation issues in great depth. It predicted that there would be 100 traffic accidents over the life of the Yucca Mountain project in Nevada when they were

forecasting transport problems. Not only that, the article made the following estimations

A small number of first responders may be fatally affected.
Around 200 to 1,000 latent fatal cancers of nearby citizens would eventuate
Nearly 600 million dollars would be needed to clean up the containment area over a 14-month period.

When I asked Dr. Donev about these numbers he was surprised, so the two of us did a little digging. The author cited in the article I'd read took a lot of digging to find and if my memory serves me correctly, the article that was cited in the article I'd read had all but disappeared, only to be found in the deleted archives of the www, and only because someone more technology savvy than us knew where to look.

The reality is though that the article I read is still out there, and these are the types of things that PLM will respond to. My point is that unless PLM know what is possible and what is realistic, we don't have the ability to filter out the nonsense.

Does radiation dissipate? Does it travel? If so, how and how far? PLM know the Simpsons and in many cases, PLM don't know much about radiation.

I hear a lot of talk about Education & Outreach. Although I appreciate the efforts and I don't think the time is wasted trying to education me, I would suggest that PLM don't really need to know a lot about the numbers. An understanding of the units would be helpful for sure and an understanding of what level is safe would be nice, but what we really need to know is the fundamentals of radiation, of radioactivity, of nuclear energy, and of nuclear waste. We just need to know the basic properties so that we can have the ability to do our own filtering and make our own judgments. It isn't about how far we can over engineer our systems to make people 'feel' safe; it's about giving us the basic tools so that we can understand why it is we are safe.

PLM know that accidents can happen and that accidents will happen. What we need to understand is the potential reach that those accidents could have.

You have to remember that PLM believed the titanic was unsinkable

PLM watched the challenger space shuttle as it blew up
PLM have heard of Chernobyl and are excruciatingly aware of what happened in Japan, And PLM are still waiting for the death toll numbers to role in of which we are certain they will.

Yesterday on the drive out here Dr. Donev and I were talking about 'the issues' and he coined a term that I thought was incredibly cleaver. It's a term that brings PLM and PLU a little bit closer together. And it's actually more relevant to gaining PUBLIC BUY-IN than you might think. The term was DYNAMIC COMFORT, as opposed to STATIC COMFORT. SC being the comfort that people have about a subject when they DON'T have the SCIENCY background and are relying on those that do.

PLU even, that work in nuclear and choose to trust those around you b/c you know that they know what they're talking about.

The risk of this kind of SC though is that when things like Fukushima happen some of you might not be so sure anymore. You might even ask yourself "Do 'they' really know what they're talking about?" If nuclear fundamentals are over your head, you might ask yourself that question, and if you do, that is a dangerous place for the nuclear industry to be. It's dangerous because when people who have ties to nuclear falter on their beliefs PLus see that, and that's when PLM get really scared.

If we were smart, and trust me nobody can claim that we are not smart. Converting uranium into energy takes more than a just little bit of intelligence. But, if we were really smart, not only would we focus on communicating to PLM, we would focus on raising the fundamental intelligence of nuclear energy across the board. We would focus on moving people first into that place of SC but from there we need to move them as quickly as is humanly into a place of DC.

DYNAMIC COMFORT, when people have enough of a knowledge base in which they can filter their own judgments. When they have just enough knowledge to know that what they're hearing doesn't add. Just enough knowledge so they know when to ask questions instead of reacting to the doom and gloom of the days rhetoric.

How do we get there, to that place of DC? We manage understanding, we don't' do it by managing perceptions. If you can do that, manage understanding,… if we can do that, then the next time a Fukushima happens we can focus our grief not for the panic of what's coming, but we can turn our focus to our grief on honoring those that perished as a result of the universe stretching it's muscles and shifting into a more comfortable position.

First, we have to know enough about a subject to know what questions to ask and when we have a level of comfort where we know what questions to ask that's when people will shift from no comfort, to SC, to DC. This is the goal - this is the future-focused objective that you and I need to work on if we truly believe that a nuclear renaissance is worth pursuing. The question is, Do you believe that a nuclear renaissance is worth pursuing?

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Adaptive Phased Management (APM)

So how does all of this related to APM?

The NWMO has developed a plan to manage our spent fuel that in my opinion does cover all the bases. Their plan is comprehensive and adaptable from a technical perspective right through to public involvement. They have developed a plan that is inclusive, flexible and transparent. In fact, you can visit their website and not only see their process, but you can read the minutes from their meetings, and if that's not enough you can contact them directly knowing that they have a very impressive responsive rate.

Case in Point: When I was at the CNA conference in February I told the NWMO that I was studying their process and the impact that it had on PI? I expected opposition or at least some negative energy and I was fantastically surprised by what happened. The NWMO sent me every newspaper article that they had collected between September 2011 and January 2012 to give me a flavor of the publics voice, good, bad or otherwise. They are actually open to PLus! If we develop better technologies, the process can adapt to accommodate right up to the point of closure which by the way is slated for about 300 years out. If the public becomes unhappy about the management of spent fuel, there are avenues that can be taken to open the doors and revisit the plan.

And one other bonus from my perspective is that once we build a foundational understanding of nuclear more great minds can weigh in on the conversation. They can weigh in by supporting the process, or they can weigh in by offering insight into something that hasn't yet been considered. Either way it's a win. Good job NWMO!

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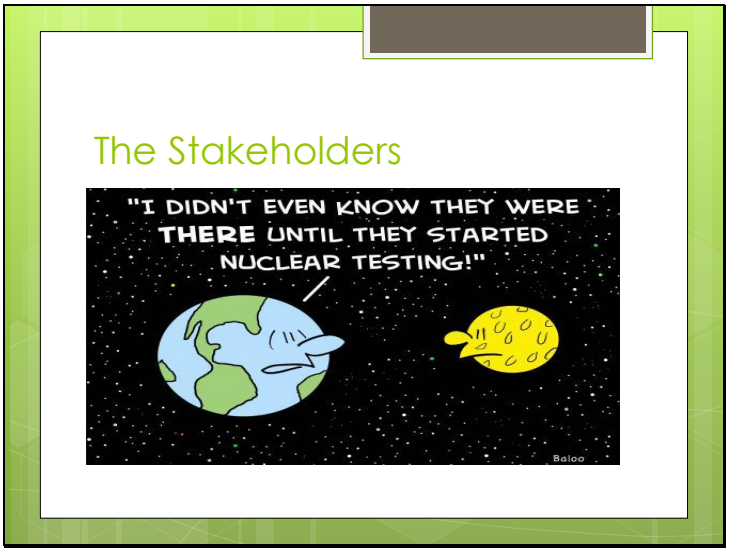

The Stakeholders

Who are the stakeholders that need to be considered when decisions are made about APM and the disposal of spent fuel?

Is it those that have the POWER? Who does have the power anyway?

There tends to be a lot of controversy around the word Stakeholder so I'm going to clarify what it is I mean. I'm using a definition developed by Freeman in 1984 who said that a stakeholder is, "any group or individual who can affect or is affected by the achievement of (an) ~~the~~ organization's objectives" (Freeman (1984) as cited in Achterkamp & Vos, 2007, p. 4).

In the case of spent fuel, a stakeholder is literally anyone who can be affected by spent fuel waste. To me, that includes all of us, those attached to the nuclear industry and those not, because how radioactive materials are being managed can have an affect on our ecosystem. I may not know what that impact is but I'm certain it's there because the literature states that spent fuel waste remains dangerously radioactive for hundreds of thousands of years.

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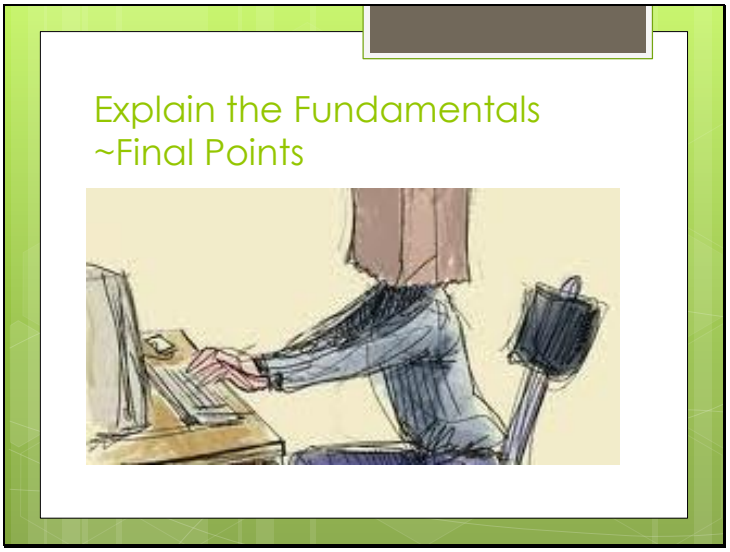

Explaining the Fundamentals: The Final Points

Should the public buy-in to APM?
I don't know, maybe.

Is APM a good way to manage Canada's spent fuel?
I don't know, I think so. I like that it's adaptable and that PLM can weigh in on it.

What would it take for me to let down my guard and have a level comfort to know that I could take the risk to let the people with the technical knowledge develop safe solutions?

I think that we've covered that. It's all about the fundamentals. But please understand that there is so darker place for me to be than to be surrounded by that of the unknown

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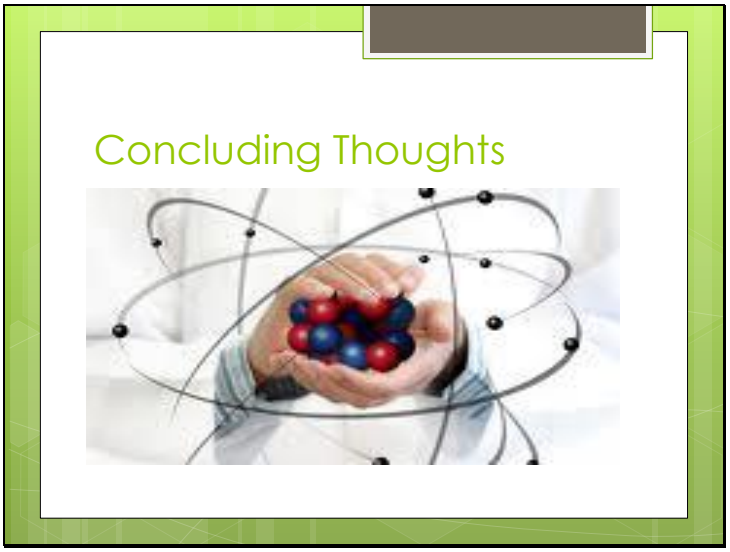

Conclusion

In conclusion, I have two closing thoughts to leave you with.

My first thought is a thought on Power. There is an amazing and almost indestructible power to the word NO. When thinking about public buy-in for APM or any other project really, it's important to understand who has the ultimate power? Is it the government? Is it the NWMO? Is it the CNSC? Or is it the people? I recently had the opportunity to see Chief Clarence Louis of the Osoyoos Indian Band speak at the University of Calgary. He stated very matter of factly, "It doesn't matter what the government says is going to happen, if we say it's not going to happen, it is not going to happen." His meaning was chillingly clear. There is more power in the word 'NO' than in any other word in human history.

Finally, I need to go back one last time to PLU and PLM. I hope the reason I chose to segregate us was obvious, but now I need to close that gap. PLU and PLM are more the same than we are different. We want to provide life that sustains us and allows us to advance human life in a way that supports us and in a way that fulfills us.

We can't realistically go back to being hunter gathers and most of us wouldn't want to and truth be told, most of us would die if we were forced to. It's time that we move forward together. With your knowing the fundaments of developing energy to sustain life and using that knowledge to develop our resources responsibly and with me asking the 'right' questions to

make sure that nothing is missed, ensuring that PLThem who sometimes pray on PLus don’t slip through the cracks.

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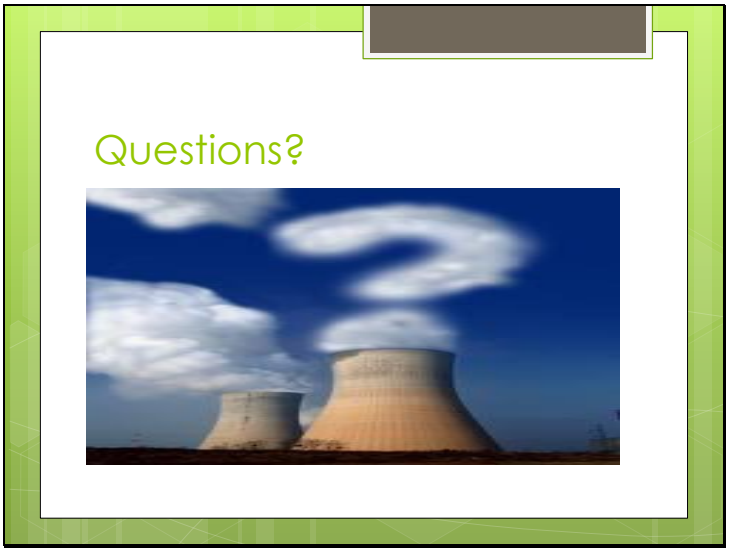

Questions?