

# **Providing Value to Ontario: OPG's Approach to Nuclear Waste Management**

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**Conference on Waste Management, Decommissioning and Environmental  
Restoration for Canada's Nuclear Activities**

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### **Introduction**

Good morning. I want to thank you for this chance to talk about an area of growing importance for the nuclear industry -- the management of nuclear waste.

I say "growing" because the volume of nuclear waste in the world is expected to grow – due to refurbishments, new build activity and the decommissioning of reactors.

I see this as a good opportunity for our industry to act responsibly, add value, and strengthen our reputation in the eyes of our stakeholders and the public.

Today, I'm going to talk about nuclear waste management from the perspective of OPG.

Not because I think we have all the answers or that we're perfect.

We're not; in fact, we're always learning and always trying to improve.

That is the very purpose of this forum today – to seek the best solutions for issues common to all of us.

We do however have extensive experience managing nuclear waste. We have large operations in this area....And we've had some important successes.

## **OPG's Operations**

Let me start with a quick review of our operations.

OPG is the largest manager of nuclear waste streams in Canada, employing over 300 highly qualified operators, drivers and other professionals.

We are responsible for all of the long-term power reactor waste and decommissioning activities and liabilities in Ontario.

Our facilities include:

- the Pickering Waste Management Facility at our Pickering nuclear plant east of Toronto which safely processes and stores spent fuel on an interim basis;
- the Darlington waste management facility at our Darlington nuclear site in Durham, which also safely processes and stores spent fuel on an interim basis; and
- the Western Waste Management Facility (WWMF) near Kincardine, Ontario.

The WWMF stores used fuel from reactors operated by Bruce Power (although owned by OPG).

It also stores low and intermediate nuclear waste from all our nuclear stations across Ontario.

Our sites are strong environmental performers:

- All are certified under the ISO 14001 environmental management system standard;
- All are certified by the Wildlife Habitat Council;
- We have environmental monitoring programs in place for all our waste management activities; and
- We have significantly reduced the environmental footprint of low-level waste at the Western Waste Management Facility through the use of incineration and compacting.

OPG is also planning the construction of a proposed Deep Geologic Repository, or DGR, near the town of Kincardine, Ontario.

This facility would store low and intermediate level nuclear waste 680 metres underground – deeper than the CN tower is tall - in an area characterized by low seismic activity and 450 million-year-old stable rock formations.

We also have a large fleet of motorized vehicles – seven tractors and 22 trailers -- that we use to transport nuclear waste.

Our drivers are highly skilled and trained, with qualifications that exceed those required by the Ontario Ministry of Transportation.

### **Safety is the Foundation Value – But Not the Only Value**

While we're a physically large operation, we know that the management of nuclear waste is about more than bricks-and mortar. It's also about values.

The most important value of course is safety.

In the more than 40 years OPG has been managing nuclear waste, no member of the public has ever been harmed as a result of a radiation emission from our nuclear waste storage facilities or from our nuclear generating stations.

The same goes for our transportation activities.

Every year we make roughly 800 shipments of radioactive materials.

Over a 40 year period, that adds up to thousands of shipments and millions of kilometres travelled.

During that time, no radioactive material has ever been released into the environment from our transportation operations.

As for employee safety, our goal as a company is ZERO injuries.

And we strive to meet that goal. Employees at the Pickering Waste management facility, for example, haven't had a lost time injury since 1994 – 17 years.

These are strong numbers. They're indicative of the importance our industry places on safety performance.

Safety is our foundation. But increasingly, people want more from us.

I think this is especially true in the wake of the Fukushima nuclear accident in Japan last March. That was a humbling experience for all us in the nuclear industry. It showed us the unthinkable might happen.

### **Nuclear Waste Management is A Values-Based Activity**

I believe the best way to prevent the unthinkable – and at the same time build confidence among our stakeholders -- is to really focus on nuclear waste management as a values-based activity.

Safety is one value, to be sure.

But there are others, which support safety and enhance public trust in what we do.

There are four values I want to talk about today.

I've chosen them because at OPG we believe these values make us better managers of nuclear waste.

The values we subscribe to are:

- Excellence – with an emphasis on Continuous Improvement;
- Accountability;
- Responsibility; and
- Openness/Transparency

**Excellence:** Excellence is a value for us because as an industry, we can never rest.

We have to keep improving.

That's what excellence is about – the ability to keep doing things better.

At the headquarters of my former employer – the Institute of Nuclear Power Operations (INPO) in Atlanta – there is a large stone monument with the word “Excellence” carved in it. The final “E” on “Excellence” was deliberately left unfinished.

That's because excellence is never complete. It's always in a state of becoming.

The paradox is – the more we strive for excellence, the harder we have to work to get there.

The journey IS the destination.

In short, for us excellence is all about continuous improvement.

At OPG, for example, we're proud that our public and employee radiation protection consistently meets or exceeds regulatory requirements.

That doesn't mean we can't get better.

So last year, we adopted a new ultrasonic technology to inspect the welded seals on dry storage containers.

The process allowed us to stop using X-Ray equipment, eliminating potential radiation exposure to employees.

It also has the potential to save on performance compared to the old technology.

As a result, we enhanced both our safety performance and our value for money performance.

That's striving for excellence.

And people appreciate it.

**Accountability:** People also appreciate accountability.

This is another important value for nuclear waste managers.

It's important because it provides oversight to our activities and assures stakeholders that our standards are high.

From a regulatory perspective, the nuclear waste industry is one of the most accountable in Canada.

Our facilities and transportation programs are stringently licenced and monitored by the Canadian Nuclear Safety Commission.

We also must comply with conditions, directives and regulations issued by:

- Natural Resources Canada;
- Transport Canada;
- the Canadian Environmental Assessment Agency;
- the Provincial Ministry of the Environment; and
- the International Atomic Energy Agency.

Accountability also involves conducting regular inspections and audits of our operations to ensure compliance with accepted safety and operational practices.

In addition, we have an emergency response plan for our transportation operations that is audited internally, as well as by Transport Canada.

In many cases, our goal is not simply to comply with the standards. We want to exceed them.

Finally, we are accountable in the sense that we can account for the nuclear waste under our care.

I believe our industry is exceptional in that at OPG we control every gram of used nuclear fuel that we have ever produced.

We know where it is. We know how much of it there is. And we know exactly what it's doing all the time -- because we monitor it constantly.

Few industries can exercise this level of accountability and control over their waste.

We do.

And I think that provides people with a certain level of comfort – not to mention a significant safety advantage.

**Responsibility:** Equally important, as managers of nuclear waste we must also be responsible – especially to future generations.

One of our deepest commitments as an industry is to ensure that those coming after us not be burdened with managing and disposing of the waste and equipment from our nuclear facilities.

To accomplish this, OPG contributes every year to two segregated funds.

These funds are designed to deal with the costs of managing nuclear waste and the decommissioning of our nuclear plants.

Their current value of these funds exceeds \$11 billion.

Meanwhile, at the federal level an effective process is being developed for the long-term storage of used nuclear fuel.

This is the Adaptive Phased Management process, developed in consultation with communities across Canada by the Nuclear Waste Management Organization (NWMO) – of which OPG is an active member.

Another responsibility is the long term management of low and intermediate nuclear waste -- which we are meeting through our involvement in the Deep Geologic Repository.

With these important pieces in place, our job as nuclear waste managers will be to work together with regulators, suppliers and other partners to successfully execute all aspects of the nuclear waste management process from cradle-to-grave.

This includes transportation, storage, decommissioning and site remediation.

**Openness and Transparency:** To do this we need to consult freely and honestly with host communities every step of the way.

This is where openness and transparency enter the equation.

Communities have a right to be involved directly in the decision making process for managing nuclear waste.

OPG has taken this approach with the Deep Geologic Repository.

Our partnership with the community there has been open, collaborative and transparent since day one. And it will continue to be so – as we move through the environmental assessment process and public hearings.

Likewise with transporting nuclear waste... We communicate with police, fire and municipal leaders along the routes we travel. This ensures there are no surprises. They know about our transportation program and what to do in the unlikely event of an emergency. Each year we meet with first responders along our routes and provide presentations and information to hundreds of emergency response personnel.

All tolled, OPG communicates nuclear waste management information to nearly 400 key stakeholders across Ontario – including local, provincial and government officials, suppliers and contractors, community and environmental groups and educational institutions.

For those of us in the nuclear industry, values like excellence, and accountability and open communication and information sharing will be even more important as we go forward.

And people will increasingly judge our industry on how well we live up to these values.

We have to put them into practice.

## **Challenges**

I say this because we are entering a new world – a world of unique challenges that will test our resolve.

Like the challenge from Fukushima -- a global resurgence in an un-founded but perceived fear of harm from radiation.

A major societal and political difficulty in discussing waste streams from nuclear energy is a palpable fear of radiation by some people.

A byproduct of the low-greenhouse-gas-emission nuclear energy we make, are materials that have atoms with excess energy. These give off radiation as they stabilize over time in the form of electromagnetic radiation.

Now radiation is all around us everywhere and every day. From radio/ TVs, cellphones, WiFi hot spots, Blackberries, iPads, microwave ovens, cosmic rays from space, and the materials in soil and our own bodies – for our planet and ourselves are made from nuclear reactions over billions of years in the stars.

Our doctors very beneficially use radiation to diagnose and treat invasive diseases like cancer.

Canadian scientists and doctors were at the forefront in development and implementation of these life saving techniques in the 1950s and 60s.

We seem to take these for granted today – and forget the miracle they were and still are.

So we have a challenge to remind our contemporaries of the realities of nuclear radiation.

We hurt ourselves in part because of the unfamiliar, and “hard-to-relate-to-in-daily-life” terms that we use. This, plus the fact that in the past we used numbers to communicate that were too small (Curies) and now, in metric, are very large (Becquerel’s).

Radiation is a natural part of life – and we know as much about it as any substances that, in very large quantities, can cause harm.

We have technology today that can measure and control minute quantities – a few disintegrations per second.

And long before there were International Scientific bodies on climate change – there were well established similar institutions that helped set fact based limits and radiation control strategies. Our fathers' and mothers' generation who did this work, did it well.

Their foundational work has protected our nuclear industry workers and the public for more than five decades – a solid body of scientific work that we should remember, be proud of, and communicate!

So Fukushima has again raised the visibility and importance of good communication and the need for better understanding of nuclear radiation.

We need to accept the challenge of ensuring that public health officials, doctors, nurses, policy gurus, and politicians can put nuclear radiation in proper context and perspective for the public.

We need to continue to respect even small quantities of radiation – we always have -- but we also need to convey that we have demonstrated that radiation can be measured, controlled, and handled very safely – in ways that provide huge positive benefits to our society at large.

Ladies and gentleman, we live in a generation that does not fully trust experts, or institutions, or science *per se*.

People want information to form their own conclusions.

Our challenge is to deliver that information and meet that public expectation.

Beyond this impact of Fukushima, there are other challenges.

Like the challenge of accommodating the additional nuclear waste produced by refurbishment, new build and decommissioning.

Like the challenge of planning the safe transportation of used nuclear fuel to wherever Canada's permanent repository will be -- once a site has been agreed upon.

Will the same strategies that worked for transporting low level waste work for high level waste?

Like the challenge of managing segregated nuclear funds in today's increasingly volatile financial markets.

And like the critical challenge of building and strengthening credibility with the public as these and other challenges materialize.

This all means one thing to me. The values we hold as managers of nuclear waste are going to matter a great deal going forward.

We're going to have to place more focus on excellence...become more accountable...demonstrate more responsibility across a broader range of activities....and become more open and transparent than ever before.

The days when we could assume that nuclear waste management was solely a technical issue with a technical solution are gone – if they ever existed.

The safe and effective management of nuclear waste is much more than a technical issue – although that's critical.

It's also a social issue. It's a political issue. It's a community issue. It's a communications issue. It's a financial issue.

It's a value issue.

All these factors come into play.

I think the nuclear industry and our partners have done a good job managing nuclear waste.

It's one of our great strengths as a company, as an industry and as a country.

Only now – with Fukushima; with new build; with refurbishment; with decommissioning – it's becoming more complex.

And we have to continue to get better to meet public expectations.

That's our challenge.

But it is also our opportunity and our responsibility as professionals.

The management of nuclear waste is poised to grow significantly over the next several decades.

I believe this is huge opportunity for us. Let's unlock this opportunity.

And let's make sure we do it right, because we frankly might not get another chance.

This is our moment. Let's make the most of it.

I believe we are up to the task.....And that by accomplishing this task, we'll help pave the way for nuclear renewal in Ontario and Canada...and with it, the continuation of a stable, reliable and environmentally positive energy supply. That's something all of us can value.

Thank you.