

Theresa McClenaghan

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To: <rad-waste@list.web.ca>
Sent: Wednesday, November 02, 2005 3:05 PM
Subject: [Rad-waste] Saskatchewan premier muses about creating nuclear wastefacility

Saskatchewan premier muses about creating nuclear waste facility
Canadian Press Newswire
Tuesday, November 1, 2005
Section: National General News
Byline:
Source:

REGINA (CP) _ Saskatchewan may sell uranium to China and would consider setting up a nuclear waste facility in the province, says Premier Lorne Calvert.

Calvert, who just returned from a trade mission to Asia, said China plans to build more than 30 nuclear facilities in the coming years.

He said the province would consider any business case to establish a nuclear waste storage facility, but it would have to include a very rigorous testing and approval process that would involve the people of Saskatchewan.

"It wouldn't be up to me to allow or disallow," Calvert said Tuesday, adding there is no plan for such a project before his government at this time.

"One of the challenges we face is what to do with the waste of a nuclear generation."

Calvert said China's plans should create a strong demand for uranium.

For decades, uranium mining has been a contentious issue among members of the New Democratic Party.

(Regina Leader-Post)

Shawn-Patrick Stensil

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Subject: Re: Nuclear Waste Watch / Action dTchets nuclTaires -
news release

Date: Tue, 24 May 2005 15:04:55 -0400

Norm - I think you're correct on Bruce from the geographic description --
and maybe they're thinking that's their best bet for a "willing community"?
Depending on who they talk to as the community. also minimizes transport
distance at least from Bruce. also meets the "community that has benefitted
from nuclear power" rationale. Also their timing recommendation means they
can spin out the siting decision with such a vague long process that it will
be hard to rally opposition around it and it blurs the distinction between
what is there already and the interim / final siting decisions. Theresa

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----- Original Message -----

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Sent: Tuesday, May 24, 2005 2:44 PM

Subject: Re: Nuclear Waste Watch / Action déchets nucléaires - news release

> Now that I'm back in TO, I can look at this stuff! A couple of quick
> comments:
>
> I think it's always worth mentioning that these wastes contain
> nuclear-weapons-usable materials. There are other pretty toxic wastes
> (though the radwastes are #1, of course!), but no others that are
> nuclear-weapons usable. Our presser doesn't mention it, I think.
>
> My public (and private) comments on the waste situation usually stress the
> fact that the federal government is the ultimate defender of the
> environment and public health against nuclear threats, but they are so
> busy promoting the health of the nuclear industry (which they created,
> partly own, and continue to subsidize and treat like a favourite child)
> that they have zero credibility when they make believe that they are doing
> so. (Take the Pt. Lepreau rehabilitation, please!) This government
> conflict of interest (which our press release maybe doesn't mention) is a
> good reason to phase out nuclear power, to dismantle AECL, and to go slow
> on irretrievable NW decisions.
>
> Does it look to anybody else as if we're heading toward interim then maybe
> permanent disposal at the Bruce site??
>
> Can somebody please explain to me how there can be a 4-fold (or greater)
> difference between the cost of the NWMO proposal in 2002\$ (\$22.6 to \$24.4
> billion) and the present-value cost of that same proposal in \$Jan2004
> (\$5.1 to 6.1 billion)? They both have to use discount-rate calculations,
> but they must use different discount rates, I'm guessing. Huge difference,
> though. . .
>
> I gave a long and rambling phone interview to CBC French this morning (in
> English) before reading this, or more than the NWMO press release. I
> didn't say anything that contradicts the press release, but it's possible
> the edited piece will make our positions sound different. I made some "one
> more step in the (right) direction toward wisdom and truth" noises, unlike
> the press release. If the feds overrule NWMO's final report in favour of
> "getting on with the disposal job" and "keeping the team intact", it'll be
> too bad if they claim support from the environmental community's

> opposition to the NWMO report. (I'm not sure they're above using that
> trick.)

>
> Norm

>
> At 01:47 PM 5/24/2005, Dave Martin wrote:

>
>>Our English and French releases are attached

>>

>>

>>~~~~~

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>

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Sent: Wednesday, June 22, 2005 5:04 AM
Attach: nwmo-ge-CAWF.RTF
Subject: Re: NWW listserve

The following is my critique -- unfinished -- so far.
 I will finish it tomorrow morning.

Gordon.

Nuclear Waste Watch ~ Critique of the NWMO Report of May 2005

The Nuclear Waste Management Organization (NWMO) has done Canadians a service by confirming once and for all that the perpetual safe management of irradiated nuclear fuel is an unresolved problem of gigantic proportions:

In its recent report, entitled "Choosing a Way Forward" [CAWF], the NWMO has confirmed that irradiated nuclear fuel will remain extremely dangerous for an extraordinarily long period of time, and that this material cannot be eliminated or rendered harmless by any method currently known to science. It can only be "managed" at a cost of tens of billions of dollars over a period of centuries.

"... used fuel will remain a potential health risk for a very long period, likely hundreds of thousands of years or longer." [CAWF, p. 9]

"A technical method cannot be practically demonstrated over thousands of years prior to implementation." [CAWF, p. 11]

"... we must not ... pretend we have all the answers for all time." [CAWF, p. 12]

"... no one of the management approaches ... perfectly addresses all of the objectives." [CAWF, p. 19]

But the industry-led organization has done Canadians a disservice by failing to report accurately and fully on the history of the irradiated nuclear fuel issue in Canada. At many of the NWMO dialogue sessions, Canadians wanted to know how Canada got into the business of producing this incredibly toxic radioactive waste material. Did the decision-makers know at the outset how dangerous the stuff is? or were they lied to? Did the reactor owners know from the beginning how difficult and costly the waste would be to manage? or were they incompetent?

The NWMO report is completely silent on these vitally important questions of accountability. Yet they cut to the heart of the larger question of trust. If Canadians have been deceived before on this issue, deliberately or not, surely they must beware of being deceived once again -- perhaps by the same parties.

The NWMO has also failed to study two historically significant approaches to the management of irradiated nuclear fuel waste : one involving the phase-out of nuclear power, and the other involving the eventual reprocessing of irradiated nuclear fuel in order to recover plutonium. Both of these approaches were raised frequently during NWMO dialogue sessions, both are mentioned briefly in the NWMO report, both have been formally considered on previous occasions, but neither is studied by the NWMO as an option.

In our opinion, these NWMO failures and oversights are not accidental, but are the inevitable consequences of entrusting a public policy question of enormous importance to a body which is totally owned by the industry that created the problem in the first place. Ultimately, they are the result of a bad law, the Nuclear Fuel Waste Act, passed by the Chrétien government in 2002. This law should be repealed and replaced by one which puts this public policy issue into the hands of an organization at arm's length from the industry and from the government, as was recommended most emphatically by the Seaborn Environmental Assessment Panel in 1998.

History of Irradiated Nuclear Fuel

Canada began producing irradiated nuclear fuel in 1945, just one month after the dropping of the world's first atomic bombs on the cities of Hiroshima and Nagasaki.

The war-time decision to build nuclear reactors at Chalk River, Ontario, was made in Washington D.C. in 1944. The Canadian efforts were seen as part of the World War II Atomic Bomb project, as indicated in a large bronze plaque displayed at the Chalk River Visitor's Centre:

A nuclear chain reaction was first initiated in Canada on September 5, 1945, when the ZEEP reactor went into operation here at Chalk River. Originally part of an effort to produce plutonium for nuclear weapons, the reactor was designed by a team of Canadian, British, and French scientists and engineers assembled in Montreal and in Ottawa in 1942-43.

By 1975, there were a dozen reactors operating in Canada, seven of them electricity-producing power reactors, all of them mass-producing irradiated nuclear fuel. Yet it wasn't until 1977, with the publication of the Hare Report ("The Management of Canada's Nuclear Wastes") that the Government of Canada publicly acknowledged the nature of the long-term hazard from this toxic waste material. Of the 3 authors, only A. Aikin, an ex-Vice-President of AECL, was knowledgeable on nuclear wastes.

The Hare report recommended burying irradiated nuclear fuel in the Canadian Shield and abandoning it there : a plan later known as "geologic disposal".

One year later, in 1978, the Ontario Royal Commission on Electric Power Planning published its Report of Nuclear Power, entitled "A Race Against Time". The Commission observed that there was no scientific proof that geologic disposal would provide the necessary degree of protection to future generations. The Commission recommended that unless such proof could be provided before 1985, there should be a moratorium on the building of any new reactors in Ontario.

In fact, there have been no new power reactors ordered since 1978, neither in Canada nor throughout North America. All of the nuclear power reactors in Canada today -- eight at Pickering, nine at Bruce (including Douglas Point), four at Darlington, one at Rolphton (NPD), two in Quebec (Gentilly-1 and Gentilly-2), and one in New Brunswick (Point Lepreau) -- were commissioned at a time when neither the public nor their elected members had any idea of the scope of the nuclear waste problem.

Had they been properly informed of the hazardous nature of irradiated fuel at the outset, we believe that Canadians would never have accepted nuclear power. The fact that Canadians are now willing to accept responsibility for those wastes already produced in no way justifies the continued production of such wastes in the future.

History of AECL's Geologic Disposal Concept

In the mid 1970's, nuclear spokesmen generally portrayed nuclear power as entirely safe and clean, a virtually trouble-free technology. They often stated in public that severe nuclear accidents were not credible and that the long-term management of nuclear waste was just a public relations problem, not a serious technical problem.

Following the publication of the Hare Report in 1977, the Standing Committee on National Resources and Public Works held hearings into the nuclear waste issue. During the 1977-78 session, the Committee received over 300 briefs, mostly critical of the Canadian nuclear industry's unproven claims and perceived conflict of interest.

Robert Uffen, Dean of Engineering at Queen's University and ex-Vice Chairman of Ontario Hydro, urged the Committee to recommend a halt to the building of new reactors until the waste problem is satisfactorily resolved. The Canadian Geological Council told the Committee that research into geologic disposal should not be left in the hands of the nuclear industry. This seems self-evident; if the nuclear industry views the waste issue as primarily a PR problem, how can it be trusted to give an objective, unbiased scientific appraisal of their own geologic disposal program?

Meanwhile, the Ontario Royal Commission on Electric Power Planning was conducting public hearings into the entire spectrum of nuclear issues, from uranium mining residues to the potential for catastrophic reactor accidents to the long-term management of nuclear fuel and the possibility of plutonium recycling. The Royal Commission was formulating similarly stringent recommendations.

Abruptly, in June 1978, without even waiting to hear from either the Parliamentary Committee or the Royal Commission, the Government of Canada signed an agreement with the Government of Ontario to authorize an extensive research program, under the direction of Atomic Energy of Canada Limited and Ontario Hydro, to "validate" the geologic disposal concept mentioned in the Hare Report.

Fifteen years and seven hundred million dollars later, AECL produced in 1994 a multi-volume Environmental Impact Statement on its Geologic Disposal Concept. The Environmental Assessment Panel that was appointed to evaluate the EIS was chaired by Blair Seaborn, and so came to be known as the Seaborn Panel.

The Seaborn Panel concluded that the geologic disposal concept had not been demonstrated to be adequately safe, and that it was not a socially acceptable procedure in the eyes of the Canadian public.

The Seaborn Panel unanimously recommended that an independent Nuclear Fuel Waste Agency be formed, at arm's length from both the government and the nuclear industry, to advise the government on a strategy for the long-term management of irradiated nuclear fuel. Instead, the pro-nuclear Chrétien government created the NWMO, whose Board of Directors has as members only those corporations that mass-produce irradiated nuclear fuel: OPG, NBP, and HQ.

History of the Three Management Methods

The Nuclear Fuel Waste Act (NFWA) of 2002 required the corporations that produce irradiated nuclear fuel to create a non-profit body, the Nuclear Waste Management Organization (NWMO). The Act requires the NWMO to elaborate a number of proposed approaches to the management of irradiated nuclear fuel, and recommend one or more of these to the Government. By law, the NWMO must study (among others) approaches that are based solely on one of the following three methods:

Option 1 : deep geological disposal in the Canadian Shield;

Option 2 : storage at nuclear reactor sites ["on-site storage"], and

Option 3 : centralized storage, either above or below ground.

Option 2 is, of course, the status quo. When it is first removed from the reactor, an irradiated CANDU fuel bundle (about the size of a fireplace log) is so radioactive that it would kill any unprotected human being standing a metre away from it for more than a minute. Freshly discharged irradiated fuel generates a great deal of heat -- so much that it must be stored in a deep pool of slowly circulating water for at least seven years to prevent it from over-heating and releasing radioactive gases. After that time, the irradiated fuel can be moved into heavily-shielded dry storage containers, each with its own cooling system, located close to the nuclear reactor site.

Option 1 is clearly the AECL concept of geologic disposal, first mentioned in

the Hare Report of 1977. In 1998, the Seaborn Panel had concluded that

"The concept in its current form does not have the required level of acceptability to be adopted as Canada's approach for managing nuclear waste."

Among other things, the Panel was concerned about the safety of geologic disposal:

"From a social perspective, safety of the AECL concept has not been adequately demonstrated for a conceptual stage of development."

Nevertheless, the Seaborn Panel did not reject the geologic disposal concept outright saying that further study would be needed to resolve a host of unanswered questions.

Option 3 was first considered and rejected by the Ontario Royal Commission on Electric Power Planning, which concluded in its 1978 report:

"there is no need for a central interim storage facility for spent fuel. All spent fuel should be stored at nuclear generating station sites, either in circulating water storage bays or in 'dry storage' if this proves feasible."
(A Race Against Time, Major Findings and Conclusions, p. xii)

The Royal Commission was concerned about the risks of moving irradiated fuel:

"The hazards associated with transportation, in particular the possibility of accidents and the threat of hijacking, are real possibilities. Hence, the minimization of handling and transporting spent fuel is a desirable objective." (A Race Against Time, p. 91)

Indeed, why move irradiated fuel from point A to point B if it's no safer at point B ?

NWMO's Option 4 : "Adaptive Phased Management"

In its May 2005 report, "Choosing a Way Forward", the NWMO claims to have developed a fourth option that combines aspects of the three options specified in the Nuclear Fuel Waste Act. The fourth option is called by NWMO, in a masterpiece of bureaucratese, "Adaptive Phased Management". The idea is to store the irradiated fuel at the reactor site for a certain period of time, then to move it to a centralized storage site for a while, and then to bury it deep in a stable rock formation forever.

As anyone can see, this is just Option 1 -- deep geological disposal. In fact, the three options are not different options at all, but merely different phases of the one option that was foreshadowed back in 1977 by the Hare Report. In order to achieve deep geological disposal, one must have on-site storage to begin with, then transportation to a centralized site at some later time, and finally, burial in a deep rock formation.

Here's how the NWMO describes Option 1 [CAWF, p. 51] :

"The management approach is:

- . Long-term management of used nuclear fuel through containment and isolation in a deep geologic repository;
- . Used nuclear fuel is transported from the nuclear reactor sites to a central location for long-term management;
- . Following an interim period of monitoring, the repository is closed, without the intent to retrieve the used fuel."

And here's how the NWMO describes Option 4 [CAWF. p. 10] :

"A risk management approach with the following characteristics:

- . Centralized containment and isolation of the used fuel in a deep geologic repository ... ;
- . Provision for ... shallow underground storage of used fuel at the central site, prior to final placement in a deep repository;
- . Potential for retrievability of the used fuel ... until ... final closure."

It is a mystery why the NWMO staff insists on calling this a fourth option. Perhaps they are embarrassed to confess that their two-and-a-half years of study and dialogue have produced so little that is new. The NWMO insists on maintaining that this particular management approach has "emerged from a process of collaborative development with citizens" [CAWF, p. 11] rather than confessing that it is a public policy prescription written by AECL scientists almost 30 years ago.

If NWMO had acknowledged openly that they were choosing Option 1, they might have felt compelled to call their report "Following the Way Backward" rather than "Choosing a Way Forward". The entire NWMO dialogue process has all the earmarks of an elaborate public relations marketing campaign rather than a democratic decision-making process. The use of "focus groups" is a well-known marketing tool, not an instrument for conducting serious social science research. It was preordained that the NWMO dialogues would yield AECL's preferred approach.

NWMO's Primary Objective : Safety

The NWMO insists that its primary objective is safety:

"Our primary motivation is safety -- to protect people and the environment from highly radioactive waste. We are not confused or conflicted about this objective and common vision." [CAWF. p. 11]

Stragely, however, there is no useful information in the document on the

subject of human health, environmental integrity, or the biological effects of atomic radiation.

Why does human health have to be protected from irradiated nuclear fuel? Is it because high doses of radiation from used fuel will cause radiation sickness and possibly death? Is it because chronic exposure to low levels of radiation from used fuel can cause cancers of all kinds, as well as genetic damage that can affect future generations? Is it because exposure of a foetus to radiation can cause a host of developmental abnormalities, the most important of which is mental retardation? From the NWMO report, you would never know that these things are of concern.

Nor is there any discussion of how the hundreds of different radioactive materials in irradiated nuclear fuel can behave once they have escaped into the environment, or how they can affect biological organisms. The NWMO doesn't even give a list of these materials. There is no discussion of how some of the radioactive poisons in used nuclear fuel can concentrate in specific food chains, or how they accumulate in specific organs such as the lungs, the gonads, the thyroid, the liver, or the skeleton.

In 1980, the Select Committee on Ontario Hydro Affairs published a report entitled "The Safety of Ontario's Nuclear Reactors" in which we read:

"It is not right to say that a catastrophic accident is impossible The worst possible accident . . . could involve the spread of radioactive poisons over large areas, killing thousands immediately, killing others through increasing susceptibility to cancer, risking genetic defects that could affect future generations, and possibly contaminating large land areas for future habitation or cultivation. " [pp. 9-10]

The radioactive poisons that are released during a catastrophic nuclear accident are precisely those that are contained in the irradiated nuclear fuel.

In 1978, the Royal Commission on Electric Power Planning had this to say:

"By definition, a major reactor accident would lead to the severe overheating, and subsequent melting, of the nuclear fuel, which would give rise to a substantial quantity of radioactive material escaping, after breaching several formidable barriers, into the environment.

"The major health and environmental threat would be due to the escape of the fission products to the atmosphere. The most important of these are caesium, ruthenium, tellurium and the fission gases, iodine, krypton and xenon.

"It is generally agreed that the greatest threat to health in the event of a major reactor accident is the considerable quantity of the radio-isotope iodine-131... which would be released to the atmosphere.

"It is well known ... that iodine-131, after ingestion or inhalation, concentrates in the thyroid gland and may cause ... thyroid cancer. The threat to children in such circumstances is particularly serious because the

iodine-131 could be ingested in the form of contaminated milk....

"Because of its half-life of about 8 days, iodine-131 remains highly radioactive for a few weeks. Subsequently, the major contributor to the radiation field is caesium-134 with a half-life of two years. The radioactivity arising from this isotope would persist for many years.

"Apart from the direct radiation to which individuals might be exposed in consequence of the released radioactivity, there would also be a threat to the public in the immediate vicinity of the affected nuclear power station, from radioactively contaminated food and water....

"When we talk about the safety of a nuclear reactor, we are referring essentially to how effectively the fantastic amount of radioactivity contained in the reactor core can be prevented from escaping into the ground and atmosphere in the event of major malfunctions.

"Clearly, if a major release of this accumulated radioactivity occurred ... the consequences would be extremely serious and could involve several thousand immediate fatalities and many more delayed fatalities."
[A Race Against Time, pp. 73-76]

The failure of the NWMO to provide any meaningful discussion of health and safety is most apparent in Appendix 2 of the report entitled "The Nature of the Hazard" [pp. 240-246] In this appendix, nothing is said about specific biological hazards. The word "cancer" is never mentioned, nor are genetic or teratogenic effects alluded to. The discussion is highly technical, using language, concepts and units of measurement which are totally baffling to the untutored lay person.

One of the most ridiculous sections of the appendix deals with the danger of standing beside a million-year old used fuel bundle for 110 hours, yielding a dose of radiation which is equal to the annual regulatory limit for a member of the public. Yet there is no numerical indication of the number of fatal doses that could be administered through internal contamination by the radioactive poisons contained in that same million-year old fuel bundle.

Experts know that the principal hazard of very old irradiated fuel is not external but internal. The biological hazard is due to the extreme toxicity of non-penetrating alpha radiation, which is about 20 times more toxic (per unit dose) than the far more penetrating gamma radiation. Alpha radiation is not an external hazard, but it is a very grave internal hazard. None of this is explained or even mentioned by NWMO.

It is beyond belief that public health is the principal preoccupation of NWMO staff.

The Nuclear Phase-Out Option

As long as nuclear reactors continue to operate in Canada, there is a fresh supply of highly radioactive used fuel being mass-produced on a daily basis.

For seven to ten years, this irradiated fuel is too hot to be transported away from the reactor site. Thus, there will always be seven-to-ten-years worth of irradiated nuclear fuel at the site of each operating reactor, no matter what is done with the older used fuel.

The catastrophe potential at a reactor site depends mainly on the irradiated fuel that is inside the reactor core and in the water-filled spent fuel bay. These two locations account for well over 90 percent of the total radioactivity on-site, even if all the older irradiated fuel is maintained in dry storage containers on-site or close by.

The reason for this is that a "fresh" irradiated fuel bundle -- one just removed from the reactor core -- is 1000 times more radioactive than one which is ten years old.

Thus, as long as nuclear reactors continue to operate, the risk to public health and to the environment around the reactor sites is essentially undiminished, regardless of what option is adopted by the NWMO or the Government of Canada for the long-term management of used nuclear fuel.

Moreover, transporting irradiated nuclear fuel to a central repository only exacerbates the problem as long as the reactors continue to operate. Instead of having seven sites where irradiated nuclear fuel is stored, as is the case at present, we will have eight sites : the seven reactor sites plus the centralized repository. And there is the added danger of transportation accidents and/or terrorist high-jackings.

A similar consideration applies to deep geologic disposal. As long as the reactors continue to operate, the catastrophe potential is virtually unchanged at the reactor sites, but the never-ending transports of irradiated fuel and the temporary central storage of irradiated fuel will simply add new dimensions to the existing risk factors.

Moreover, the deep geologic repository will never be closed and sealed as long as reactors are continuing to produce more and more irradiated nuclear fuel. In fact, it will be impossible to seal the repository until the last reactor has been shut down for at least seven-to-ten years.

Despite the irrefutable logic of these observations, the NWMO refuses to consider a "nuclear phase-out" scenario. If NWMO were truly motivated by safety -- protecting human health and preserving environmental integrity -- the staff would surely realize that such safety objectives are impossible without a nuclear phase-out.

Unless we stop producing this highly toxic material, transporting it over highways or rail-lines or rivers or lakes is analogous to rearranging the deck chairs on the Titanic -- it may not, in itself, cause a catastrophe, but it will certainly not prevent one either. It defies logic that an agency committed to safety would not study the option of stopping the production of the toxic material that is posing the threat.

The Reprocessing Option

In the core of an operating nuclear reactor, certain uranium atoms absorb neutrons without undergoing nuclear fission, and become transmuted into plutonium atoms. In fact, the first nuclear reactors in the world were built for the purpose of producing plutonium, the principal nuclear explosive in most nuclear weapons.

The plutonium is contained in the irradiated nuclear fuel. It is only one of hundreds of materials that have been created in the irradiated nuclear fuel, but it is regarded as a uniquely valuable material because of its explosive properties.

To extract plutonium from used nuclear fuel requires the use of a reprocessing plant. Using robotic equipment to protect workers from the intense radiation fields, the irradiated nuclear fuel is chopped into pieces which are dumped into metal baskets suspended in boiling nitric acid. The resulting high level radioactive liquid waste is extremely corrosive, but it is possible to chemically separate the plutonium (about one-quarter of one percent) from the rest of the radioactive poisons.

Separated plutonium is a strategic nuclear material because it can be used to make an atomic bomb. However, plutonium can also be used to fuel a nuclear reactor. Many nuclear technologists, including many of those in Canada, believe that it would be a sin to bury the irradiated nuclear fuel from existing reactors without first separating out the plutonium for use as a fuel in future nuclear reactors.

This is called the reprocessing option. It is described reasonably well in Appendix 8 of the NWMO Report.

Theresa McClenaghan

From: "Norman Rubin" <NormanRubin@EnergyProbe.org>
To: <shawn.patrick.stensil@yto.greenpeace.org>; "Northwatch" <northwatch@onlink.net>;
 <ccnr@web.ca>; <mouvementvert.fugere@bellnet.ca>; <daniel.leblanc@petitcodiac.org>;
 <robbins@kingston.net>; <graham.simpson@sasktel.net>; <ccc@web.net>;
 <mduguay@gel.ulaval.ca>; <mcclenaghan@execulink.com>; <info@iicph.org>;
 <farp@sympatico.ca>; <cfre@web.ca>; <tom.Adams@nextcity.com>;
 <dave.martin@yto.greenpeace.org>; <shawn.patrick.stensil@yto.greenpeace.org>
Sent: Wednesday, June 15, 2005 12:10 AM
Subject: Leaked CabDoc re NWMO vs. NWMA?

In early 1999, I received a brown-envelope copy of an Oct. 1998 leaked Cabinet Document concerning the federal government's options to respond to the "Seaborn" EA Panel report on the management of Canada's High-Level Nuclear Waste. Just before leaving town for a trip, I released it to some of the press (mostly Tom Spears of the Ottawa Citizen, who wrote a good story) and also sent some copies around to our network, including CNP. (One of the networked copies -- to Dave Taylor of Manitoba -- turned into a big media "bounce" a couple of weeks later.)

Among other things, the document makes clear that the reason the federal government rejected the Seaborn EA Panel's recommendation to entrust the rest of the waste-disposal job to a federal Agency, in favour of getting a proposal from the industry's NWMO and then also entrusting the final implementation to NWMO, was fear of federal-government financial liability in case the wastes became "orphaned".

I've just dug through my remaining files and found that my only remaining copy of that document is a photocopy that's missing a whole bunch of pages!! Does any of you have a complete copy, and if so could you please mail one to me at the address below? (I'm good for photocopying costs and postage, if that's an issue.)

Thanks,

Norman Rubin
 478 Brunswick Ave
 Toronto, ON M5R 2Z5
 phones: h&o)416-964-3761

Norman Rubin
 478 Brunswick Ave
 Toronto, ON M5R 2Z5

phones: h&o)416-964-3761

Theresa McClenaghan

From: "S. (Ziggy) Kleinau" <cfre@web.ca>
To: "rad-waste list-serve" <rad-waste@list.web.ca>; "Brennain Lloyd" <brennain@onlink.net>;
<cecilia@onlink.net>; "Gordon Edwards" <ccnr@web.ca>; "Alice Hirt" <alicehirt@charter.net>;
"Shawn-Patrick Stensil" <shawn.patrick.stensil@yto.greenpeace.org>; "Faye More"
<irisblue16@hotmail.com>; "K. Cumbow" <kcumbow@greatlakes.net>;
<"kevin@nirs.org"@web.ca>; "Sam & Jennifer Heisz" <womanslegacy@yahoo.com>; "IICPH"
<info@iicph.org>
Sent: Sunday, October 30, 2005 10:34 AM
Subject: [Rad-waste] Deep underground rad-waste disposal proven unsafe.

Hello all, on my recent visit to Germany I came across a report in the 'Berliner Zeitung' (Sept. 14/05 edition) talking about the government giving up on a low- and intermediate level radioactive waste disposal dump and contemplating closure.

Attempts to store this long-lived nuclear waste in a salt mine 500 m underground near the former East German village of Morsleben (no to be confused with Gorleben!) have proven to be a failure.

Large blocks of salt, one weighing as much as a ton, have fallen from the ceiling and because of the danger of a total collapse the shafts are to be filled with 4 million cubic metres of concrete at a cost of 2 Billion Euros (\$ 3 Billion CDN).

The 37,000 cubic metres of nuclear waste were deposited over a period of 13 years, temporarily interrupted by legal action, and the closing procedure is estimated to take 15 years, after 3-4 years of regulatory investigation. Experts say the site can be stabilized up to 150,000 years, but warn of the possibility of radioactive water contaminating underground aquifers.

Please note: This Morsleben nuclear waste disposal site is several 100 km east of the Gorleben deep disposal site, another salt mine, which seems to be just as unsafe according to the latest reports (Nuclear Monitor # 634, Sept. 2005).

Rad-waste mailing list

Rad-waste@list.web.net

<http://list.web.net/lists/listinfo/rad-waste>

Theresa McClenaghan

From: "Gordon Edwards" <ccnr@web.ca>
To: "Norman Rubin" <NormanRubin@EnergyProbe.org>
Cc: "Theresa McClenaghan" <mcclenaghan@execulink.com>;
 <shawn.patrick.stensil@yto.greenpeace.org>; "Northwatch" <northwatch@onlink.net>;
 <mouvementvert.fugere@bellnet.ca>; <daniel.leblanc@petitcodiac.org>; <robbins@kingston.net>;
 <graham.simpson@sasktel.net>; <ccc@web.net>; <mduguay@gel.ulaval.ca>; <info@iicph.org>;
 <farp@sympatico.ca>; <cfre@web.ca>; <tomAdams@nextcity.com>;
 <dave.martin@yto.greenpeace.org>
Sent: Friday, June 24, 2005 11:28 AM
Subject: Re: NWMO critique

Hello Norm:

Thanks for the detailed comments and the overview thoughts.
 All very worthwhile. You have always been a superb checker.

Although I agreed to write a critique now for the immediate purpose of showing people that all is not well in the land of NWMO, I am leery of putting all our cards on the table at this point in time, when NWMO still has months to put their folks to work countering them (and their lobbyists in Ottawa).

I think we should save our strongest critiques for the fall, when it is too late for them to pre-empt our comments. Consequently I would argue that we prepare to provide answers to the kinds of things Norm has brought forward towards the end of his e-mail, but save them for the fall for public release.

As for the stuff on uranium tailings etc., I agree it may need re-working, but I think it is vitally important to put it in. First of all, people tend to forget about uranium tailings being another major unsolved nuclear waste problem. Secondly, although NWMO doesn't actually say so, the suggestion is that natural ore bodies are relatively safe because they are natural. Thirdly, the NWMO never explains that radio-toxicity can be primarily internal due to the properties of alpha radiation. If they want to use ore bodies as a natural analog of radioactivity, then they should also be willing to use ore bodies as a natural analog of radiotoxicity. I believe they are once again preying on people's ignorance to suggest an unwarranted assurance. And lastly, Northern Saskatchewan is in the running for a HLW repository, which makes the uranium question of political importance in the HLW debate.

Thanks Norm -- I will ponder all that you have said.

Gordon.

Norman Rubin wrote:

Basically, I think this is terrific as a critique of the report.

Some editorial comments follow, with some general notes at the end of the edits.

I expect to be phoning in tomorrow at 2:00. Talk to many of you then.

p. 2:

The NWMO has also failed to study two historically significant approaches to the management of irradiated nuclear fuel waste : one involving the phase-out of nuclear power, and the other involving the eventual reprocessing of irradiated nuclear fuel in order to recover plutonium.

There should be no space before the colon (":").

p. 3:

The Hare report recommended burying irradiated nuclear fuel in the Canadian Shield and abandoning it there : a plan later known as "geologic disposal".

There should be no space before the colon (":").

It appears that several colons (":") in this document are preceded by spaces, which should all be deleted.

also p. 3:

One year later, in 1978, the Ontario Royal Commission on Electric Power Planning published its Report of

--> on

Nuclear Power, entitled "A Race Against Time".

also p. 3:

In fact, there have been no new power reactors ordered since 1978, neither in Canada nor throughout North America.

I'm pretty sure the "neither . . . nor" is technically incorrect and should be replaced by "either . . . or", but neither am I totally certain, nor do I feel strongly. 8>) The grammatical logic is similar to: "They've been ordered in neither place" but "They haven't been ordered

(or None have been ordered) in either place".

p.4:

The Seaborn Panel concluded that the geologic disposal concept had not been demonstrated to be adequately safe, and that it was not a socially acceptable procedure in the eyes of the Canadian public.

Maybe it's just me, but any summary of the "carefully nuanced" Seaborn report that's shorter than the one in the press release makes me nervous. Not sure how to tweak it. I usually mention that the Panel couldn't agree on whether or not it was safe enough to proceed to the next step, but they were unanimous that it was unacceptable on 6 or 7 (I never remember which was which, sorry) separate grounds.

p. 5:

Freshly discharged irradiated fuel generates a great deal of heat
-- so much that it must be stored in a deep pool of slowly circulating

chilled [or cooled, if you prefer]

water for at
least seven years to prevent it from over-heating and releasing radioactive
gases.

p. 6:

The fourth option is called by NWMO, in a masterpiece of
bureaucratese, "Adaptive Phased Management".

The phrase is certainly bureaucrat-friendly, but I think it was actually coined (and the principles first assembled) by an American professor whose name I can dredge up if necessary. (He took part in the first Royal Roads U. "e-dialogue" that I took part in, sponsored by NWMO. He also wrote a paper for NWMO on Adaptive Management that's on their website.)

p. 7:

Is it because exposure of a ~~foots~~

--> fetus

to radiation can cause a host of developmental abnormalities, the most important of which is mental retardation?

p. 8: General comment: I think the two quotes about the hazards of short-lived isotopes (esp. I-131 and Cs-134) from a meltdown require a clarification from us, acknowledging that these particular isotopes aren't of concern for long-term disposal or management (because they'll be long gone), but clarifying that the longer-lived isotopes have similar health effects, or some such.

Also p. 8:

~~Its~~

--> It's

all focused on the physical sciences, not on the biomedical sciences

, and all concerns external radiation, not internal exposures. [This sentence tag helps lead into the following paragraph, in my opinion.]

Also p. 8:

It is difficult to understand these omissions, given that public health and safety ~~is~~ **are** stated to be the principal preoccupation of NWMO staff.

Why the (sudden) distinction between NWMO and its staff? Can we make that distinction? Any reason to doubt that the Board and Advisory Committee, etc., share this stated "principal preoccupation"?

p. 9:

The reason for this is that a "fresh" irradiated fuel bundle -- one just removed from the reactor core -- is 1000 times more radioactive than one which is ten years old.

Thus, as long as nuclear reactors continue to operate, the risk to public health and to the environment around the reactor sites is essentially undiminished, regardless of what option is adopted by the NWMO or the Government of Canada for the long-term management of used nuclear fuel.

I think this section is very tricky, because it's too easy to interpret this 1000-fold reduction in radioactivity -- and the statement in the second paragraph that suggests that eliminating all the risk from the older waste would eliminate virtually no risk -- to mean that radwaste poses no significant risks at all after the first decade. Of course, if the initial number (initial risk and radioactivity) is big enough -- and it IS!! -- then even 0.1% of that number can be staggeringly, unimaginably large (and it is). But I think that mathematical fact is likely to be lost on some intelligent casual readers, unless this is clarified.

My proposed solution is as follows:

~~The reason for this is that a "fresh" irradiated fuel bundle -- one just removed from the reactor core -- is 1000 times more radioactive than one which is ten years old.~~

-->The reason for this is that a 10-year-old irradiated fuel bundle is only one *one-thousandth* as radioactive as one that has just been removed from the reactor core -- still incredibly radioactive ["and containing enough poison to . . ." if somebody has the data handy to complete the sentence!], but containing only 0.1% of its original radioactivity.

Thus, as long as nuclear reactors continue to operate, the risk to public health and to the environment around the reactor sites is ~~essentially undiminished~~

-->only diminished by 0.1% or less,

, regardless of what option is adopted by the NWMO or the Government of Canada for the long-term management of used nuclear fuel.

With these changes, I think most intelligent casual readers will get it (or at least not use it against us!).

It also might be helpful if an earlier part of the document (or maybe better a later part that can be referenced here) described the "quick drop and long tail" shape of the radwaste decay curve. (That's probably too hard.)

Also p. 9:

And there is the added danger of transportation accidents and/or terrorist highjackings.

I don't think there's been any mention so far of the fact that these wastes contain nuclear-weapons-usable plutonium. If this important problem isn't mentioned before this spot, it should probably be mentioned to explain the risk of "terrorist hijackings" to those intelligent readers who don't already know everything about this subject. At least, we should add a quick reference here to the discussion later in the document.

Also p. 9:

the never-ending transports of irradiated fuel and the temporary central storage of irradiated fuel will simply add new ~~dimensions to the existing risk factors.~~

--> risks to the existing ones.

Also p. 9:

If NWMO were truly motivated by safety -- protecting human health and preserving environmental integrity

from Canada's largest collection of toxins and carcinogens [or "from one of Canada's . . . " if you're squeamish about the claim, as I am not]

-- the staff would surely realize that such safety objectives are impossible without a nuclear phase-out.

Again, I'm troubled by "the staff" popping up, as if in opposition to "the Board" or somebody else in NWMO. I'm starting to believe that this "staff" thing is probably the response to an editorial problem: Is NWMO an "it" or a "they", how many times can you repeat "NWMO" over and over without a synonym to break the monotony, etc.? If so, how about "the report's authors" or "the authors" or "the NWMO authors" as a synonym? (Or just "they", which also works for me. I also don't mind if we're inconsistent about "it" and "they", depending on what seems to fit better in each instance.)

So I'd probably just say:

If NWMO were truly motivated by safety -- protecting human health and preserving environmental integrity from Canada's largest collection of toxins and carcinogens -- they would surely realize that such safety objectives are impossible without a nuclear phase-out.

Also p. 9:

rail-lines

--> rail lines

p. 10:

In fact, the first nuclear reactors in the world

insert "(and in Canada)"

were built for the purpose of
producing plutonium, the principal nuclear explosive in most nuclear weapons.

Also p. 10:

it is regarded as
a uniquely valuable constituent because *of its explosive and energetic properties*.

Isn't it clearer to say "[because] it can undergo a nuclear chain reaction."?

p. 11:

The current uproar over North Korea and its nuclear weapons capabilities has
to do
with the fact that North Korea has been reprocessing irradiated nuclear fuel to
obtain plutonium, which can then be readily used to make nuclear bombs.

The use of the word "uproar" suggests to me that the authors don't (or Gordon doesn't) share the widespread concern over North Korea and its nuclear weapons capabilities. Is that suggestion intentional? If not, a more neutral word might be better -- maybe "crisis", since it seems to be that, no matter what? (And if so, I don't think I share that view.)

p. 12:

Canada's first reprocessing facility was built at Chalk River

Ontario

in the late 1940's in order
to aid British scientists in their efforts to build the first non-American atomic
bomb.

p. 13:

Nowhere in its report does NWMO explain this historic

and institutional

linkage between the
management of irradiated nuclear fuel and the reprocessing option.

p. 14:

This sizable

quantity of plutonium-based fuel, called "MOX" (a "mixed oxide" of plutonium and uranium blended together), was burned in research reactors and even in electricity-generating power reactors in Ontario, to prepare for its future use on a large scale.

We are all familiar with the (mis-)use of the verb "burn" to mean "use" or "irradiate", but I think lots of our intended readers aren't. I'd say "was used" or "was tested" instead.

p. 15:

The following is from a 1976 British Royal Commission Report, "Nuclear Energy and the Environment", written by Sir Brian Flowers, a prominent Nuclear Physicist:

I don't think that "Nuclear Physicist" deserves to be capitalized any more than "mathematician" or "bus driver".

p. 15:

We believe that the Canadian Government should enact a law prohibiting the reprocessing of irradiated nuclear fuel, as in the USA. Without such a law, there is a real danger that any "willing host community" for a centralized storage site may be victimized in the future by becoming the unwilling host of a reprocessing facility.

Indeed, it is difficult to justify the risk and the expense of transporting irradiated fuel to a central repository unless it is for the express purpose of eventual reprocessing.

This passage -- the end of the section dealing with reprocessing -- seems to me to cry out for a reminder that (under the NWMA Act) the next steps of the waste-management program approved by the feds are to be carried out by NWMO, and without any guaranteed future public debate by the public at large, a Royal Commission, an EA panel, or even Parliament. In other words, if anybody is going to be knocking on doors of candidate communities and either clarifying the reprocessing risk or neglecting to do so, it's the waste-maker-controlled NWMO, under Canadian law. I think clarifying that fact makes this passage's "real danger" seem even more dangerous, and rightly so.

p. 15:

Radioactive radium, polonium, and lead are seeping into surface waters and threatening to contaminate ground waters.

We might also add that emissions from these facilities have been found to be toxic to nearby populations of animals in a review held under the Canadian Environmental Protection Act.

p. 16:

However. in appendix 2,
"Nature of the Hazard", NWMO uses a natural uranium ore deposit as a baseline:

The period after "However" should really be a comma.

By the way, I wouldn't mind "losing" the last 3 paragraphs of p. 16 entirely. I find the argument tendentious and a bit off-topic:

- It is true under the NWMAAct that "the health and environmental risks of uranium ore and uranium residues, however serious, are not relevant to NWMO's main responsibility, which is the management of irradiated nuclear [sic: nuclear] fuel", and the following passage doesn't actually change that or successfully refute it.
- The NWMO quote compares the total radioactivity (a technical quantity, different from radiotoxicity -- arguably relevant or irrelevant, to be sure) of spent fuel to the total radioactivity of the ore body it came from; the refutations all deal with concentrations, which is not the subject of the quote.
- Whatever the merits (or not) of the "benchmark" comparison, its bottom line is that it takes one million years for the spent fuel to decay down to that benchmark. That's a very, very, very long time, and therefore the statement serves our side of the debate more than theirs. This isn't about the wastes fitting into a hockey rink, right?? (Of course, that argues against "losing" the great quote, but I don't think I see how to incorporate it relevantly.)

p. 17:

The refurbishment of Point Lepreau in New Brunswick and Gentilly-2 in Quebec

, assuming they are approved and proceed,

will cost more than two and a half billion dollars.

Also p. 17:

Presumably, they will be the responsibility of the

--> their

respective provincial governments.

Why wouldn't they be (at least initially) the responsibility of the nuclear generating companies that own the reactors (and ultimately also own NWMO)? Is this a reference to the fact that OPG & NBPower and Hydro Quebec are all owned by provincial governments? I find it a bit confusing.

Also p. 17:

The NWMO does
not accept any responsibility for these wastes;

The fact that refurbishment (if it proceeds) and decommissioning wastes are both ultimately the responsibility of the same companies that created and control or "own" NWMO seems highly relevant here and worth mentioning.

General comments:

I think it would be good if we could be clear on some minimum standards for future process, and include it in (or along with) this critique. As it stands, the industry-controlled NWMO is publicly circulating a draft of its report to the (all-too-industry-controlled) federal government, which will then decide (in secret) on a plan that the industry-controlled NWMO is tasked by the Act to implement. We are commenting on the draft, and also whining some about the federal Act that sets up that process and mandated the creation of the NWMO instead of the Seaborn-recommended "NWMAgency". (By the way, I don't mind whining, but in some ways the NWMA proposal scared me and still scares me more than the NWMO.)

Perhaps we could all agree (e.g.) that the concept that was rejected by a full Canadian EA Panel shouldn't proceed until it has been accepted by a(nother) full Canadian EA Panel? Or that no serious work on site-selection should proceed in any province until there's been a full joint Canadian-provincial EA Panel that approves it? And/or demand CCNR's national debate on nuclear power? Or insist on specific process guarantees that must be written into the (new) NWMAAct? Heck, it's not as if this stuff is going somewhere in a hurry!

I agree with all of Gordon's criticisms of the report and its context, but I'm afraid that we're likely to lose a "public pissing contest" with Liz Dowdeswell over this report. For one, if we're going to try to prove that she's a puppet for the industry, I don't think we'll prove it to the satisfaction of most of the public, or the press. I also don't think that most people would be outraged to hear that this "disposal proposal" was drafted by the waste producers, with money they provided -- that's exactly how the polluter-pay principle is supposed to work, right? The main problem, I think, is that we apparently have zero rights to due process AFTER this proposal is finalized, when the NWMO report goes to the feds.

I think we have to point out all the problems with the report, as Gordon's critique has done, and then be clear on the guarantees (for public health, the environment, democracy, and maybe even private property) that we think are needed after the final report is submitted (as I think we have not done yet).

I expect to be phoning in tomorrow at 2:00. Talk to many of you then.

Norm

At 01:51 PM 6/23/2005, Gordon Edwards wrote:

Hi everyone:

My son Peter, who is an excellent rock guitarist, has just shown me how to "print to pdf". So here is a pdf version of my still-unfinished critique of NWMO's report.

Cheers, GE.

Norman Rubin

Senior Consultant, Borealis Energy Research Association
Director of Nuclear Research and Senior Policy Analyst, Energy Probe
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Check out Energy Probe's home page at
<http://www.energyprobe.org>

--

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Canadian Coalition for Nuclear Responsibility
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Theresa McClenaghan

From: <shawn.patrick.stensil@yto.greenpeace.org>
To: <rad-waste@list.web.ca>; <energy-vision@list.web.net>
Sent: Thursday, November 03, 2005 8:36 AM
Subject: [Rad-waste] Looking for a waste land;

Hi folks, the NWMO's recommendation is being made public today.

Looking for a waste land; Ottawa urged to bury spent nuclear fuel bundles 1 kilometre deep at central site Extending criteria includes more of Ontario as option, Peter Calamai reports

The Toronto Star

Thursday, November 3, 2005

Page: A7

Section: News

Byline: Peter Calamai

Dateline: OTTAWA

Source: Toronto Star

Wanted A community in Ontario, Quebec, New Brunswick or Saskatchewan willing to store millions of bundles of highly radioactive waste fuel from the country's 22 nuclear reactors. Forever.

The nuclear waste would be buried at this central site in mausoleum caverns up to a kilometre underground in hard rock, concludes a three-year study by experts submitted today to the federal government.

The study was carried out by the Nuclear Waste Management Organization, an industry-led group specially created by federal law.

The proposed mausoleum would not actually be built for roughly 60 years, according to the study's master plan. It also could remain unsealed for centuries while scientists search for a better way to deal with radioactive waste, says the report.

A decision on a site is unlikely for at least a couple of years, according to officials here.

The final waste management plan contains no significant changes from draft proposals reported exclusively by the Star in May.

The federal government has been anticipating the recommendations as a way to help defuse public opposition to new nuclear power plants being considered to reduce emissions of carbon dioxide, the leading greenhouse gas formed by burning coal and oil to make electricity.

Anti-nuclear campaigner David Martin of Greenpeace said polls suggest many Canadians instead want nuclear power phased out, a move that would stop the steady rise in nuclear waste that must be managed.

"I think the federal government is setting the scene for a huge social confrontation on nuclear waste disposal," Martin said in an interview.

Two earlier federal waste disposal studies rated the granite-bound Canadian Shield as the only

geological formation stable enough for millennia of storage. But the organization report says other parts of the country could host a nuclear mausoleum because they are located on sedimentary Ordovician rock that is also low-risk for fractures and underground water seepage.

Extending the geological criteria brings in non-Shield areas in Ontario including London, Hamilton-Niagara, Windsor-Sarnia and a swath from Kitchener-Waterloo up to Barrie.

Almost 90 per cent of Canada's nearly two million bundles of waste nuclear fuel is currently stored at Ontario's Pickering, Darlington and Bruce power stations, mostly in concrete and metal casks inside ordinary sheds. The master plan says the waste will remain at these sites for at least the next 30 years. Depending on public opinion, the bundles then might be moved to temporary storage in a centralized shallow facility for the following 30 years.

Spent fuel, expected to double over the 40-year reactor lifetimes, is dangerously radioactive for dozens of centuries.

Federal law forces Ontario Power Generation, Quebec Hydro and other producers of waste fuel to make annual contributions to a fund to cover the costs of long-term radioactive waste management, estimated at \$24 billion in the study. The fund now contains \$770 million.

The federal government must respond to the master plan for a drawn-out approach the organization calls Adaptive Waste Management. Ottawa can still opt for other ideas the report rejects, including leaving the waste dispersed at reactor sites, or building a central repository on the surface.

Once the federal government makes its choice, the organization will search for an eventual site or sites.

"In the interests of fairness, we intend to focus within the provinces that are directly involved in the nuclear fuel cycle - Ontario, New Brunswick, Quebec and Saskatchewan (where uranium is mined)," the report says.

Organization president Elizabeth Dowdeswell, former head of the United Nations environment program, said yesterday, "The issue that really gets people excited is where it's going to happen."

She said it is reasonable to expect to find a community willing to host a central mausoleum because that's happened in Finland and Sweden.

In the mausoleum that's proposed, steel-and-copper capsules would each hold 324 bundles of waste fuel. The containers would be designed to last at least 100,000 years and be sealed in underground caverns behind water-resistant clay barriers.

Shawn-Patrick Stensil

Energy Campaigner/Responsable de la campagne énergie

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Rad-waste mailing list

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Theresa McClenaghan

From: <shawn.patrick.stensil@yto.greenpeace.org>
To: <rad-waste@list.web.ca>
Sent: Thursday, November 03, 2005 8:36 AM
Subject: [Rad-waste] No *nuclear* *waste* dump: Calvert

No *nuclear* *waste* dump: Calvert

The StarPhoenix (Saskatoon) Thursday, November 3, 2005 Page: A4 Section: News Byline: James Wood Dateline: REGINA Source:

The StarPhoenix REGINA -- A day after seeming to leave the door open for a *nuclear* *waste* facility in Saskatchewan, Premier Lorne Calvert slammed it shut on Wednesday.

"Let me say today definitively, the answer is no. Under my leadership in this province there will not be in Saskatchewan a *nuclear* *waste* disposal facility," he told reporters.

"The people of Saskatchewan I believe have said to me, in my conversations with them, it's not something they want to pursue. It's not something my government wants to pursue."

The issue arose after Calvert was questioned at a press conference Tuesday marking his return from the Team Saskatchewan trade mission to Asia.

After speaking of the province's desire to sell its uranium to China, where more than 30 new nuclear reactors are being planned, Calvert did not rule out a *nuclear* *waste* dump for the province when questioned by reporters.

He said the government would consider the business case for a nuclear reactor or waste dump but said any proposal for a dump would prompt an intense testing and review process.

The premier said Wednesday his remarks from a day earlier had been misinterpreted. "They could come, I would consider it and I would say no," he said of any proposal for a site in the province. Disposal of waste from nuclear reactors is a major environmental issue because the waste remains highly radioactive -- and dangerous -- for thousands of years.

On Nov. 15, the industry-led *Nuclear* *Waste* Management Organization will present a report to the federal government on its long-term plan for waste disposal.

A draft report released in May recommended a \$24-billion underground mausoleum for waste and said Ontario, Quebec and Saskatchewan are suitable sites for such a facility.

However, it is expected the report will recommend continuing with the system of storing waste at nuclear reactors for the next 60 years.

A review process to pick a site for a new facility in the Canadian Shield is expected to take 18 years. Victor Lau, leader of the province's Green party, said he's not surprised Calvert appeared to struggle to define his stance on a waste dump in Saskatchewan.

Uranium and nuclear issues have been contentious within the NDP, which has pro- and anti-uranium

factions within the party, said the former NDP activist. In the 1980s, party policy called for the phasing out of uranium mining in the province. That stance was reversed in the early 1990s and the NDP government recently formally backed the development of uranium processing in Saskatchewan.

"The war will begin if the NDP government ever moves towards accepting a nuclear reactor or *nuclear* *waste* disposal. I think there's a lot of people in the NDP still who are very environmental," Lau said in an interview Wednesday.

While former NDP deputy premier turned Nexen executive Dwain Lingenfelter has recently been touting the development of a nuclear reactor in Saskatchewan to provide energy for the oilsands projects in Alberta, Calvert said the economics and infrastructure of such a project doesn't make any sense.

"Mr. Lingenfelter speaks for himself or for his oil company, I don't know which. But he's certainly not speaking for the government of Saskatchewan or the New Democratic Party."

"There are places in this globe that may have no other choice but to use the nuclear generation of electricity. In this province we have such a broad diversity of energy potential it is not an option I think we need to pursue," he said.

The Opposition Saskatchewan Party is interested in the prospects of nuclear energy development in the province, but leader Brad Wall said Wednesday a *nuclear* *waste* dump is not on his party's agenda.

The provincial Liberal party will consider a resolution at this weekend's convention that would see it advocating the development of small nuclear power systems in the province. Lau said there seems to be a groundswell of debate on uranium and nuclear issues in Saskatchewan.

"We're the only party really hard against it," he said. "It's certainly drawn the lines very clear."

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