

Nuclear Waste: Abandonment versus Rolling Stewardship

The Concept of Abandonment

1. Humans have never permanently disposed of anything.
2. Assumes a permanent solution to waste problem exists.
3. Monitoring the waste ceases after abandonment.
4. Retrieval is difficult or impossible.
5. Containers will inevitably disintegrate.
6. If leakage occurs timely corrective action is not likely.
7. Abandonment will eventually result in amnesia.
8. Difficulty in communicating to unknown future societies.
9. No intention to truly solve the problem of nuclear waste.

The Concept of Rolling Stewardship

1. Humans can contain waste securely for decades at a time.
2. Recognizes a solution to the problem does not yet exist.
3. Continual monitoring of waste is essential.
4. Retrieval is anticipated and actively planned for.
5. Periodic repackaging is an integral part of the process.
6. If leakage occurs timely corrective action will be taken.
7. Rolling Stewardship is based on persistence of memory.
8. Information is readily transmitted to the next generation.
9. Ongoing reminder that the problem remains to be solved.

The concepts of abandonment and disposal are intimately related. According to the IAEA “disposal” means that there is no intention to retrieve the waste in the future – although such retrieval may, with difficulty, be possible; the waste is abandoned.

When disposal attempts fail – as in Port Hope Ontario, the Asse-II salt mine in Germany, the Love Canal in New York State, or the US DOE’s “Pit 9” in Idaho – cleaning up and consolidating the waste is often exceedingly costly & difficult because of lack of documentation, failed packaging, and damage already done.

Ironically, the end result of failed disposal is usually some form of Rolling Stewardship – by default, not by intent. Had Rolling Stewardship been instituted from the start, the damage, difficulties and cost would have been greatly reduced.

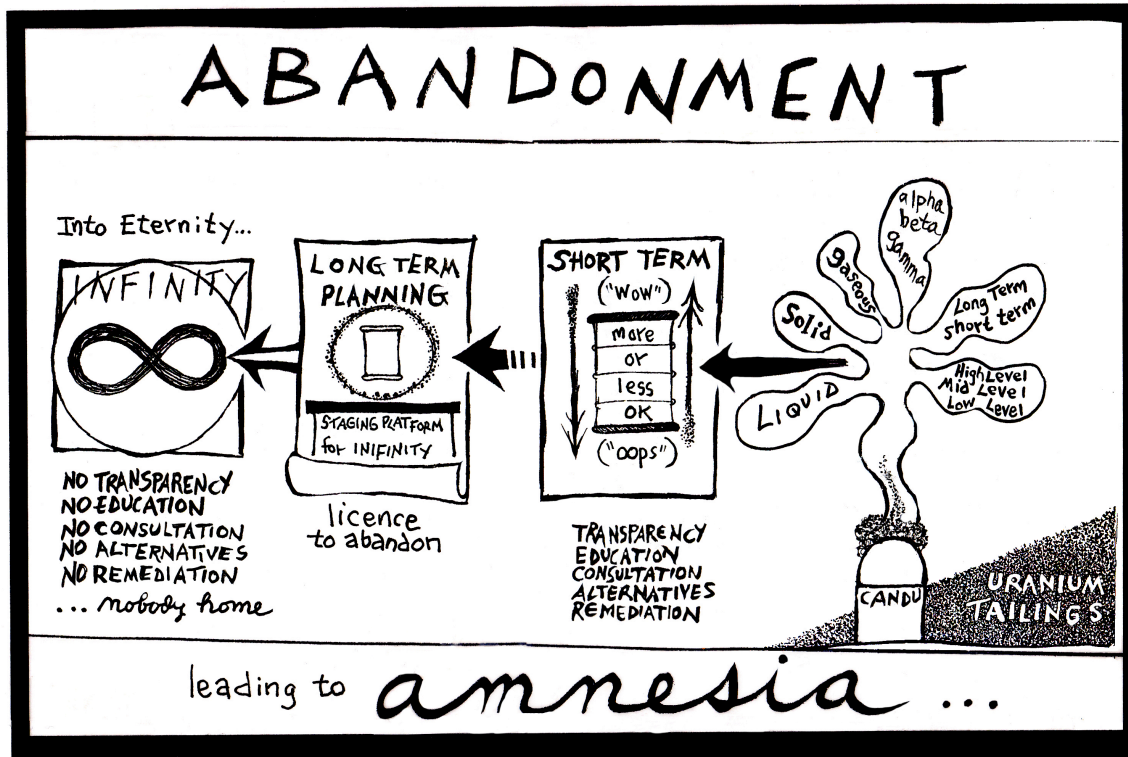
When abandonment of a repository occurs, the repository becomes a dump. Even if the repository has been well managed, the dump will not be. No matter how well designed a large nuclear power reactor might be, it would be foolish and irresponsible to licence it for operation, start it up and then abandon it. Yet that’s what OPG hopes to do in the case of the Deep Underground Dump (DUD).

The pyramids of Egypt are 5,000 years old. The Great Lakes did not exist 15,000 years ago. But the half-life of plutonium-239 is 24,000 years, and plutonium-239 gradually changes into uranium-235 – which has a half-life of 700 million years.

Science is unable to make reliable predictions over hundreds of thousands of years, since the mathematical predictions can’t be verified against experience. As the rollout of ObamaCare has shown in the USA, computer bugs often go undetected.

Geology is a descriptive science, not a predictive one. Besides, it is impossible to place wastes in an undisturbed geological formation without disturbing it.

Canadians have much expertise in mining – but a mine is for taking things out, not putting them in. And deserted mines always flood. No one knows how to put a rock formation back together again so that it returns to its original strength and integrity.



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Abandon (n) : to cease to support or look after; to desert.

Disposal (n): the process of throwing away or getting rid of something.

Management (n): the process of dealing with or controlling something.

The nuclear industry and its government owners are responsible for the long-term management of nuclear waste. That means dealing with the waste and controlling it so that it does not endanger the health and safety of people or the environment.

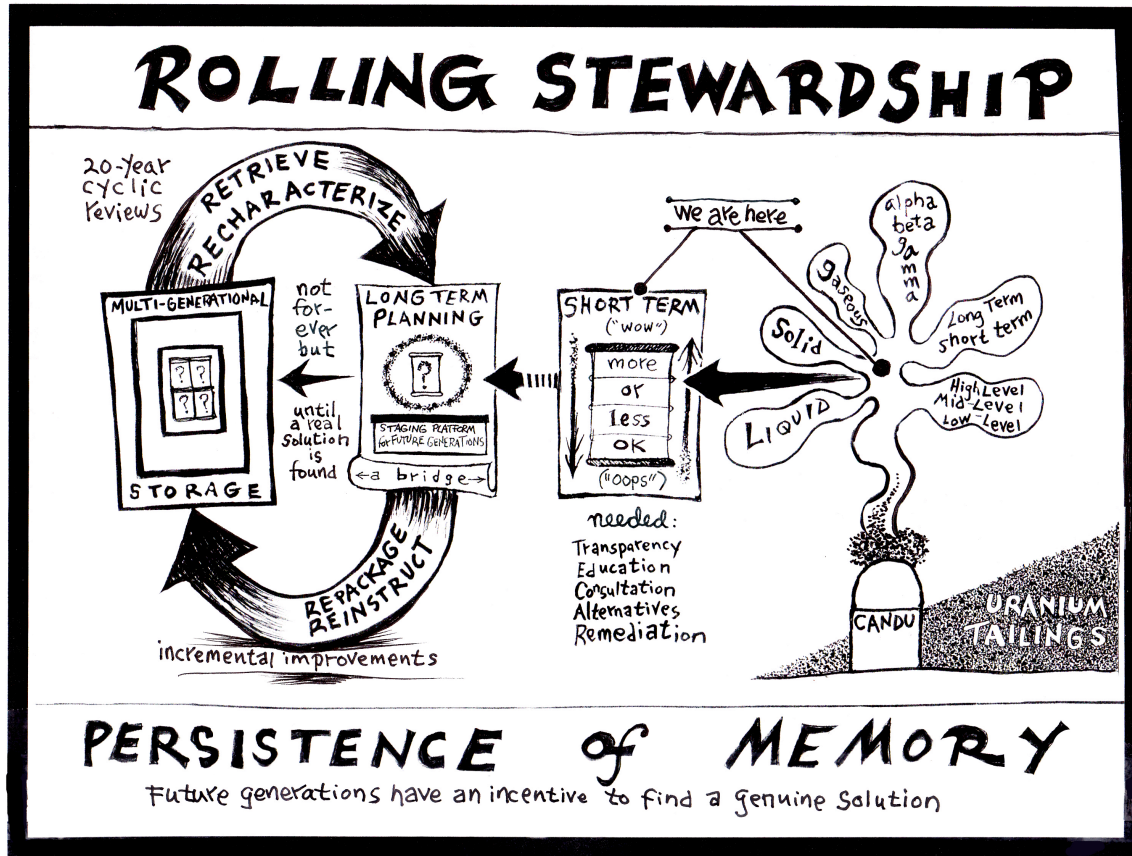
To abandon nuclear waste, as proposed by OPG in its current proposal to build a Deep Geological Repository (DGR) beside Lake Huron, is to cease to look after it. As such it is a breach of governments' fundamental moral and legal obligations to society.

"The DGR Project includes the site preparation and construction, operations, decommissioning, and abandonment and long-term performance of the DGR."

EIS Volume 1, second paragraph, Executive Summary

Abandonment is intended to dispose of nuclear waste – to get rid of it by throwing it away. But no one knows how to truly get rid of long-lived nuclear waste or any other persistent toxic material in this manner. A corporation may rid itself of toxic waste but only at the risk of burdening others – present or future generations – with the obligation of coping with the waste or living with the harmful consequences.

Abandonment eventually leads to amnesia. Future generations have no adequate knowledge or resources to deal with leaks that may go undetected for long periods.



Realizing that there is as yet no genuine solution to the nuclear waste problem – we do not know how to destroy this waste or render it harmless – the only responsible alternative to abandonment is Rolling Stewardship. There is a growing awareness on the part of those who have struggled with this problem that this is the way to go.

“The word “disposal” has come to mean permanence and irretrievability in the minds of the public, and that raises questions about our stewardship of the waste. For that reason we do not use the word disposal.”

NWMO, Choosing A Way Forward, Final Study (2005), Page 21

Nuclear waste remains harmful for unimaginably long periods of time. Until the waste can be eliminated, it must be managed on a multigenerational basis. This implies continual monitoring and periodic retrieval and repackaging (e.g. 50 – 100 years).

Rolling Stewardship implies persistence of memory : the accurate transmission of information and the transfer of responsibility from one generation to the next. For example, there could be a ceremonial “changing of the guard” every 20 years, accompanied by a thorough familiarization with & recharacterization of the waste.

Rolling Stewardship will ensure that leakages can be rapidly detected and corrected. It will also provide a constant incentive to improve containment and find a solution to the waste problem. But it requires meticulous planning and commitment to succeed.

POINTS TO PONDER

Abandonment is based on the concept of amnesia: let's forget it!

Rolling Stewardship is based on the persistence of memory: look after it!

Rolling Stewardship allows timely corrective action to be taken when needed.

Rolling Stewardship imparts all relevant information to the next generation.

A 20-year “changing of the guard” transfers responsibility and resources.

Rolling Stewardship ensures monitoring, robust packaging, and retrievability.

It implies recharacterization of the wastes and repackaging when necessary.

This is not a solution – it is a responsible waste management scheme.

Rolling Stewardship is required until a genuine solution can be found.

A permanent solution might involve destruction or neutralization of the wastes.

We know how to look after this waste and we must be prepared to do it.