

Exercising Natural Rights in Canada for Environmental Protections: Our Comments on *The Draft Policy on Radioactive Waste Management and Decommissioning*

Submitted by [REDACTED] & [REDACTED] April 1, 2022

Introduction

As part of its dedicated, inclusive engagement process to ensure the future safe management of radioactive wastes, in developing a modernized policy that aspires to meet international standards based on the best available science, and that reflects the values and principles of Canadians, we find that the federal government and specifically, Natural Resources Canada (NRCan), along with the Ministry of the Environment and other government departments with responsibilities for the management of radioactive waste, **need to be strongly reminded of the direct, potent risks to human health and well-being, and of the simultaneous risks of damages to our living, natural environments including all trees, plants and lichen etc., to our animal, bird and fish populations and to their natural habitats, and therefore also of the dangers of damage to our irreplaceable Canadian biodiversity, our precious water, air, land (which produces our food supplies) and other invaluable natural resources.**

So, we are submitting, here and now, to the government, our outline of these potent risk mechanisms, for these stated purposes: To contribute to the improved understanding of everyone involved in the development of the modernized policies, to help create improved policy outcomes, and especially to help NRCan staff to achieve work in this mission according to its own stated core principle of protecting the *Safety of People and the Environment* for thousands of generations.

Our more specific, brief comments and objections to the draft policy – which echo closely what many other concerned individuals, indigenous and otherwise, community organizations and scientific bodies have also officially expressed as part of this engagement exercise—will immediately follow these important reminders. The draft policy you have introduced to Canadians on February 1st of this year is weak, ineffectual and seems to intentionally avoid the establishment of any serious, *independent* management or regulation of nuclear wastes and decommissioning processes. We submit this review of the potent dangers of nuclear wastes and our more specific policy comments which follow, for the purpose of contributing to an improved final policy.

Achieving a More Mature Regulatory Environment

The disposal of radioactive substances in a manner that reasonably anticipates their eventual potential release into the human and natural environments imposes a health burden upon future generations that cannot be justified by any moral or legal rationale.

Until the Government of Canada articulates a truly integrated, comprehensive policy for the safe, short- and long-term management of the products of the entire nuclear cycle, in what should be a mature regulatory environment, the government cannot be believed or trusted to function properly with these current draft policies. The wastes from mining, from operating power plants with post-fission radioactive waste materials, the irradiated nuclear fuels, any structures and materials exposed to radioactivity, and so, indeed, radioactive waste from all sources, must be highly and independently regulated, tracked, monitored and reported on, within set schedules, and according to established international standards. Indeed, these wastes must be much more highly regulated than they have ever been, to date, before in Canada. The draft policy still reinforces the huge credibility gap that developed in reaction to the original, truly deficient waste management policy because of its many continuing deficiencies. See our final comments for our specific objections.

Allowing the very same companies and government ministries which are vested in the promotion of nuclear technologies (as is currently the case) to be the **captured regulators** is an immoral and unacceptable planned policy, and denies all Canadians and our natural environments, the due diligence required to live up to the government's own stated core policy of utmost

care for our collective health and wellbeing. This flaw is so glaringly obvious that intentionally designing it is a national embarrassment and shame, no exaggeration.

Effects of Ionizing Radiation on Human, Animal, Fish, Avian and Environmental Health

Microphysics: In nature, energy is regularly cast off from unstable atomic structures. When these particles or energies leave their previous orbits or shells and radiate outward, they are capable of imparting an electrical charge to other matter they encounter, and so are called "ionizing radiation." Such radiation can be, and is, quite damaging to biological structures.^[i] As atomic physicist John Gofman described it:

"With ionizing radiation, electrons are removed from their atoms, and endowed with energies huge compared to those in ordinary chemical reactions. Such electrons maraud for great distances (compared with atomic dimensions in angstroms) and have the chemical capability to break any kind of bond one might care to visualize. In living biochemical systems, reactions are carefully controlled, often by special geometric juxtaposition of the reactants. A marauding high-speed electron simply does not notice all this elegant juxtaposition. It can break anything, anywhere. And once it has ripped an electron out of an atom in a molecule, that molecule is itself at such a high-energy level that it can produce all kinds of chemical reactions that would never have been possible without the ionizing radiation." ^[ii] **Therefore, ionizing radiation such as that created by nuclear waste, causes by its very nature an accelerated entropy of biological systems.**

In the human cell, certain chemical bonds are crucial to the integrity of the genetic code and breaking just a few of these bonds may endow the code with a permanent alteration. When a mutated gene is responsible for regulating normal cell growth, an uncontrolled proliferation of damaged cells, or cancer, can develop. When mutation occurs in the procreative cells or in the developing embryo, birth defects can result. When mutation occurs in the blood-forming tissue, impairment of the immune response system can result, and this can increase susceptibility to an entire spectrum of human diseases.

Radiation is therefore said to be mutagenic (cell-mutating), carcinogenic (cancer-causing), teratogenic (birth-defect inducing), and immuno-suppressing (resistance-impairing).

All of these effects, which begin at a submicroscopic level, remain invisible for extended periods of time until they reach observable proportions. The latent period may be decades in the case of an incipient cancer, or it may be centuries in the case of a genetic effect. **Another aspect of nuclear waste, then, is contributing to the suffering, ill health, and death of humans and all other life forms, over extremely long periods of time,^[iii] tens of thousands of years in some cases, or even more, as we all know.**

Declassified reports from the Manhattan Project show that senior health physicists knew or suspected that: "... the genetic effect [from radiation] has no threshold and exposure is not only cumulative in the individual, but in succeeding generations.^[iv] As health physics, microbiology, and human radio-epidemiology developed, **our early optimism about the harmlessness of low-level radiation vanished. Repeated studies verified that radiation is a powerful bio-genetic poison, capable of causing irreversible health damage at the lowest measurable doses.**^[v] Today it has become universally recognized that there is no proven threshold for potentially fatal injury from radiation -- that there is no "safe" dose. It is now also widely recognized that all exposures to radiation are cumulative; both in individuals, and in the species as a whole. **Indeed, studies have shown that exposure of parents increases the susceptibility of their offspring to cancer.^[vi] We are thus confronted with accumulating genetic susceptibility to an increasingly radioactive environment, a process which places the survival of our species and all life forms in jeopardy.**^[vii]

Against this backdrop of basic biological science of the effects of ionizing radiation on human, animal, fish, avian species and on overall environmental health, and with the proven physics of the known half-lives of the documented contaminants which would be extremely long-lived hazards in some cases, leads us to hereby register our strong objections to the insufficient draft plan for the management and decommissioning of nuclear wastes now being proposed.

After 75 Years, Waste Management Still Not Solved

After 75 years of the unfettered nuclear program in Canada, the very experts in that field have still not been able, themselves, to solve these problems of exposure risks of such incredibly long duration and such notable significance. They claim that the industry is easy to manage, safe, and green, yet those empty claims are clearly not true, since these experts themselves have yet to credibly solve these remarkably pertinent, and for our human-scale purposes, permanent, life-damaging hazards.

Simply put, nuclear waste management remains an internationally acknowledged problem even within official 'nucleardom', and it's truly a huge one, as outlined above. Therefore, to have any credibility, the draft policy on managing nuclear wastes needs to conform to the highest internationally established standards, with clarity, and not remain vague, light, and casual in its approach, which it currently does. In its final form, it could also potentially fail to address Canada's international obligations under the *Joint Convention on the Safety of Spent Fuel Management* and on the *Safety of Radioactive Waste Management*. These current proposed (draft) management and decommissioning policies do not reduce Canada's nuclear legacy liabilities and may, in fact, directly increase them.

Our Specific Objections to the Draft Policy

- ⊗ Canada needs an *independent agency*, arms-length from government and industry, to independently oversee radioactive waste management and decommissioning. The draft plan fails to do this.
- ⊗ The Nuclear Waste Management Organization (NWMO) is not that agency since it was started by and is still controlled by Canada's nuclear energy producers themselves. This draft plan continues to encourage the nuclear industry to be in charge of developing its own waste management strategies, never a good idea, as vested financial and other internal, priority interests wind up dominating the proposed methodologies and protocols.
- ⊗ This draft plan fails to establish specified, embedded roles for the federal government, independent scientists and related experts, Indigenous peoples or concerned civil society/community representatives with respect to the development and implementation of an integrated waste strategy which would enable Indigenous peoples and other Canadians to have a right to access information, to engage in *on-going decision-making*, and to know the full risks of management and decommissioning— and *not just at the initial planning stages of this management policy*.
- ⊗ The modernized policy needs to provide precise, scheduled enforcement practices and rules. The draft plan fails to do this.
- ⊗ Radioactive waste should NOT be abandoned; policy should direct for perpetual care and scheduled monitoring. The draft plan fails to do this.
- ⊗ Government and industry must be even more open and transparent with more highly regulated management, monitoring, reporting of radioactive waste and its transportation on our roadways through our communities. The draft plan fails to do this.
- ⊗ Policy should explicitly prohibit the importation of radioactive waste from other countries for disposal in Canada, with no exceptions. Such unnecessary increase in the amount of radioactive wastes present in Canada must be avoided at all times. The draft plan fails to do this.
- ⊗ Plutonium extraction (by reprocessing or pyro-processing) from radioactive fuel waste must continue to be prohibited, due to long-recognized environmental, security and proliferation issues. Such processing is an experimental, unproven technology, and therefore puts Canadians at further risk. This is not compatible with the government's stated core policy of protecting the *Safety of People and the Environment*, and specifically breaks a number of international agreements designed to protect world citizens from experimentation, that Canada has signed. The draft plan fails to do this. (See next point.)
- ⊗ As a party to the following international human rights treaties, conventions and covenants, by potentially allowing the use of unproven pyro-processing of fuel wastes, and by other potentially insufficient, unproven and dangerous waste management and decommissioning processes, the government would not be carrying out its responsibility to protect its citizens (and environments) from becoming unknowing subjects in what would amount to experimentation – and which has the strong potential to expose them unduly to unnecessary releases of ionizing radiation into its water, air, and food supply: The United Nations Universal Declaration of Human Rights; The United Nations International Covenant on Civil and Political Rights; The United Nations International Covenant on Economic, Social, and Cultural

Rights; The United Nations Convention on the Prevention and Punishment of the Crime of Genocide; The Nuremberg Principles; The United Nations Convention on the Rights of a Child; and The Helsinki Agreement. We challenge the authority of the federal government and the Canadian Nuclear Safety Commission (CNSC) to thereby cause unknown rates of current and future fatal and other cancers, genetic effects, numerous illnesses and damage to the overall human and fauna populations, and the flora of all potentially affected regions.

- ⊖ The draft policy indicates that the reprocessing of radioactive wastes would simply be subject to “policy approval” -- an incredibly lax process omitting a full environmental review by all concerned parties, rather than affirming longstanding Canadian policy of disallowing reprocessing. This is particularly objectionable.
- ⊖ The draft policy does not direct a national standard for the specific characterization of radioactive wastes and maintenance of a verified inventory.
- ⊖ Lacks clear and specific objectives as repeatedly requested by many previous contributors to the public engagement process, and instead merely offers policy guidelines for government.
- ⊖ The new policy should include specific provisions for when and how its effectiveness and achievement of its goals will be evaluated.

These are our comments on the most important failures and weaknesses of the draft policy proposal. Thanks in advance for including our complete submission on the public record of all feedback received.

^[i] Bates, Albert K. The Karma of Kerma: Nuclear Wastes and Natural Rights, *Journal of Environmental Law and Litigation* Univ. of Oregon School of Law Vol 9, page 3 February 1988 & 1995

^[ii] Gofman, J.W., *Radiation and Human Health* (San Francisco: Sierra Club Books, 1981), 23.

^[iii] Bates, Id., 1.

^[iv] Parker, H.M. Instrumentation and Radiation Protection, *Health Physics* 38:957, 970, June 1980

^[v] Honicker, Petition for Emergency and Remedial Action Before the Nuclear Regulatory Commission (Petition), pp. 8-9 (1978); Mancuso, TY., et al., Radiation exposures of Hanford workers dying from cancer and other causes, *Health Physics* 33:369 (1977); Kneale, G.W., et al. Re-analysis of data relating to the Hanford study of the cancer risks of radiation workers, *Late Biological Effects of Ionizing Radiation*, Vol.1 (International Atomic Energy Agency; Vienna, 1978); Kneale, et al. Hanford Radiation Study III: a cohort study of the cancer risks from radiation to workers at Hanford, *Br.]Ind.Med.* 38:156 (1981)7 Advisory Committee on the Biological Effects of Ionizing Radiation (BEIR 111), *The Effects on Populations of Exposure to Low-Levels of Ionizing Radiation: 1980* (Academy Press; Washington, 1981); and Stewart, A.M., Delayed effects of A-bomb radiation: a review of recent mortality rates and risk estimates for five-year survivors, *Br.]Epid. and Com.Health*, 36:80 (1982).

^[vi] Petition; ibidat 17; and see, Bross, I.D.J., and N. Natarajan, Cumulative genetic damage in children exposed to preconception and intrauterine radiation, *Investig. Radiology* 15:52 (1980).

^[vii] Petition at 150; and see, Bertell, R., Radiation Exposure and Human Species Survival, *Envir. Health Rev.* (Canadian Inst. of Public Health Inspectors, June 1981), 43-52 (App. Br. at 12).