

Cuttler & Associates Inc.

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Nuclear Waste Management Organization
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Second Submission of Comments to NWMO Regarding Discussion Document 1

The vision and mission of the NWMO imply two fundamental assumptions:

1. that used CANDU fuel is waste, and
2. that chronic radiation from potential releases of fission products is harmful to people and non-human biota, that is, the environment.

These assumptions are not valid as explained below.

My first submission, dated January 28, 2004, pointed out that only ~1% of the fission energy in natural uranium fuel is extracted in CANDU reactors; nearly all of the remaining 99% can be extracted using advanced nuclear reactors, which future generations of Canadians will build. The assumption that used CANDU fuel is waste would be valid only if Canadians decided to abandon the nuclear energy option (as advocated by the anti-nuclear activists). Such a decision would be unwise in view of concerns about availability of long-term supplies of natural gas (methane) and petroleum, and concerns about the polluting emissions from coal-fired power plants. The notion that windmills and solar panels can supply our electricity needs has not been demonstrated. To rely on such power plants would require the use of large areas of land and large energy storage facilities, which would be costly and would impact the environment severely.

Contrary to common knowledge, low doses of radiation increase the activity of damage-control biosystems and are, therefore, beneficial to all living organisms. This was identified in my earlier submission. I now enclose a paper from the 14th Pacific Basin Nuclear Conference that provides the radiobiological basis of low dose irradiation in prevention and therapy of cancer.^[1] Also enclosed is a publication,^[2] which appeared recently in the Journal of American Physicians and Surgeons – available at <http://www.jpands.org/vol9no1/chen.pdf>. It presents evidence, which confirms the more definitive information referenced, that chronic radiation reduces the incidences of both cancer mortality and congenital malformations. There are many areas on the Earth's surface where the ambient dose rate of natural radiation is much higher – even orders of magnitude higher – than the world average of 2.4 mSv/year, without evidence of any harm to people or the environment.^[3, 4] A good example is the City of Ramsar (Figure 1) where high concentrations of radium salts, dissolved in water springs, provide local radiation dose rates ranging up to 700 mSv/year.^[4] Spas have been established for residents and vacationers.^[5]

I urge the NWMO to include this scientific information in its future publications in order to meet its values objective of integrity, excellence, engagement and accountability. Communication of accurate information on the energy content of used fuel and the health effects of radiation to the public is essential, to achieve the NWMO mission to develop a used fuel management approach that is socially acceptable, technically sound, environmentally responsible and economically feasible.

I have enclosed Reference 6, with the author's permission. The paper describes the ineffective American efforts, since the early 1970s, to manage its used nuclear fuel. On February 22, 2004, the author stated: "It struck me on rereading the paper that, although it was written two decades and a few billion research dollars ago, nothing much has changed and we have no more reason for optimism now than we did then."

It is clear that the problem is fundamentally political in nature; the solution will have to come from the public through the political process. Consequently, it is very important that the NWMO provide credible information to the Canadian public and its politicians about the true nature of the problem, so that we may reach informed decisions on the best approach.

My recommendation is for aboveground storage of used CANDU fuel – to be recycled in advanced nuclear reactors by future generations of Canadians when economically viable.

Sincerely,

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 President
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Enclosures: References 1, 2 and 6

References:

1. Pollycove M. "Radiobiological Basis of Low Dose Irradiation in Prevention and Therapy of Cancer". 14th Pacific Basin Nuclear Conference, Hawaii, March 21-25, 2004
2. Chen WL, Luan YC, Shieh MC, et al. "Is Chronic Radiation an Effective Prophylaxis Against Cancer?" *J Am Phys Surg* 9(1):6-10 (2004). Available at: <http://www.jpands.org/vol9no1/chen.pdf>
3. Rockwell T. *Creating the New World – Stories & Images from the Dawn of the Atomic Age*. 1st Books Library, Bloomington, IN, USA (2003). ISBN: 1-4107-0333-9
4. *Sources and Effects of Ionizing Radiation*. UNSCEAR, New York (1993)
5. Ghiassi-Nejad M, Zakeri F, Assaei RG, Kariminia A. "Long-term Immune and Cytogenetic Effects of High Level Natural Irradiation on Ramsar Inhabitants in Iran". *J Environ Radioact* 2004;74(1-3):107-116

6. Cohen JJ. "Nuclear Waste Disposal: the Nature of the Problem". *Fifteenth International Conference on the Unity of the Sciences*. Washington DC. November 27-30, 1986

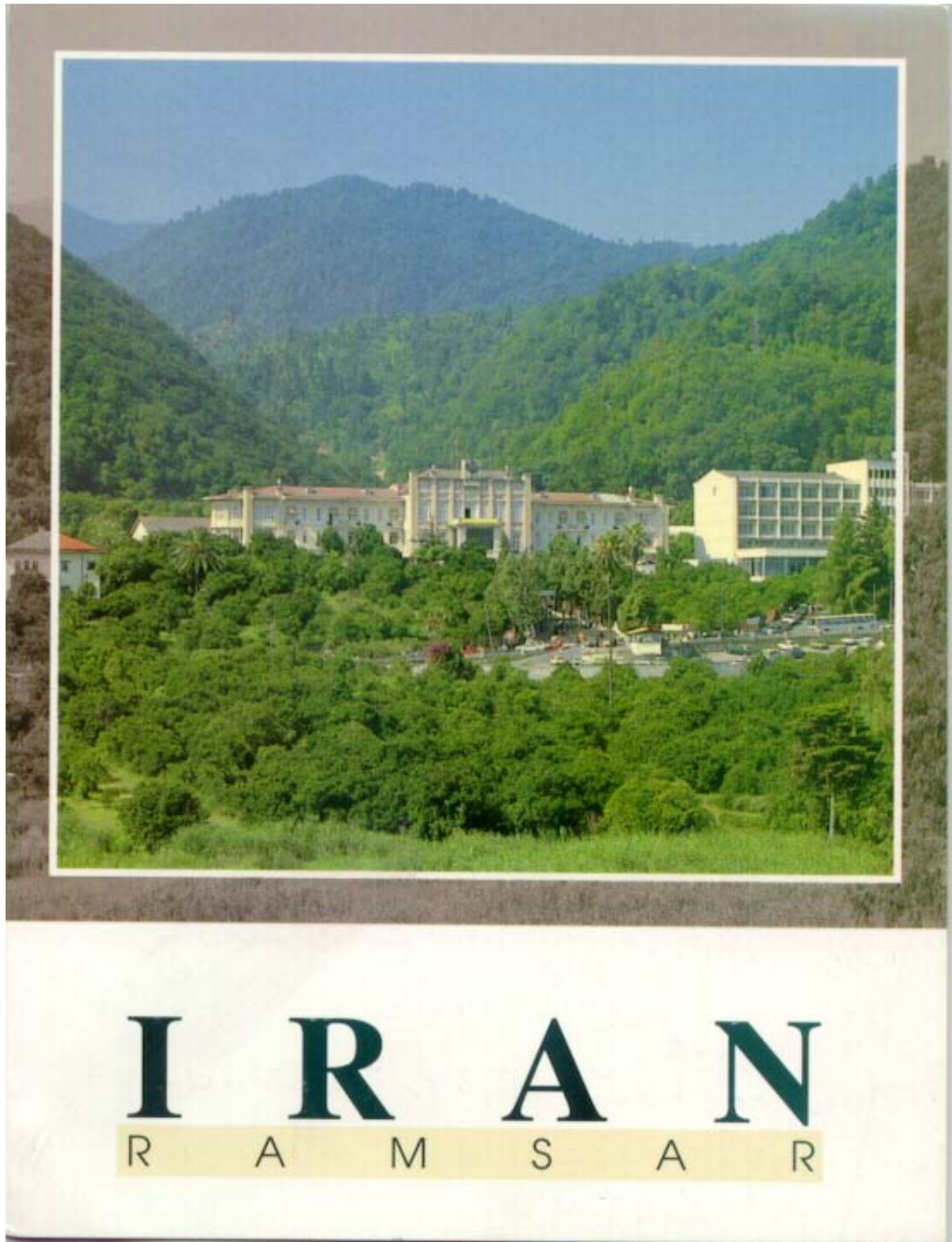


Figure 1. Vacation resort and spa in the City of Ramsar, Iran