

Durham Nuclear Awareness

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Ms. Debbie Farr
Manager,
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Electricity Policy Branch, Policy Division
Ontario Ministry of Environment and Energy
135 St. Clair Ave. West, 6th floor
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Re: Provincial Nuclear Emergency Plan

Dear Ms. Farr,

I'm writing to provide you with comments on the Royal Society of Canada and Canadian Academy of Engineering (RSC/CAE) report to the Ministry of Environment and Energy (MoEE) dated November 1996 on nuclear emergency planning matters. As you know, Durham Nuclear Awareness (DNA) has been involved in nuclear emergency planning issues since the group was formed in 1986. DNA is a citizens environment group dedicated to raising awareness about nuclear issues in Durham Region. DNA prepared a detailed submission on emergency planning for the Ontario Nuclear Safety Review in 1987, and has been suggesting major improvements to the plans on an ongoing basis.

DNA has reviewed the RSC/CAE report and finds it to be an inadequate analysis of the matters under review. This could be due in part to the very limited scope of the terms of reference for the report. We believe that the topics have not been reviewed with the necessary rigour, and we question the validity of the RSC/CAE report findings and recommendations.

The RSC/CAE report states that "Since the time of the WG-8 Report, modifications to operating conditions and design of safety features have been made that reduce the expected radioactive emissions in an accident." (page 8). This statement is not substantiated or referenced. The RSC/CAE report credits the containment system with being able to hold contamination for 48 hours. "The holdup time used in very conservatively based estimates of emissions to the environment should now be at least 48 hours instead of 24 hours in most accidents." (page 8). Again, this statement is not substantiated or referenced. In addition, the report credits the presumed availability of the Emergency Core Coolant Injection (ECCI) safety system, and goes on to state: "All these are factors that reduce possible releases of radioactivity and must be taken into account." (page 8).

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DNA believes it is inappropriate to assume that the containment system and the other safety systems such as the ECCI will be functioning properly during a severe accident. The unavailability record of special safety systems at CANDU reactors proves that these systems are not 100% reliable.

The report offers no credible argument for not pre-distributing stable iodine. The reviewers say that a delay in taking stable iodine is quite likely, so it will be ineffective anyway; that containment will work, so emission will be controlled and if containment failed: "KI tablets would be even less useful because they would likely be administered late". (page 28) Obviously, if people had stable iodine available in their homes and workplaces, they would be able to take it when needed to prevent exposure. The report fails to address the situation in New Brunswick surrounding the Point LePreau Nuclear Station. Stable iodine is pre-distributed with the emergency measures information kit, which is periodically updated. If New Brunswick can pre-distribute stable iodine, why can't Ontario?

The reviewers recommend against pre-distribution of KI because they claim that radioactive iodine is a small part of the risk from exposure to fallout from an accident. However, according to the World Health Organization:¹

"In any accident to an operating nuclear reactor which involves a release to the environment of fission products, the isotopes of iodine will be a prominent, if transitory, cause of radiation exposure. Initially, exposure will be by inhalation of the radioactive cloud, to be followed, particularly if rainfall occurred at the time of passage of the cloud, by ingestion as the radioactive iodine enters the foodchain. The affinity of iodine for the thyroid gland and the extent to which it is concentrated by the small gland results in very high doses to the thyroid." p. 15, 16.

"The infant thyroid is particularly at risk for two reasons, namely that for any given environmental exposure (radioactive iodine in the air or food chain), the dose to the infant thyroid is likely to be up to one order of magnitude greater than to adults with the same exposure, because of the differences in mass of the infant thyroid (about 1.8g at six months) compared to that of the adult (about 20g). In addition the young thyroid is up to an order of magnitude more sensitive to the cancer inducing effects of radiation than the adult." p. 17.

1. Dr. K.F. Baverstock, "WHO Guidelines on the Use of Stable Iodine After Nuclear Accidents" in *The Implementation of Short-term Countermeasures After a Nuclear Accident*, Proceedings of a Nuclear Energy Agency (NEA) Workshop, Stockholm, Sweden, 1-3 June 1994, Organization for Economic Co-operation and Development (OECD), 1995, p. 15-24.

The findings of the RSC/CAE report regarding stable iodine use are not consistent with other recent reviews of the issue. For example, the Group of Medical Advisors to the Atomic Energy Control Board noted: "Provided that stable iodine is ingested just before exposure to radioiodine, it provides virtually complete protection for the thyroid."²

A recent international conference sponsored by the OECD Nuclear Energy Agency *The Implementation of Short-term Countermeasures After a Nuclear Accident* Stockholm, June 1994, concluded:

"The medical basis for the use of stable iodine is firm... Stable iodine is most effective at reducing thyroid exposure from the inhalation of radioiodine when taken before the arrival of any airborne radioiodine... Questions remain as to the methods for the distribution of stable iodine to the population at risk in a timely manner, and as to the integration of these methods into emergency planning."³

The reviewers have failed to consider the very high population density around the nuclear stations in Durham Region. Given the likely difficulty of evacuating in a timely manner, the only reasonable way to proceed in our view is to provide all residents and workplaces in the primary zone with stable iodine. As an absolute minimum, DNA believes that authorities should provide residents and representatives of workplaces with the opportunity to obtain KI tablets in advance from the existing stockpile for storage in homes and workplaces.

The reviewers do note that the contiguous zone (3 km. radius) should have a relatively low population density, and preferably no permanent residents: "High population density and possible bad weather could make evacuation difficult and this zone should have a small population and preferably be restricted to parkland or industrial park use." (page 31). The reviewers don't address how this might be achieved in Durham Region, where large residential developments exist inside the contiguous zone around Pickering. This recommendation has important implications for property values, and for population density and zoning by-laws within Durham Region.

The RSC/CAE reviewers failed to adequately address the issue of the appropriate primary zone size: "In comparison to the wide range of consequences from a severe accident, 10 and 13 km are essentially the same number" (p. 1); and "the use of

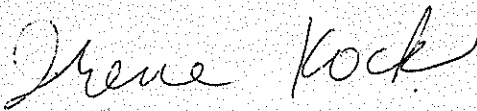
2. AECB Group of Medical Advisors, "Guidelines on the use of stable iodine as a prophylactic measure during nuclear emergencies", GMA-9, AECB INFO-0587, September 1995, p. 13.

3. *The Implementation of Short-term Countermeasures After a Nuclear Accident*, Proceedings of a Nuclear Energy Agency (NEA) Workshop, Stockholm, Sweden, 1-3 June 1994, Organization for Economic Co-operation and Development (OECD), 1995, p. 302-304.

10 km implies a reasoned generality while 13 km implies a precision which does not exist" (p. 32). It appears that no consideration was given to the present population distribution in the southern part of Durham Region, and the fact that the existing 10 km zone around Darlington cuts through urban Oshawa, and that the Town of Whitby, directly down-wind from Pickering, is excluded from the evacuation planning process. DNA believes that the ideal primary zone size is a 30 km. radius zone around each nuclear facility. As a minimum, it is essential that all residents in the urban areas between Pickering and Darlington be provided with detailed information about the nuclear emergency plans.

While I understand that the recommendations in the RSC/CAE report have been adopted by the government and will be incorporated into draft 2 of the new Master Plan, I would nevertheless appreciate hearing from you about the concerns we have raised in relation to this report. Finally, I would appreciate an explanation of why MoEE is the lead agency for this particular review, given that emergency measures are the mandate of the Ministry of the Solicitor General and Correctional Services through Emergency Measures Ontario (EMO). I look forward to your reply.

Sincerely,



Irene Kock

c.c. Ifti Ahmed, Emergency Measures Ontario
Hon. Robert Runciman, Solicitor General
Nizar Jiwan, Ministry of Environment and Energy
Hon. Norm Sterling, Minister of Environment and Energy
Dalton McGuinty, Liberal Party Leader
Howard Hampton, NDP Leader
Ivan Ciuciura, Director, Durham Emergency Measures Office
James Witty, Chairman, Regional Municipality of Durham
Pickering / Ontario Hydro Liaison Committee