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HEALTH SERVICES
REGION OF YORK
NEWMARKET

K. Helena Jaczek, M.D.
Commissioner of Health Services and
Medical Officer of Health
The Regional Municipality of York
17250 Yonge Street
Toronto, Ontario L3Y 6Z1

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Dear Dr. Jaczek:

Thank you for your correspondence of July 7, 2005, concerning electro-magnetic fields (EMFs). I would like to take this opportunity to offer some further clarifications of Health Canada's understanding of the Federal Provincial Territorial Radiation Protection Committee's (FPTRPC) supporting documents and recommendations.

While Health Canada acknowledges that meta-analyses have found statistically significant associations, their statistical power is limited by small sample sizes in the high exposure group. In addition, the heterogeneity of the different designs (in particular exposure assessments) of the studies making up the pooled analyses weakens the significance of the findings. Therefore, use of epidemiological data as a sole factor in risk assessment is not considered scientifically justifiable. Your comment about the oversimplification regarding prevalence of elevated magnetic field readings is acknowledged. In any model developed for risk assessment there will be generalizations made and hopefully, they will not be dangerous as you suggest. Your point provides further support for the need of the electrical generating and transmission industry to characterize the fields around any existing or proposed installation. This characterization would then allow us to determine if the model is a good one or not and adjust accordingly. This characterization should be one of the items discussed in the joint consultations that would take place prior to the approval of any project to upgrade or add to the power transmission grid.

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With regard to recent genotoxic studies, the discussion of a linear dose-response for magnetic fields was not meant to imply that this relationship is well established. On the contrary, a linear dose-response for magnetic fields, and by inference, a genotoxic mode of action, has not been established. In fact, if only the studies found acceptable by the authors are considered, then the only data points on the dose-response curve that exist would be at the highest levels. Not enough data exists at lower levels, in the opinion of the authors, to conclude whether the curve is linear or non-linear and therefore whether the mode of action has a threshold or not. However, if it is assumed that the curve is linear, the authors go on to say that an effective threshold exists because the response may be buried in the so-called "noise" at environmentally relevant levels. In addition, the conclusion that all assays are not sensitive enough to detect a response at lower levels may be unfounded since many of these assays are accepted risk management tools for other environmental carcinogens besides magnetic fields.

There are two points of clarification to make in regard to your understanding that the authors purposefully limited their review to genotoxic studies with large doses. Firstly, based on communication with the authors, both genotoxic and epigenetic studies were reviewed without prejudice. Secondly, it was found in the review of the studies that only studies carried out at high levels produced significant responses. Lower level studies either failed the authors' criteria for quality or produced insignificant or no response. The authors did not, *a-priori*, reject those studies based on the exposure levels used.

Given the scientific uncertainty surrounding the possible association between magnetic fields and childhood cancer, Health Canada has chosen to take a precautionary approach, which includes such activities as: public communications, monitoring scientific developments, carrying out in-house research and participating in the World Health Organization (WHO) International EMF Project. The Department believes that these activities constitute moderate measures under the framework of the precautionary principle. We also encourage any voluntary measures and open dialogue between interested parties to resolve differences. The Tsawwassen British Columbia case you have pointed out in your letter is a good example of such a dialogue achieving a positive outcome. We hope this type of dialogue can be engaged between the citizens of York Region, the power suppliers and the power regulatory authority.

Health Canada's interpretation of the precautionary principle in situations where the risk is highly uncertain as to causality is that low-cost or no-cost measures are appropriate actions to take. It is yet to be determined whether the measures suggested by the WHO in their draft documentation (i.e. engineering and planning) are low-cost or not. It appears that exposure reduction strategies and their associated costs will be project specific and not necessarily easily related, or perhaps even relevant to another project. Clearly the costs are not easily assessed without the close cooperation of the electrical supply and regulatory sectors. This again calls for a dialogue between stakeholders and must be evaluated on a case-by-case basis as to whether exposures can be significantly reduced. Health Canada has always, and will continue, to fully endorse this process.

Again, thank you for writing on this important issue. I hope you find this information helpful.

Sincerely,

A handwritten signature in cursive script, reading "Carolyn Bennett". The signature is written in dark ink and is positioned above the printed name.

Carolyn Bennett, P.C., M.P., M.D.