

Minister of State
(Public Health)



Ministre d'État
(Santé publique)

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Commissioner of Health Services
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**HEALTH SERVICES
REGION OF YORK
NEWMARKET**

Dear Dr. Jaczek:

Thank you for your correspondence of November 23, 2004, regarding power-frequency electric and magnetic fields (EMFs) from high-voltage transmission lines, and their possible connection to adverse health effects. I regret the delay in responding.

This issue has also been a matter of concern at Health Canada for a number of years. Public concerns over the possibility that exposure to EMFs may present a health effect have arisen as a result of the controversial and contradictory findings in scientific research, especially from epidemiological studies (statistically based studies of disease patterns). Throughout the world, a large number of research papers and overview reports have been produced along with numerous conferences over the past 30 years. Unfortunately, the findings remain controversial and contradictory and seem only to exasperate rather than resolve public concerns. The conclusion, which appears to have been adopted by the majority of experts in the field, is that while there are epidemiological studies that indicate an association between EMFs and certain types of cancer, other epidemiological studies and the bulk of laboratory studies do not substantiate this association. There is insufficient data to determine whether or not a cause and effect relationship exists.

This conclusion is reflected in a number of public information documents, including Health Canada's IYH document on "Electric and Magnetic Fields at Extremely Low Frequencies," which is posted on the Health Canada Web site at

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www.hc-sc.gc.ca/english/iyh/environment/magnetic.html, the World Health Organization fact sheets, which can be found at www.who.int/docstore/peh-emf/publications/facts_press/efact/efs205.html and www.who.int/docstore/peh-emf/publications/facts_press/efact/efs263.html, the U.K. National Radiological Protection Board information, which can be found at www.nrpb.org/radiation_topics/emf/index.htm, and the Australian Radiation Protection and Nuclear Safety Agency fact sheets, which can be found at www.arpansa.gov.au/rad_health.htm.

Scientists at Health Canada continually monitor scientific developments on reported biological effects associated with exposure to EMFs, conduct laboratory research, and have actively participated in the International EMFs Project coordinated by the World Health Organization. This project was initiated to address the health issues associated with exposure to static and time-varying EMFs in the frequency range 0-300 gigahertz, including power-frequency fields such as those emitted by power lines and household electrical appliances.

For your information, scientists at Health Canada have conducted laboratory research on the biological effects of EMFs since the late 1980s. The abstracts of our recent publications in this area can be found at www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12524673, and at www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11719097.

As there is a lack of hard scientific evidence linking EMFs exposure to adverse health effects, Health Canada has no guidelines regarding the exposure of the general public to EMFs from electrical installations. Exposure guidelines have been suggested by the International Committee on Non-Ionizing Radiation Protection www.icnirp.de/pubEMF.htm and the Institute of Electrical and Electronics Engineers standards.ieee.org/catalog/olis/emc.html. However, these guidelines are not based on a consideration of risks related to cancer or other adverse health problems, since such risks have not been established. Rather, the point of the guidelines is to make sure that the electric currents or the electric fields in the body caused by exposure to EMFs are not stronger than the ones produced naturally in the body in order to prevent effects on nervous system functions. For the most part, EMFs exposures in Canadian homes, offices and most other work sites are far below these guidelines.

Based on the study of power frequency EMFs that exist in Canada (<http://ceatech.ca/pdetails.php?id=5145>), EMF levels in Canadian homes, regardless of their locations from high voltage power lines, are far below the maximum exposure levels recommended by the International Committee on Non-Ionizing Radiation Protection and the Institute of Electrical and Electronics Engineers.

Provincial governments are responsible for regulating the construction of high-voltage transmission lines. In Ontario, the responsible organization is the Ontario Energy Board. Health Canada's role in this area is to participate in the environmental assessment process by providing expert information or knowledge if the *Canadian Environmental Assessment Act* is triggered.

To my knowledge, WHO has published only one official document that addresses the issue of prudent avoidance. This document, titled "Electromagnetic Fields and Public Health: Cautionary Policies (WHO Backgrounder, March 2000), may be found at the following website:

www.who.int/docstore/peh-emf/publications/facts_press/EMF-Precaution.htm

In this backgrounder, it is made clear that "prudent avoidance prescribes taking low-cost measures to reduce exposure, in the absence of any scientifically justifiable expectation that the measures would reduce risk. Such measures are generally framed in terms of voluntary recommendations rather than in terms of fixed limits or rules."

Another WHO document titled "Framework to Develop Precautionary Measures in Areas of Scientific Uncertainty" is still a draft, which was widely distributed for review and comment. I am not aware of recommended guidelines and standards for the siting of electrical power line corridors.

Consistent with the WHO backgrounder, WHO's recent opinion on cautionary policies (precautionary principle, prudent avoidance, ALARA) is that if precautionary measures are introduced to reduce EMF exposure levels, it is recommended that they be made voluntary.

To reflect the WHO's opinion, the power line regulator (Ontario Energy Board), electrical utilities (Hydro One) and concerned citizen groups should be encouraged to discuss such that a mutually agreeable resolution on power line related issues could be achieved. It may also be helpful to investigate all possible ways, including designs, that could minimize EMF exposures due to the installation of new power lines or the planned expansion of existing power lines.

As Health Canada is part of the Federal-Provincial-Territorial Radiation Protection Committee (FPTRPC), our policies are in line with their guiding principles for radiation protection. For your information, FPTRPC has recently released three EMF documents:

- (i) Position Statement for the General Public on the Health Effects of Power-Frequency (60 Hz) Electric and Magnetic Fields
- (ii) Response Statement to the Issue of Power-Frequency Magnetic Fields and Childhood leukemia
- (iii) Health Effects and Exposure Guidelines Related to Extremely Low Frequency Electric and Magnetic Fields - An Overview

The electronic copy of these documents is available at: www.bccdc.org/content.php?item=196

I trust that the above information will prove to be helpful.

Again, thank you for writing on this issue.

Sincerely,



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