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Environmental and Workplace Health

Federal-Provincial-Territorial Radiation Protection Committee

Response Statement to Public Concerns Regarding Electric and Magnetic Fields (EMFs) from Electrical Power Transmission and Distribution Lines

Issued on November 8, 2008

The Federal-Provincial- Territorial Radiation Protection Committee (FPTRPC) is aware of public concerns about possible health risks from exposure to EMFs in living and school environments, arising from electrical power lines located nearby. The FPTRPC developed both a Position Statement^{*} on the health effects of EMFs and a Response Statement[†] concerning childhood leukemia, to help address these issues.

Public concerns appear to arise from periodic media reports and from dubious Internet websites which contain inaccurate, unsubstantiated, controversial or contradictory statements regarding EMF-health issues. Concerns may result in public opposition to the proposed construction of new high-voltage power lines or upgrades of existing ones. Opposition to such proposals is often influenced by factors other than health issues (e.g. aesthetics). In addition, some individuals and organizations are promoting precaution by advising the public to limit their time spent near power lines or to avoid being near lines.

Like household electrical appliances, power lines emit power-frequency EMFs. The intensity of the EMFs from such lines depends on wiring and tower configurations, as well as the line voltage, the current being carried and distance from the lines. EMFs from power lines and electrical appliances diminish rapidly with increasing distance. For magnetic fields, the contribution from power lines to the levels in most homes and other buildings is very small to negligible when compared to the fields in close proximity to operating electrical appliances and building wiring.

During the past three decades, a large number of scientific studies have been carried out throughout the world. These studies include laboratory investigations with biological organisms, and epidemiological analyses that examine the possible link between ill health and EMF exposure. The conclusion by the majority of experts in this subject area is that, while some epidemiological studies suggest a weak statistical link between EMFs and certain types of cancer, other epidemiological studies and the bulk of laboratory studies do not substantiate this link. Based on the weak epidemiological evidence from childhood leukaemia studies, the International Agency for Research on Cancer has classified power-frequency magnetic fields as "possibly carcinogenic to humans" (the same classification applied to, for example, coffee and pickled vegetables).

International EMF exposure guidelines based on established findings have been developed in order to protect against immediate (acute) effects on nervous system functions. Science-based guidelines for protection against possible health effects such as cancer that may result from long-term (chronic) exposure have not been established. Given the lack of convincing scientific evidence on such effects, there are no national guidelines in Canada limiting exposure of the public to power-frequency EMFs.

Public concern over the EMF-health issues has led to recent demands for power line regulators to apply the Precautionary Principle (PP) to proposed construction of new high-voltage power lines or to the upgrade of existing ones. PP is a public policy approach for risk management of possible but unproven adverse health effects. The extent of PP approaches range from monitoring scientific

developments and providing information to stronger measures such as action for lowering exposures. Any precautionary measures to be taken should be proportional to the level of risk and its associated uncertainty, the severity of the health outcome and the level of societal benefit. In the context of power-frequency EMFs, health risks to the public from such exposures have not been established; therefore, it is the opinion of FPTRPC that any precautionary measures applied to power lines should favour low cost or no cost options.

Most power lines and electrical facilities in Canada fall within provincial jurisdictions. The federal government involvement is for authorization of the construction and operation of international power lines and designated inter-provincial lines coming under federal jurisdiction. On request, the federal government participates in environmental assessment reviews for the proposed construction of new high-voltage power lines or upgrade of existing ones by providing expert information or knowledge. The possible effects of EMFs on human health are one of several environmental issues considered when conducting these reviews.

In summary, it is the opinion of the Federal-Provincial-Territorial Radiation Protection Committee that there is insufficient scientific evidence showing exposure to EMFs from power lines can cause adverse health effects such as cancer. Therefore, a warning to the public to avoid living near or spending time in proximity to power lines is not required.

* Position Statement for the General Public on the Health Effects of Power-frequency (60 Hz) Electric and Magnetic Fields; issued by the Federal Provincial Territorial Radiation Protection Committee - January 20, 2005

† Response Statement to the Issue of Power-Frequency Magnetic Fields and Childhood Leukemia - Issued on January 20, 2005.

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