Canada

Report on EMF Activities

10th International Advisory Committee on EMF

June 2005

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1. Research activities

Health Canada

- Health Canada carries out its own in-house studies to assess the biological effects of power-frequency (60 Hz) fields and radiofrequency (RF) fields at 1.9 GHz (North American PCS frequency). Recent activities include:

- Assessment of the effect of acute power-frequency magnetic fields on the formation of primary DNA damage in the immature mouse, adult mouse and adult rat brain. The animals will be exposed to 0, 0.1, 1.0 and 2.0 mT for 2 h, and then sacrificed 0, 2, or 4 h later, using the alkaline comet assay to assess for DNA damage in whole brain and cerebellum homogenates. This work will act as a pseudo-replication study of that of Lai and Singh et al. (1995, 1996) and Svedenstal et al. (1998). Experiments are completed and a manuscript will be submitted for publication early this summer.
- Experiments have been conducted to assess for gene expression changes in human cells in vitro. A poster on "Microarray gene expression profiling of a human glioblastoma cell line exposed *in vitro* to 1.9 GHz pulse-modulated radiofrequency fields" will be presented at the Radiation Research Society Annual Meeting, Denver, CO, October 16-19, 2005.
- Experiments are currently underway on a variety of cell lines to assess the effect of 1.9 GHz pulse-modulated radiofrequency fields on heat-shock protein and proto-oncogene expression using RT-PCR.
- Measurements of ground level emissions near mobile phone base stations in Ottawa and Vancouver, using a low-cost measurement system developed at Health Canada, have been conducted. Similar RF emission surveys are being carried out in Bangkok by the Thai Ministry of Public Health (MOPH) using this measurement system (see photos on the next page).

MOPH's staff scientist is installing a low-cost, fully integrated and portable system (developed by Health Canada) for mapping RF fields (power density) around mobile phone base stations.

For more information, contact Dr. Art Thansandote at <art_thansandote@hc-sc.gc.ca>.

University of Ottawa

- University of Ottawa is collaborating with the International Agency for Research on Cancer (IARC) on the large-scale epidemiological study on mobile phones. For more information, contact Dr. Daniel Krewski at <dkrewski@uottawa.ca>.

Hydro Quebec

- Hydro Quebec is involved in two EMF studies looking at:

  - Psycho-physiological effects of weak DC and AC electric fields to determine whether there is a subgroup of population that is more sensitive to electric shock. This study was carried out by a group of researchers at Université de Montréal, Canada. Sixteen subjects participated in the experiments and none detected the local DC fields. In contrast, some subjects were sensitive to local AC electric fields. This study is completed and some results will be presented at the 27th annual meeting of the Bioelectromagnetics Society, June 20-24, 2005, Dublin, Ireland.
  - Neurophysiological effects of ELF magnetic fields at 1000 μT to specify the thresholds of physiological effects on humans. This study was carried out by a group of researchers at Université Montpellier, France. Experiments were carried with utility workers in a double blind counterbalanced protocol. No magnetic field effect has been shown on kinetic tremor. This work has been submitted for publication in refereed journals.

  For more information, contact Dr. Daniel Goulet at <Goulet.Daniel@hydro.qc.ca>.

2. Standard

The following standard document, published by Industry Canada in 1999, is currently under revision. There is no specific timeframe when the revision will be completed.

- Radio Standards Specification 102 – *Evaluation Procedure for Mobile and Portable Radio Transmitters With Respect to Health Canada's Safety Code 6 for Exposure of Humans to Radio Frequency Fields*.

3. Public Concerns

- Mobile phone base stations continue to be an issue of frequent public concerns. Various factors contribute to these concerns including media reports about scientific studies linking radiofrequency electromagnetic energy from mobile handsets (not base stations) to cancer. Recent safety concerns include a new wireless technology (wireless mesh network) to be installed on hydro poles in rural communities for high-speed Internet service.
- While mobile telephones are still an issue of concern, the number of inquiries made to Health Canada is less than those related to base stations. The recent release of an update of the NRPB report on mobile phones and health initiated media attention with focus on children's use of mobile phones. Questions were raised to Health Canada as to what the Department was doing to ensure the safety of children and whether Canada should take a precautionary approach in dealing with this issue. Health Canada's position on this issue is that if users are concerned about the possible risks of mobile phone use, they may wish to reduce or eliminate their exposure.
- Power lines and ELF fields. The number of inquiries is higher in the spring when more people consider purchasing new homes/properties, many of which are near high voltage transmission lines and/or transformer boxes. Besides worrying about the safety of EMF exposures, a number of home owners are also concerned about property devaluation. A recent plan by a major electrical utility to raise the line voltage of a high voltage transmission line in a major city has been suspended temporarily for review in response to increasing concerns by residents living near the corridor edge. A similar case has been raised in another major city where concerned citizens want alternate means of rerouting the high voltage transmission line. In another case, a concerned citizen whose wife was

diagnosed with breast cancer carried out his own investigation and came to the conclusion that EMFs from power lines and transformers could be responsible. Residents within the community signed a petition to ask their provincial government to fund an independent study to determine the relationship between cancer incidence and transformers. In this area, Health Canada's position is that at present, there is no convincing scientific evidence that EMF levels in Canadian homes, regardless of locations from transmission lines or transformers, cause health problems such as cancer.

- Microwave ovens. Concerns include the rusting of interior cavities that can cause holes and radiation leakage. Health Canada's scientists have recently looked into these concerns and have concluded that holes less than about 2-cm diameter do not cause radiation leakage to exceed the Canadian regulatory limits. Recent inquiries made to Health Canada include the safety and resale of used microwave ovens.

4. **Public Information Activities**

- Health Canada is finalizing a public information document "It's Your Health (IYH)" on "Microwave ovens and food safety." It will be posted on Health Canada's website (www.hc-sc.gc.ca/english/iyh/products) very soon.
- Health Canada is finalizing a document titled "Cancer and the Environment: Ten Topics in Environmental Cancer Epidemiology in Canada." A chapter on "Electric and magnetic fields at power frequencies" is included. The document should be ready for publication soon.
- The *Report on the National Antenna Tower Policy Review* was released by the Federal Department of Industry (Industry Canada) on February 18, 2005. This report, which is available on the Industry Canada website (http://strategis.ic.gc.ca/epic/internet/insmt-gst.nsf/en/sf07012e.html), was submitted to Minister of Industry by the National Antenna Tower Review Committee following consultations with citizens, communities, companies and government agencies on improvements in the policy and siting procedures for antenna tower placement.
- The Federal Provincial Territorial Radiation Protection Committee – Canada (FPTRPC) has recently published an update of their review document entitled "Health Effects and Exposure Guidelines Related to Extremely Low Frequency (ELF) 50/60 Hz Electric and Magnetic Fields." This document along with the FPTRPC "Position Statement for the General Public on the Health Effects of Power-Frequency EMF" and the FPTRPC "Response Statement to the Issue of Power-Frequency Magnetic Fields and Childhood Leukemia" are available at < www.bccdc.org/content.php?item=196 >.

5. Other

The WHO workshop on "Guiding Public Health Policy in Areas of Scientific Uncertainty" will be held on July 11 – 13, 2005, in Ottawa, Ontario, Canada. This workshop is hosted by the Institute of Population Health, University of Ottawa, and will be attended by experts from around the world to discuss this important topic to make recommendations on the draft WHO framework on uncertainty in risk management decision-making.

Compiled by Art Thansandote
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