

Document of the opinion of expert

in the Israeli supreme court
in the matter between and the

The Opinion document of the expert:

Paul Héroux
233, de la Noue, Verdun, Québec, Canada, H3E 1R7.

Employed in the *School of Global and Population Health* at the Faculty of Medicine, McGill University, Montreal, Quebec, Canada.

I am the one who is signed on this document, was asked by the petitioners to stop 5G infrastructure installation in Israel due to health concerns and other concerns, to express my professional opinion in the questions that are debated in the matter that is discussed in court.

I give this opinion document instead of court testimony, and I declare that I know well about the criminal law about lying in court under oath in court, the essence of this opinion document when it is signed by me is as I was testifying under oath in court.

These are my degrees and certificates

B.Sc. Physics Université Laval, Québec, 1972.
M.Sc. Physics Institut National de la Recherche Scientifique-Energie,
 Université du Québec, Varennes, 1975.
 Subject: Electrodynamics and Acoustics of Corona Discharges.
Ph.D. Physics Institut National de la Recherche Scientifique-Energie,
 Université du Québec, Varennes, 1981.
 Subject: Reduction of Corona Effects of High Voltage Transmission Lines.

Courses at the Department of Biology, Université de Montréal:
Cytology, Cellular Physiology, Genetics, Animal Physiology, Ecology, Nerve and Muscle Physiology, Physiological Chemistry. With laboratory work. 1978-1982.

Faculty of Medicine, Université de Montréal:
Standard course in Hematology, including hospital work. 1982.
Scientific American Medicine's Patient Management Problems (Stanford University Medical School): all Continuing Medical Education credits obtained between 1981 and 1985.

These are my working experiences

Dr. Paul Héroux is a physicist with experience in electrical engineering (15 years), and in the health sciences (33 years). After rounding out his formation with courses in Biology and Medicine, he became interested in health problems connected with electromagnetism.

On the occasion of a project linking low-frequency electromagnetic fields to occupational cancers, he was appointed Associate Professor at McGill University's Faculty of Medicine in the Occupational Health program, of which he is the current director. He teaches Toxicology and Health Effects of Electromagnetism in this program.

He was also appointed Medical Scientist in the Department of Surgery of the Royal Victoria Hospital (currently McGill University Health Center), following his work on the pathophysiology of electrical burns. He was hired as a consultant by a number of companies, among which Nortel, Siemens, Bell Canada, and Quebec Cartier Mining.

His major research contributions include the design and construction of a dosimeter to assess exposure of humans to electromagnetic radiation, a definitive study on the pathophysiology of electrical burns, the development of a diagnostic method (Electrical Impedance Spectroscopy) based on the electrical properties of living tissues, and a computerized system based on machine vision for the assessment of the effects of combinations of medical and environmental agents on cultured human cells.

In the specific area of bioelectromagnetics, he documented Karyotype Contraction, the loss of chromosomes by hyperploid cancer cells under metabolic suppression. The same phenomenon of Karyotype Contraction was detected in all major human cancer cells exposed to extra-low-frequency electromagnetic fields. This sensitivity of cancer cells to fields increases their diversity, leading to less favorable clinical outcomes. This work led to the conclusion that electromagnetic fields suppress metabolism in mitochondria by inhibiting the transport of protons through the aqueous pore of the input channel of ATP Synthase.

Another important contribution is that in exposures of erythro-leukemia cells to present-day oxygen and electro-magnetic field variations, electromagnetic field changes proved to be more powerful than oxygen changes in increasing cell death through necrosis and apoptosis. This work led to the conclusion that electromagnetic field changes generate reactive oxygen species (ROS), impacting long-term evolution of human tissues. This results from interference of fields with the tunneling of electrons in Complexes I and III of oxidative phosphorylation. He has also designed an exposure system to assess the biological impacts of various telecommunications protocols (GSM, TDMA, etc) on living cells at microwave frequencies.

Dr. Paul Héroux currently teaches Toxicology, Hearing Conservation, and Health Effects of Electromagnetic Radiation to Occupational Health and Engineering students at McGill's Faculty of Medicine.

Since the beginning of his science career in 1976, he has followed the debate surrounding the biological effects of electromagnetism. He considers himself an expert on electro-biology, having worked on electrical burns, electromagnetic field measurements, electrical measurements methods of edema, and effects of low frequency electromagnetic fields on cancer cells and on necrosis-apoptosis.

He was retained by the State of New Hampshire to serve on a committee assessing the potential health effects of 5G radiation. His most recent work focuses on the utilization of magnetic fields against cancer in humans.

My professional opinion in the matter is that FCC (USA), ICNIRP and the World Health Organization are avoiding the truth about the cellular radiation health effects. Such effects appear starting at levels orders of magnitude lower than the thermal levels they have retained for human safety. My elaborated opinion appears in the following document; see next.

presented in the next following 9 pages.

2020-07-29

Paul
Héroux, PhD

paul.heroux@mcgill.ca



Professor of Toxicology and Health Effects of Electromagnetism
McGill University Medicine
Department of Surgery, McGill University Health Center
InVitroPlus Laboratory, Tel. (514) 398-6988

<http://www.invitroplus.mcgill.ca/>