

## **CONCERNS ABOUT ELECTROMAGNETIC RADIATION (EMR)**

### **Epidemiological studies show higher incidence of leukemia with higher levels of exposure to electromagnetic radiation**

1. "Radio-Frequency Radiation Exposure from AM Radio Transmitters and Childhood Leukemia and Brain Cancer" study done by Mina Ha et al, published in 2007 in the American Journal of Epidemiology, 166 (3): 270-279.

"Leukemia and brain cancer patients under age 15, along with controls with respiratory illnesses...were matched to cases on age, sex, and year of diagnosis (1993-1999) were selected from 14 South Korean hospitals..." (pg. 1). "...there was an increased risk of lymphocytic leukemia among children with higher levels of exposure to Radio Frequency Radiation from AM radio broadcasting than among children with lower levels of exposure" (pg. 8).

2. "Investigation of Increased Incidence in Childhood Leukemia near Radio Towers in Hawaii: Preliminary Observations" study done by G. Maskarinec et al, published in 1994 in the Journal of Pathological Toxicology Oncology, 13(1):33-37.

"Twelve children from the Waianae Coast, Hawaii were diagnosed with acute leukemia from 1979 to 1990." The authors conclude that the "clustering (of cancer) may have been a chance event, but because of its peculiar characteristics, we feel it should be noted." There was an increased risk of childhood leukemia within 2.6 km of the radio towers.

3. "Adult and Childhood Leukemia near a High-Power Radio Station in Rome, Italy" study done by Paola Michelozzi et al, published in 2002 in The American Journal of Epidemiology, June 15:155(12):1096-1103.

"The risk of childhood leukemia was higher than expected for the distance up to 6 km from the radio station...and there was a significant decline in risk with increasing distance both for male mortality...and for childhood leukemia..." (pg. 1096).

### **Children are more vulnerable to the effects of electromagnetic radiation at radio frequencies**

Children are more vulnerable than adults to electromagnetic radiation because they "continuously grow at a rapid pace. The rate of growth in children means that they undergo a much faster pace of cell division. Thus, the DNA of children is more vulnerable to the errors that occur during normal protein synthesis, and any damaged DNA is more likely to pass to more cells (through cell division as well as replication), spreading further in the body and more rapidly. Additionally, the bone in a child's head is thinner, leading to less shielding of the brain's neurons from external forces than is found in adults." Source: Overpowered, Martin Blank, PhD, 2014, p. 214.

(Also view on u tube Dr. Erica Mallery-Blythe, Physicians Health Initiative for Radiation and Environment Nov. 18, 2014. Her talk focused mainly on wireless devices.)

In Tsawwassen there are approximately 23,000 people, of which 3,267 are school aged children from kindergarten to grade 12. Therefore, approximately 14 percent of Tsawwassen residents

(children) are the most vulnerable to the effects of electromagnetic radiation. This is a conservative estimate as not included were preschoolers, toddlers and infants. This figure was compiled in the fall of 2014.

### **Biological effects research, not outdated thermal criteria to determine effects of EMR on the human body**

Dr. Martin Blank, an expert on EMR effects on the human body, "responded to the Federal Communications Commission's (FCC) request for information relevant to its current review of the thermal (tissue-heating) model of harm as the basis for radiofrequency radiation safety policies". "I have studied the effects of electromagnetic fields on biological cells for several decades..." There is "biological evidence demonstrating the unsuitability of the thermal model as a basis for safety standards of human radiofrequency exposures."

"Cellular damage occurs in response to radiofrequency exposures even in the absence of a thermal response." Dr. Martin Blank concludes in his report to the FCC that the "thermal model is both misleading and inadequate as the basis for determining radiofrequency safety standards..."

"It is an invalid basis on which to approach safety standards. The thermal model should be replaced by a more appropriate biological model..." Source: Dr. Martin Blank, FCC, Comments on Notice of Inquiry, ET Docket No. 13-84, 09-03-2013.

### **Electromagnetic radiation, DNA damage and cancer**

"The body generates stress proteins to strengthen cellular resistance to the effect of EMR. However, stress protein synthesis is really only an emergency measure that is designed to be effective in the short term. The response to repeated stimuli diminishes with repeated exposure and this could be dangerous...repeated EMF (Electromagnetic Field) stimuli result in lower production of stress proteins. This could very well be a mechanism by which repeated exposure to EMF can result in less protection and more damage to molecules like DNA. The lower protection predisposes exposed individuals to an increased risk of mutation and initiation of cancer." "The reduction in stress protein synthesis as a result of continuous exposure to electromagnetic frequencies would predispose an individual to the accumulation of DNA damage and the development of cancer."

"Living cells are continuously growing (making protein) and dividing (making DNA) and errors in synthesis occur. When the error rate is too high, the cell activates apoptosis and destroys itself. However, the small number of errors that is retained accumulates over time as mutations, some of which can affect function. It is particularly bad when mutation inactivates a tumor suppressor gene or a DNA repair gene and enables creation of an oncogene, since this accelerates the development of cancer." Source: The Cellular Stress Response: EMF-DNA Interaction, BioInitiative 2012 Supplement, Professor Martin Blank, PhD, Department of Physiology and Cellular Biophysics, College of Physicians and Surgeons, Columbia University, New York. pp. 11-13.

"The other thing about the stress protein is that this is made across the spectrum. You find it in not only non-ionizing, but up into the ionizing range. You start getting stress proteins being generated on exposure to EMF (electromagnetic field)." Dr. Martin Blank, House of Commons Committees - HESA (40-3) - Evidence - Number 034, 28 Oct. 2010