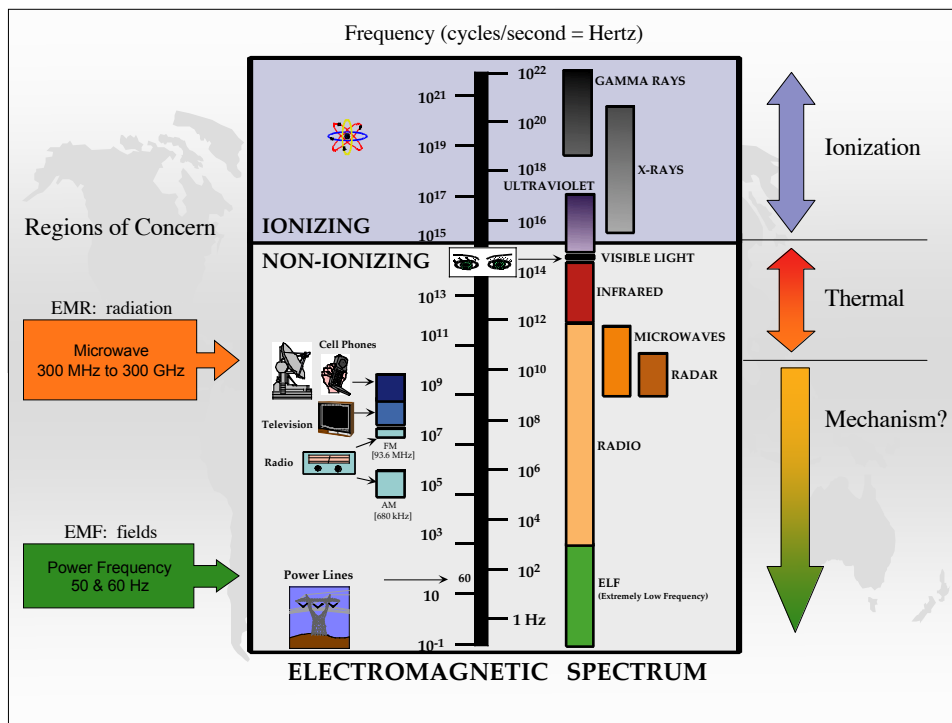


# Wired and Wireless Electromagnetic Energy: An overview of Health Concerns and a Call for Action.

*Presented to Environmental Committee, House of Commons, Ottawa, Canada, May 21, 2002.*

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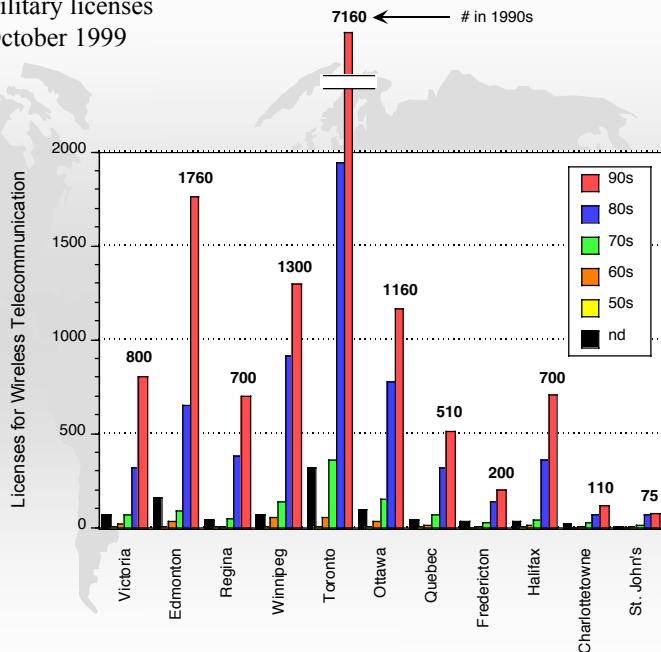
Presented to the Environmental Committee, House of Commons, Ottawa, Canada, May 22, 2002

### Summary:

#### Part 2. Wireless Electromagnetic Energy: *Electromagnetic Radiation (EMR)*

The success and widespread use of cellular phones has led to the rapid proliferation of cell phone antennas world wide. Often these antennas are erected in residential areas, near schools, on churches, on high rise office buildings within the downtown core of large urban centres with little regard for exposure of the surrounding population. Exposure guidelines in various countries range from **0.001 to 10,000 microwatts/cm<sup>2</sup>** and Health Canada's Safety Code 6 guidelines are among the highest in the world along with the United States and Great Britain. Furthermore, antenna sites are seldom tested by Health Canada or Industry Canada, the agency responsible for regulating the telecommunication industry. Multiple antennas often appear on towers with little regard for their combined radiation patterns. The City of Toronto's attempt to reduce the current Canadian guideline to **1/100** of its present level has been unsuccessful. *Biological effects occur below the Canadian Safety Code 6 Guidelines, hence these guidelines need to be reassessed.* Also, *the area surrounding cell phone towers with multiple antennas need to be properly monitored, and research on the biological effects of these towers and cell phones needs to be supported.* **Currently we are conducting a human experiment on a massive scale by exposing a large population worldwide to microwave radiation without understanding the long-term biological and health consequences.**

All but military licenses  
as of October 1999



## Transmission Antennas: *Toronto Public Health*

### Good News: New Antennas

"A request that applicants who wish to install new, replacement or modified antennas demonstrate that radio frequency exposures in the areas where people other than telecommunications workers would normally use will be at least **100 times lower than** those currently recommended by **Safety Code 6**."

### Bad News: Existing Antennas

"In situations where **residents express concern** over an existing base cellular telephone antenna, the **owner and/or operator** of the facility be requested to **monitor** levels of RF fields around the antenna and provide this information to the affected community and the Telecommunications Steering Committee."

Ronald Macfarlane, *Health Concerns of Radio Frequency Fields near Base Telephone Transmission Towers*. Toronto Public Health, Health Promotion and Environmental Protection Office, November 1999.

## Cell Tower Siting: Great Britain

### •Belfast City Council

- Ratified decision of its Development Committee (Aug 18, 1999) that **no transmitter** masts s/b permitted on any **Council Property**, due to unknown risk and substantial public concern.

### •Wyre Borough Council, Lancashire

- site of telecommunication tower **190 m** from primary **school** and **40 m** from **houses unsuitable**

### •Scotland

- Planning Authorities adopted "**Precautionary Policy**" due to "perceived inadequate official advice from Government Departments"

### •England & Wales

- Local Government Association (LGA) advising member authorities to adopt "**Precautionary Approach**"
- **Decision making process** based on waiting for "conclusive scientific evidence" before acting is potentially **flawed**

## Cell Tower Siting: Europe

### •Germany

- telecommunication mast erected,
- adverse health and decreased milk yield cows
- mast distance s/b 200-250 m from inhabited property

### •Latvia

- school children, sleep disorders, attention & memory problems -- transmitters shut down

### •Switzerland

- adverse effects on population
- symptoms disappeared 3 days--transmitter failed
- Swiss Government closed tower

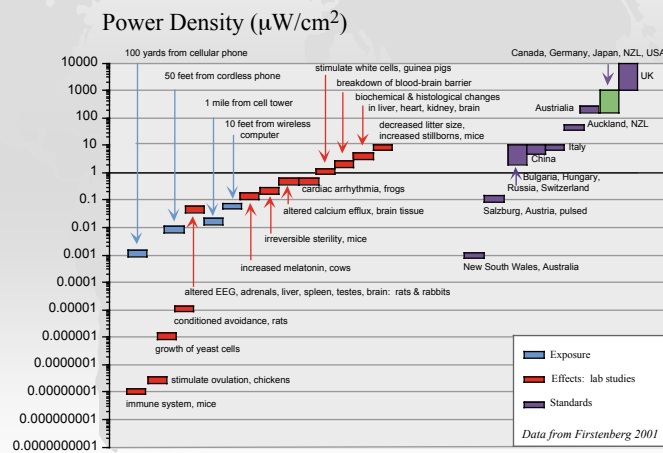
## Standards, Limits & Guidelines

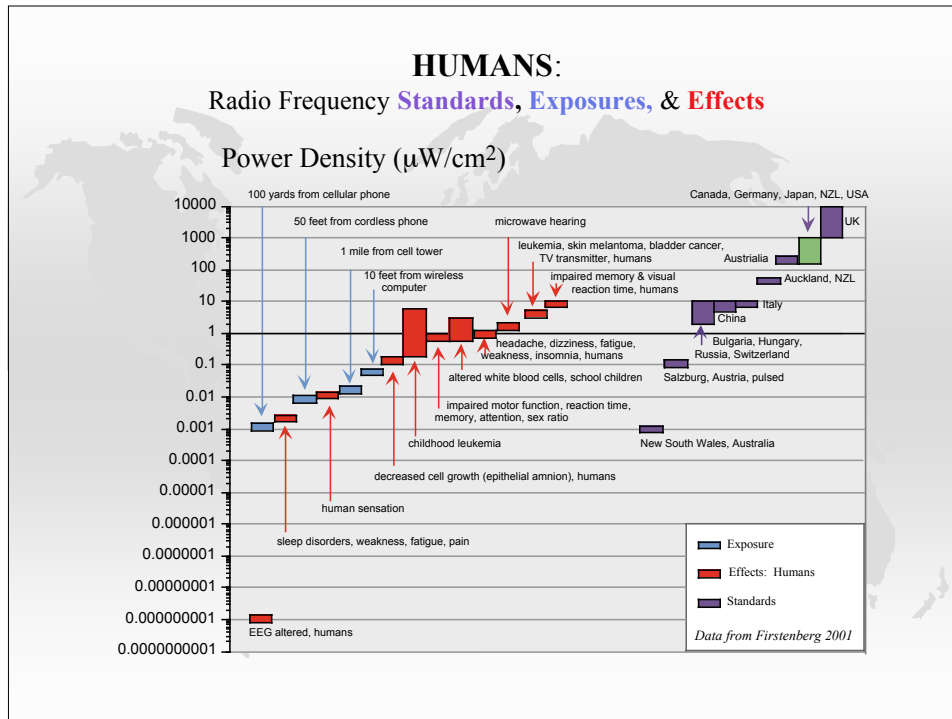
- **Standard**: distance, height,
  - 500 m from school
  - **enforceable**
- **Limit**: power density, electric, magnetic field
  - 1000 microwatt/cm<sup>2</sup> for 24-hour
  - **enforceable**
- **Guideline**: prudent avoidance
  - **not enforceable**

## Standards: General Public, 24-hour

Country	Frequency (Hz)	microW/cm <sup>2</sup>	Misc. Info.
● USA (ANSI)	100M-10G	10,000	= 100 W/m <sup>2</sup>
● <b>Canada (SC6)</b>	<b>1.5G-15G</b>	<b>1,000</b>	<b>= 10 W/m<sup>2</sup></b>
● Poland	300M-300G	100 10	rotating stationary
● Czechoslovakia	300M-300G	2.5 1.0	continuous pulsed
● former USSR	300M-300G	1.0	since 1970

## LABORATORY STUDIES: Radio Frequency Standards, Exposures, & Effects





*Mobile phone radiation gives Gro Harlem Brundtland headaches.*  
Translation from Norwegian "Dagblad et" March 9, 2002, by Aud Dalsegg.

WHO Director-General Gro Harlem Brundtland (62) gets headaches from talking on a mobile phone. That is not enough: People in her proximity must turn their phones off in order to prevent discomfort.

"It's not the sound, but the waves I react to. My **hypersensitivity** has gone so far that I even react to mobiles closer to me than about 4 metres."  
--Gro explains.

"People have been in my office with their mobile hidden in their pocket or bag. Without knowing if it was on or off, we have tested my reactions. I have always reacted when the phone is on and never when it is off. So there is no doubt."



## Biological Effects at Low Intensity



- cataracts



- headache
- brain waves
- brain tumors
- blood brain barrier
- melatonin
- sleep
- Alzheimer's Disease



- microwave hearing



- asthma



- calcium flux
- DNA damage
- cell proliferation



- blood disorders
- leukemia



- healing of bone fractures

## What needs to be done regarding wired & wireless electromagnetic energy?

### We need to:

1. **Increase public awareness** of electromagnetic sources and individual exposure.
2. **Alert medical profession** to electromagnetic hypersensitivity.
3. **Encourage prudent avoidance** by providing information on how to reduce exposure (individuals, utility companies, cell phone manufacturers, etc.)
4. **Set standards** for **wireless** (cell phones, antennas, broadcast & telecommunication industry) energy.
  - Base Stations: distance > **500 m** from homes, schools, office buildings, etc.
  - Radiation: Salzburg standard < **0.1 microwatts/cm<sup>2</sup>**
5. **Monitor & reduce fields**
  - Children: schools, daycare centres, playgrounds
  - Adults: home & workplace
  - Urban centres, especially upper floors of high rise buildings
6. **Encourage & support research** on exposure and biological effects.