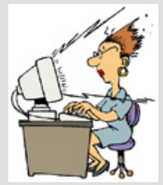
"As with most environmental concerns, the EMF debate is basically a moral one, and as long as there's legitimate scientific debate about safety issues, the morality of profiting on dubiously safe technology will be debated as well. There seems to be no possible resolution of that debate short of a lot more funding for truly independent scientific analysis. This has to include epidemiology as well as other research, because I think we're much more likely to discover what's going on by carefully examining what follows what we're doing than by simply trying to pinpoint the cause of those phenomena, which may not happen for a long time, as with tobacco - though we shouldn't stop trying.

Take the problem of measuring exposure, for instance. Any piece of measuring gear you use has severe limitations when you're trying to realistically estimate the exposure to a human being. Even if you had a spectrum analyzer with a bandwidth from DC to 300 GHz, there's no way one person (in the field, for instance) could measure the whole spectrum at once. But realistic exposure IS the whole spectrum at once. And what do you use for an input? Even the best probe has severe limitations as well. The only truly realistic probe would be something that reproduces all the complex conductors, coils, and connections in the human brain and nervous system - if you could legitimately limit it to the nervous system. But even then such a receiver would not be alive. And even if you could pull off all that, you'd still have to take into account non-structural differences, and individual variations in age, state of health, diet, etc. If you're measuring microwaves in the field, you need to include temperature, humidity, electromagnetic and other influences in the surroundings, and so forth. Even a person's mood can drastically affect the capabilities of their immune system. As Harold Saxton Burr said decades ago in his book The Fields of Life, 'beliefs can have as drastic an effect on the body as a kick in the teeth.'"

Stan Hartman, Boulder, Colorado

EMF Research: Examples of Complicating Factors



Cumulative Effects

The evidence now reveals there are biological effects even at very low levels of exposure. These effects accumulate in a lifetime, even though laboratory studies are finite in length.

Combined Effects

It is more difficult to study EMF in the laboratory or reduce exposure in the world due to the combination of artificial and natural EMF in combinations which change over the day.

Circadian Effects

Some effects vary according to the time of day more than the field characteristics. We tend to be more vulnerable to EMF at night.

Compounded Effects

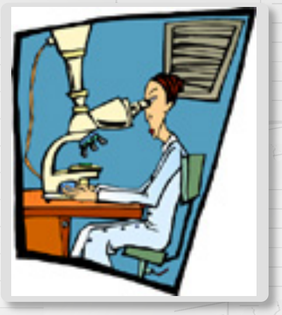
Sometimes an EMF shows biological effects primarily in the presence of xenobiotic substances which themselves may be less toxic without the presence of EMF.

Varying/Complex Effects

Fields may vary in time, or be associated with transients and harmonics which create some biological effects. Different tissues in the body respond differently.

Delayed/Prolonged Effects

Some studies showed that significant effects occurred or persisted after exposure was withdrawn, or when rest periods between exposures were included.



Indirect Effects

If it were possible to live in an area with little EMF exposure, one nevertheless will experience indirect biological effects from the way food and environmental services are influenced by EMF. Pathogenic organisms produce more toxins when stressed by EMF.

Non-thermal Effects

Early in EMF research and policy making, only the heating effects on tissue from EMF were considered. To some extent, low levels of heat were believed to be well managed and rapidly dissipated by body tissues. However, evidence has accumulated on the effects of EMF which are not related to the heating of the tissues.

Nonlinear Effects

Our bodies have natural rhythms, frequencies and oscillations, tied in with cycles of nature. EMF may disrupt tissue functions more strongly at frequencies or field strengths which resemble natural rhythms than other (stronger or weaker) frequencies or (shorter or longer) distances by affecting normal cell signaling or inducing resonance. Life itself is not well characterized.

Controlled Studies Less Possible

The widespread and increasing background exposures to both voluntary (cell phones) and non-voluntary sources of non-ionizing radiation as listed above - residential, occupational or school exposures, may soon preclude the possibility of so called controlled studies, and the situation can be expected to become more complex... (Cindy Sage)

Research Links

- The Grand Challenge
- Good reasons for not studying EMFs
- Studies don't consider ambient fields
- Influence of quasi-spherical polarization
- All scientific papers controlled by 6 corporations
- Is toxicology model appropriate in EMF studies?
- Head exposure studies need to use true morphology
- Difficulties in numerical parameters, occupational EMF studies

Home: Oscillatorium
Newest version this map
Date of this update: 11-26-15