Published in the British Medical Journal, November 7, 2011

http://www.bmj.com/content/343/bmj.d6387?tab=responses

On the Safety of Cell Phone Radiation

Allan H. Frey (allan@freys.us)

Randomline Inc, Potomac, MD USA

Recently, policy makers, journalists and the Public have been inundated with conflicting information and confusion concerning the biological effects and safety of cell phone radiation.

For some years now epidemiology studies have been done, supposedly to determine if present and future cell phones are safe. But there is a fatal assumption in all these epidemiology studies, whatever their outcome, which render them of little value for such a purpose. The microwave wavelength and modulation (pattern of the energy) radiated by present and future phones are generally different from the radiation characteristics of past phones, which are the primary subject of the epidemiology studies. The experimental biology research that has been published shows that wavelength and modulation does matter. For example, published experiments show that the well known microwave hearing phenomena (often cited as the Frey effect) will occur at specific wavelengths and modulations and not others. The same holds for other published microwave biological effects, such as heart function and brain function effects, as would be expected in biology. Thus, the radiation from cell phones of yesteryear that is the subject of the epidemiology studies, including the Danish cohort update, does not have the same biological effects as the radiation from current and expected future phones (1).

In addition, there are other faults in the epidemiology studies which invalidate them. For example, most of the patients and most of the data analyses in two of the prominent epidemiology studies are irrelevant to the issue of whether handheld cellular telephones cause brain cancer. Most of the patients (86%) in one study used car telephones or bag telephones, not handheld telephones; the antennae used with car and bag telephones are well away from the head, so there is little, if any, exposure of the head to the energy (2). Most of the patients (82%) in another of the studies had no or negligible use of a handheld telephone (3). Shortly after these papers were published, another epidemiology study was published in another prominent medical journal. The authors lumped together in their analyses car, bag, and handheld telephones as though the use of all these types of telephones gave the same head exposure as handheld telephones (4). And the update of that study has the same faults (1). Thus, most of the analyses in these epidemiology studies actually show that if you have no exposure you have no effect; they are irrelevant to the issue.

A further source of confusion is that the microwave biology literature is unusual in that the military office that controlled most of the US funding for biological research in this area had blatant conflicts of interest. Prof. Nicholas Steneck, who at the time was director of the Collegiate Institute for Values and Science at the University of Michigan, received a major grant from the National Science Foundation's Program for Ethics and Values in Science and Technology. He and Institute fellows in biology and physics used it to do an in-depth case study of this area of research. They documented how the conflicts of interest derailed the science in this area, blocked promising lines of research, led to confusion and to the insertion of gross misinformation into the scientific literature and resulted in the virtual extinction of research on the biological effects of low intensity microwave radiation, such as used by cell phones, in the USA. Prof. Steneck details this in a book he wrote and also in a book that he edited: in a chapter by Frey and another chapter by Medici (5, 6).

There are also various implicit assumptions that have crippled the research and led to misinformation in the epidemiology reports. For example, this area of biological research, like some others, is encumbered with a vocal few who imagine that they are the possessors of "real truth." They like to talk about the dogma, such as the "laws of physics." For them, if the data do not conform to the dogma, then the data must be wrong. But one does not challenge data with the current dogma. That's upside down; the essence of science is that it's the dogma that is tested by data. Or these naysayers say, as in a recent cell phone epidemiology paper, that they don't know of an explanation for how the radiation can affect an organism and they imply that, thus, there cannot be an effect. But biologists cannot yet explain most biological effects. For example, people used aspirin for one hundred years before biology advanced enough to recently provide an explanation for its effects. And, contrary to what the naysayers say, there are in fact numerous published experimental papers showing how the radiation affects living organisms (7).

Further, it is to be expected that concepts conceived at one level of observation will have to be modified as observational ability improves. In 1840, it took more than six months to go from Washington DC to San Francisco by mule and wagon. No one then could even imagine, much less believe, that today I could have breakfast in Washington and lunch in San Francisco, as I have sometimes done.

The Public has not been well served by these epidemiology studies.

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