

9 March 2018

Mary S. Wolfe, Ph.D.
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Director, Office of Liaison, Policy, and Review
530 Davis Dr
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Dear Dr Wolfe,

Public Comment Response to the January 29, 2018 (Vol. 83, No. 19) Federal Register Notice, pages 4063-4064

System and Method for reducing Exposure of Human to Radio Frequency (RF) Radiation (i.e. to a level significantly below the FCC and ICNIRP public safety limits)

As a concerned [REDACTED] and an inventor, I am pleased to provide comments to the National Toxicology Program (NTP).

I am heartened over the public health concerns addressed by US FDA in nominating cell phone radiofrequency radiation for NTP study and the consequential publication of the two Draft NTP Technical Reports on Cell Phone Radiofrequency Radiation.

Further I note that the U.S. Food and Drug Administration (FDA) nominated cell phone radiofrequency radiation for NTP study because:

- (a) widespread human exposure is possible
- (b) current exposure guidelines are based largely on protection from acute injury due to thermal effects,

(c) little is known about the potential health effects of long-term exposure to radiofrequency radiation, and

(d) currently available human studies have found limited evidence of an increased risk of cancer from cell phone use.

Non-ionizing radio frequency radiation can produce local thermal effects leading to the heating of body tissues at high exposure levels. These effects can damage temperature-sensitive biological structures and process.¹ It is also important to note that NTP's cell phone radiofrequency radiation study chose exposure levels ranging from 1.5 to 6 watts per kilogram (W/kg) in rats, and ranging from 2.5 to 10 W/kg in mice. As the NTP studies also looked for a range of non-cancer health effects in rats and mice, including changes in body weight, evidence of tissue damage from RFR-generated heating, and genetic damage, the researchers saw lower body weights among newborn rats and their mothers. The lower body weights was seen when these rodents were exposed to high levels of RFR during pregnancy and lactation even though these animals grew to normal size.

According to the draft reports from the National Toxicology Program (NTP), relatively high exposure to radiofrequency radiation (RFR) in rodents resulted in tumors in tissues surrounding nerves in the hearts of male rats. We note that the findings among others are based on the lowest SAR exposure levels of 1.5 W/kg used in the studies being **slightly lower** than the highest level permitted by FCC for local tissue exposure in cell phone emissions today. The choice of this lowest exposure level would have attracted additional concerns to the public on the protective nature of the existing permitted levels. SAR level of 0 W/kg (control/sham exposure) is naturally of no practical value if we wish to continue to enjoy the benefits of wireless communications technologies.

¹ Effect of Cell Phone Radiofrequency Radiation on Body Temperature in Rodents: Pilot Studies of the National Toxicology Program's Reverberation Chamber Exposure System, Wyde et al [2018]

Considering these and other concerns, I am proposing a voluntary, precautionary reduction in radio frequency radiation (RFR) arising from wireless communications devices such as smartphones and tablets. A level significantly below the FCC and ICNIRP public safety limits is proposed. To these end, I have developed a new invention with patents pending in the US and in other countries (US Patent Pending publication #20170311330). This invention reduces the RF exposure to humans in particular to the human head RFR contributing to a SAR much below **0.16 W/kg**, a decade lower than the FCC specified local SAR to the head. Typical exposure reduction to the head SAR with this new invention is estimated to reach 0.001 W/kg (99.9% reduction) with transmitters operating at total output power of 37 μ W (microwatts). This considerable reduction in the RFR contributes to the appreciable **reduction in the RFR dose** even with prolonged exposure. To address some of the important performance requirements of the wireless industry, the invention ensures these performances are preserved and even enhanced in certain embodiments.

I convey my thanks and appreciation to NTP Peer-Review panels, FDA and the other agencies under the US government for taking steps to review and recommend important public health policies and anticipate the universal adoption of these policy recommendations.

Sincerely yours,

R. Gandhi

Rakuram Gandhi
Private Citizen

March 14, 2018

Subject: Re: NTP Comments on Cell Phone Radiation

Comment:

Dear Dr Wolfe,

With reference to my submission of written comments on 9th March 2018, I wish to inform you that I have also developed a proof of principle prototype incorporating an embodiment of the invention whereby the radio frequency radiation is reduced to a total transmit power of about 37 micro watts from the wireless communications device. This prototype was incorporated on a iPhone 6 device.

The reason I am highlighting the above is to convey the fact that the invention to reduce the RF exposure to humans can be developed with the necessary components in existence in the communications industry.

Sincerely,
R. Gandhi