

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of)
)
Reassessment of Federal Communications Commission)
Radiofrequency Exposure Limits and Policies)

And

Notice of Proposed Rulemaking)
18 FCC Rcd 13187, 13188 ¶1 (2003))

ET Docket No. 03-137

And)

Service Rules for the Advanced Wireless Services)
H Block---Implementing Section 6401 of the)
Middle Class Tax Relief and Job Creation Act of)
2012 Related to the 1915-1920 MHz and)
1995-2000 MHz Bands ¶53 footnote 95)

WT Docket No. 12-357

And

**Proposed Changes in the Commission's Rules)
Regarding Human Exposure to Radio frequency)
Electromagnetic Fields)**

ET Docket No. 03-137

To: Office of the Secretary
Federal Communications Commission
Washington, DC 20554

Comment Filed by: Devra Lee Davis PhD MPH
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DATE: September 3, 2013

AFFIDAVIT OF DEVRA LEE DAVIS PHD MPH

**Region of Teton County, Wyoming
U.S.A.**

I, Devra Lee Davis PhD, MPH¹, attest that my statements are true to the best of my knowledge.

Submission for FCC 13-84; and ET Docket No. 03-137, WT Docket No. 12-357, and **ET Docket No. 03-137.**

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2. I am currently **President, Environmental Health Trust, Scientific Advisor to Healthy Child, Healthy World, and Visiting Scholar at the University of California Berkeley, Goldman School of Public Policy. I hold numerous awards and commendations, including a National Book Award and a Silver Medal from Nautilus Books for Courageous Reporting for my book, *Disconnect—the truth about cell phone radiation, what industry has done to hide it, and how to protect your family, Dutton:Plume, 2010, 2011*, which has been translated into 6 languages. I also was a Lead Author of the Intergovernmental Panel on Climate Change, the group awarded the Nobel Peace Prize in 2007, with Al Gore, and held a Senate confirmed Presidential appointment from 1994-99, as a member of the National Chemical Safety and Hazard Investigation Board. From 1983-93, I worked at the U.S. National Academy of Sciences, as Founding Director of the Board on Environmental Studies and Toxicology and Scholar in Residence. I also founded the Center for Environmental Oncology of the University of Pittsburgh Cancer Institute, 2005-2010 and have authored more than 200 books and articles that have been translated into more than a dozen languages. I have served as an advisor to the World Bank, World Health Organization, and state, local and national authorities including the U.S. National Toxicology Program, the National Institutes of Health, and the Centers for Disease Control and Prevention.**

3. I have conducted and published in leading journals epidemiological research on patterns of brain cancer and other diseases, and brain modeling estimations regarding exposure to microwave radiation from cell phones in persons of varying ages and head sizes. My results indicated that cell phone radiation is absorbed twice as deeply into the young brain than the adult brain, and that the bone marrow of the young skull absorbs twice as much radiation as does that of the adult (Gandhi et al, 2011; Fernandez and De Salles, 2006)

4. Analyses of published studies on brain cancer risk find that those who begin using cell phones regularly before their twenties have between 4 to 8 times greater risk of brain cancer within a decade of beginning such regular exposures ;Davis et al., 2013.)

. In this Notice of Inquiry the FCC asks:

5. On page 4, Item 6, the Commission is seeking input on “whether additional precautions may be appropriate in some cases, for example with respect to children”

We conclude as do numerous colleagues from the Health Ministry of Israel, the Nuclear Radiation and Safety Authority of Finland, and Australia’s Radiation and Nuclear Protection Agency that additional precautions are warranted for children. The SAM mannequin used for testing cellphones is modelled on a homogenous large male head weighing about 11 pounds. This is non-representative of a child’s head where the absorption is greater and the energy penetrates comparatively deeper into the brain in a child’s small head. Christ et al. have demonstrated that exposure to radiofrequencies in the brain from cellphone calls is higher in toddlers and children than adults (Christ et al., 2010). They found several “major age-dependent changes” (p.1780), ultimately due to the distance between the radiation source and the respective brain region. These included increased energy absorption (SAR) in young children of 2 dB to 5 dB in some brain regions, such as the hippocampus and hypothalamus; absorption in bone marrow 10-fold higher than in adults; and greater absorption in the eyes of children than adults.

It may be more appropriate to require that cell phones (especially those for use by young people) can only function for calls with headsets or with hands-free operation thereby avoiding any phone-to-ear use.

6. P.5, Item 7, in the *Inquiry* asks whether the Commission should consistently require either disclosure of the maximum SAR or other more reliable exposure data in a standard format--perhaps in manuals, at point of sale, or on a website.

The French and Israeli governments provide information on SAR to consumers at the point of sale. Better explanations of what the SAR constitutes should be provided along with information on ways to reduce overall microwave radiation exposure.

7. Simple software and hardware design changes can reduce absorbed radiation and lengthen battery life. Both software and hardware changes, including case design, should be made to cellphones today to reduce overall microwave radiation and extend battery life. Phones should be re-programmed with software like that included in the app of Tawkon that indicates when phones are being used in a manner that maximizes radiation and reduces battery and automatically reduce power. Cases and antennas can be reconfigured to diffuse radiation as well, using a system such as that of Pong Research. With these changes in place, the average and maximum SAR should be listed, along with information regarding the circumstances under which the phone is likely to emit more or less microwave energy, including the importance of avoiding use in areas where signals are weak, and the need *not* to carry phones in the bra or pocket.

8. Maximum SAR and the minimum distance at which it applies should also be clearly labeled on baby monitors, phablets, laptops, tablets, and any other electronic transmitting technology commonly used next to the body.

9. Page 17 states: “currently, the outer ear, or ‘pinna’ is not included on the list of exceptions from the localized SAR limits for "extremities" in the Commission's rules. Nor has the Commission treated the pinna as subject to localized SAR limits to the head, nor has it required parties seeking equipment authorizations to measure or calculate localized SAR in the pinna. This is because there is no standard for SAR measurement in the pinna."

The notion that the ear should be treated like the hand or foot and permitted to absorb more radiation than the rest of the head is illogical. The ear or pinna is part of the head, adjacent to the hearing nerve, temporal lobe and parotid and salivary glands, and is comprised of cartilaginous conducting tissue against which the two-way microwave sending and receiving device is held. The current SAM mannequin does not treat the pinna as anything other than space as it is a plastic spacer. This has been criticised for reducing conduction and thereby lowering the measured energy absorption in the brain (Gandhi and Kang, 2004; Gandhi et al., 2012). Every single millimeter of separation from the head results in a 15% reduction in absorbed microwave radiation. As Gandhi et al noted in 2004:

, with the relaxed limit of 4.0 W/kg for any 10-g of tissue of the pinna for maximum allowable powers for cellular telephones at 835 and 1900 mHz to show that the newly proposed relaxed IEEE limits will allow radiated powers that may be 8 to 10 times those permitted by the current standard and up to

two times higher than those permitted under ICNIRP used in over 30 countries."Gandhi et al., 2004, IEEE Transactions on Microwave Theory and Techniques.

10. The Commission stipulates that the maximum SAR for any 1 gram of "body tissue (defined as tissue volume in the shape of a cube) be less than or equal to 1.6 W/kg. The Safety Standard (IEEE 1991) defines extremities as "hands, wrists, feet and ankles" where SAR of 4 W/kg for any 10 g of tissues is permitted.

11. Page 18, Item 47, states, "*Decision*. We conclude that classification of the pinna as an extremity is supported by the expert determinations of the FDA and of the IEEE, will have no practical impact on the human exposure to RF radiation, and is therefore appropriate."

On behalf of Environmental Health Trust, we strongly object to this re-classification. In making this re-classification, the FDA and the IEEE (2005) are ignoring the analyses of Gandhi et al (2004), which has shown that for every single millimeter of distance from the head there is a 15% reduction in absorbed radiation and the considerable body of work by experimental biologists confirming the existence of nonthermal impacts of RF.

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IEEE C95.1-2005, IEEE Standard for Safety Levels with respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz-300 GHz, *published by the Institute of Electrical and Electronics Engineers, Inc.*, New York, NY, 2005.

Respectfully submitted by

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