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Julie C. Rosenberg  
Executive Director

July 3, 2019

Tomás J. Aragón, MD, DrPH  
Health Officer, City & County of San Francisco  
Director, Population Health Division (PHD)  
San Francisco Department of Public Health  
101 Grove St., Rm 308, SF CA 94102

Dear Dr. Aragón:

I am writing to you on behalf of the San Francisco Board of Appeals ("the Board") to request that the Department of Public Health ("DPH") review and update Dr. Rajiv Bhatia's Memorandum, dated June 14, 2010, regarding the health effects and regulation of wireless communications networks (attached).<sup>1</sup>

To give you context for this request, I would like to explain that the Board provides the final administrative review process for a range of appealed City determinations including personal wireless service facility site permits issued by the San Francisco Public Works Department.

As you know, DPH must approve these permits prior to being issued. More specifically, DPH must determine whether a permit application complies with the Public Health Compliance Standard<sup>2</sup> which means:

whether (a) any potential human exposure to radio frequency emissions from a proposed Personal Wireless Service Facility described in an Application is within the FCC guidelines; and (b) noise at any time of the day or night from the proposed Personal Wireless Service Facility described in an Application is not greater than forty-five (45) dBA as measured at a distance three (3) feet from any residential building facade.<sup>3</sup>

When these permits are appealed to the Board, the Board's review is limited to consideration of the factors established in Public Works Code Article 25. In connection with alleged health risks, the Board may only consider whether DPH incorrectly determined that the permit application complies with the Public Health Compliance Standard.

The relevant FCC Guidelines, which set forth the limit for safe exposure to radio frequency radiation, were adopted in 1996. The Board frequently hears from concerned appellants that

<sup>1</sup> On June 26, 2019, the Board voted 4-0 to direct the Executive Director to draft a formal request to the DPH to update Dr. Bhatia's June 14, 2010 memorandum.

<sup>2</sup> See Article 25, section 1507 of the Public Works Code.

<sup>3</sup> See section 1502 which defines "Public Health Compliance Standard."

the FCC regulations are outdated given the significant advancements in technology that have been made over the last two decades. Parties to appeals before the Board oftentimes submit scientific articles that assert radio frequencies pose health risks to the public.

The Board recognizes that DPH's mission is to protect and promote the health of all San Franciscans and that DPH last addressed the health effects of wireless communications networks in Dr. Bhatia's Memorandum dated June 14, 2010.

Given the health concerns raised by the public and the advances in wireless technology, the Board respectfully requests that: (1) Dr. Bhatia's June 14, 2010 Memorandum be reviewed and updated, and (2) that DPH presents its findings to the Board at a regularly scheduled Board meeting.

We look forward to working with you on the matter.

Respectfully,



Julie Rosenberg  
Executive Director  
San Francisco Board of Appeals

Cc: Stephanie Cushing, Director of Environmental Health, DPH  
Patrick Fosdahl, Assistant Director of Environmental Health, DPH



Gavin Newsom  
Mayor

Mitchell H. Katz, MD  
Director of Health

## MEMORANDUM

**DATE:** June 14, 2010

**TO:** James Illig, President  
and Honorable Members of the Health Committee

**THRU:** Mitchell H. Katz, MD *Mitchell Katz*  
Director of Health

**FROM:** Rajiv Bhatia, MD, MPH *Rajiv Bhatia*  
Director, Occupational & Environmental Health

**RE:** Health Effects and Regulation of Wireless Communications Networks

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Radiofrequency (RF) and microwave (MW) radiation are two types of electromagnetic radiation (EMR). They are in the frequency ranges 3 kilohertz (kHz) - 300 Megahertz (MHz), and 300 MHz - 300 gigahertz (GHz), respectively. Other forms of non-ionizing EMR include the spectrum of ultraviolet (UV), visible light, infrared (IR), and extremely low frequency (ELF) EMR. Non-occupational population exposure to RF radiation arises from wireless communications systems and devices including radio and television broadcasting and cellular and cordless telephones.

Approximately 25,000 articles have been published over the past 30 years in the area of biological effects and medical applications of non-ionizing radiation.<sup>i</sup> Health research has established that exposure to RFR may increase body temperatures and cause tissue damage but only at high doses. A potential exists for interference between cell phones and some medical devices if in close proximity (within a few centimeters). Experimental studies on RFR have not demonstrated consistent toxicological effects or identified a biological mechanism linking RFR to cancer.<sup>ii, iii</sup> Epidemiological studies have evaluated whether there is a higher frequency of certain adverse health effects in populations with higher RFR exposures including residents living in proximity to RFR emitting antennae and cell phone users. These epidemiological studies have not linked current population RFR exposure with either non-thermal effects or serious health problems such as cancer.<sup>iv, v, vi</sup>

The Federal Communication Commission (FCC) is the regulatory agency for radiofrequency electromagnetic fields in the U.S. In 1996, through the Telecommunications Act, the United States Congress required the FCC to adopt a nationwide human exposure standard for radio frequency radiation (RFR). The FCC guidelines for human exposure to RF fields are based on the recommendations of two expert organizations, the National Council on Radiation Protection and Measurements (NCRP) and the Institute of Electrical and Electronics Engineers (IEEE). The current NCRP, IEEE, and International Commission on Non-Ionizing Radiation Protection (ICNIRP) exposure guidelines state the threshold level at which harmful biological effects may occur, at a specific absorption rate (SAR) value for the whole body of 4 watts per

kilogram (4 W/kg) of tissue based on the potential of RFR exposure to cause thermal heating. The SAR is a quantity used to measure how much RF energy is absorbed by a body.

Based on this information; the FCC has set maximum exposure limits for wireless system devices. All wireless devices, including cell phone base stations and all cellular phones that are sold in the United States must comply with FCC guidelines on RF exposure. The maximum permitted levels of RFR allowed from cellular base station antennas is 1.0 mW/cm<sup>2</sup>.<sup>vii</sup> The limit provides a substantial margin of safety relative to the FCC threshold for thermal health effects regardless of age or gender. These standards are reviewed every 5 years based on the latest available information.

The Telecommunications Act of 1996, §704(a) prohibits state or local jurisdictions from implementing their own RF exposure standard. In San Francisco, City Planning rules implemented with oversight by the SF Department of Public Health require that cell antennas located in the city meet FCC standards. The City has a three step process for ensuring compliance with the FCC standards for RFR.

1. Sponsors must submit a Health Report which includes a description of the project and the anticipated radiofrequency energy levels.
2. Sponsors must provide a Project Implementation Report which includes field measurements verifying the radiofrequency levels outlined in the Health Report within 10 days of the projects completion. Sponsors must notify neighbors located with 25 feet of the antenna and offer to take measurements from inside their dwellings.
3. Sponsors must conduct every two years field measurements be taken and submitted as a part of a Periodic Safety Monitoring Report.

Monitoring conducted in San Francisco has confirmed that exposures to RFR from wireless networks cordless phones are very low for the general population and much lower than FCC maximum permitted exposure standards. RF radiation energy decreases rapidly with distance (in proportion to the inverse square of distance) and building structures attenuate transmission of RFR substantially. In San Francisco, RFR exposure at the ground level around these cellular base stations has been found to have a low of .005% and a high of 9.6% of the FCC public exposure standard. Ground-level measurements taken from directly below the antennas indicate that the average ground exposure in San Francisco is approximately 1% or less of the FCC public exposure standard (1.0 mW/cm<sup>2</sup> for PCS transmissions).

Overall, although research is ongoing, public health science has not established casual links between radiofrequency electromagnetic radiation and adverse health effects at levels of exposure found in the population. DPH concludes that: scientific evidence does not support the existence of any adverse health effects from RF radiation at levels below the current ANSI standard. In San Francisco, Department of City Planning rules and Department of Public Health monitoring assures compliance with FCC standards.

<sup>i</sup> World Health Organization: <http://www.who.int/peh-emf/about/WhatIsEMF/en/index1.html>

<sup>ii</sup> Repacholi MH. Radiofrequency field exposure and cancer: what do the laboratory studies suggest? *Environ Health Perspect.* 1997 December; 105(Suppl 6):1565-8.

<sup>iii</sup> Krewski D, Glickman BW, Habash RW, Habbick B, Lotz WG, Mandeville R, Prato FS, Salem T, Weaver DF. Recent advances in research on radiofrequency fields and health: 2001-2003. *J Toxicol Environ Health B Crit Rev.* 2007 Jun-Jul;10(4):287-318.

<sup>iv</sup> INTERPHONE Study Group. Brain tumour risk in relation to mobile telephone use: results of the INTERPHONE international case-control study. *Int J Epidemiol.* 2010 Jun;39(3):675-94. Epub 2010 May 17.

<sup>v</sup> Deltour I, Johansen C, Auvinen A, Feychting M, Kjaerboe L, Schüz J. Time trends in brain tumor incidence rates in Denmark, Finland, Norway, and Sweden, 1974-2003. *J Natl Cancer Inst.* 2009 Dec 16;101(24):1721-4.

<sup>vi</sup> Ahlbom A, Feychting M, Green A, Kheifets L, Savitz DA, Swerdlow AJ; ICNIRP (International Commission for Non-Ionizing Radiation Protection) Standing Committee on Epidemiology. Epidemiologic evidence on mobile phones and tumor risk: a review. *Epidemiology.* 2009 Sep; 20(5):653-5

<sup>vii</sup> For those broadcasting in the lower cellular frequency the limit is determined by dividing the frequency by 1500.