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To: The Honorable Gavin Newsom

From: Physicians for Safe Technology

Re: 5G and Small Cell Deployment Moratorium

Date: May 17, 2019

Dear Governor Newsom:

The deployment of 5G, or fifth generation wireless technology, is among the many urgent challenges facing your Administration. Wireless radiation is increasingly recognized as a human and environmental toxin, well supported by an abundance of scientific evidence. We feel the broad expansion of 5G higher radiofrequency technology is a clear threat to human health and the environment and needs to be urgently addressed.

5G wireless technologies have been hailed by industry as an immediate necessity for our society to move forward with high speed broadband, however, there are substantial downsides now recognized.

Analysis has shown that compared to wired technology, 5G is slower, and more costly in the long term. In addition:

- It requires vastly more energy (IoT and data) contributing to climate change
- It poses tremendous cybersecurity vulnerabilities to individuals and to the nation
- It produces radically greater radiation exposures to man and the environment

Physicians for Safe Technology supports a moratorium on 5G on cell towers and in space, and a shift forward towards faster, cheaper and more secure options that include wired, cabled and fiberoptic-only solutions to reduce ambient exposure to radiofrequency radiation (RFR). In addition, every effort should be made to maintain and sustain our traditional landlines; still the clearest, safest and most secure means of emergency communications.

FCC and Industry Promote 5G by Removing Local Authority

In 2018 Governor Brown courageously vetoed SB649, a bill that would have stripped local governments' power to place antennas in the public right of way, even as 20 other states passed similar legislation. Unfortunately, California's autonomy is being threatened by the federal "Small Cell" Ruling and Order (FCC 18-133) which took effect in April 2019, preempting state law and removing the rights of municipalities to regulate the placement of "small cell" antennas in the public right-of-way along with restricting the fees they can assess. The FCC ruling is being challenged in the Ninth District Circuit Court. Representative Anna Eshoo introduced a bill in Congress (HR 530) to reverse the FCC Order. However, both challenges to the

FCC order will take many months, and the outcome is unsure. The National League of Cities and hundreds of municipalities are opposed to the FCC order and in support of HR530.

No Evidence of Safety for 5G

The 5G rollout is occurring *despite* a substantial and growing repository of scientific literature demonstrating that radiofrequency radiation is harmful to humans and the environment: *despite* reports from many nations that with each new rollout of technology a new group of people experiences health problems; and *despite* tremendous opposition by citizen and scientist groups throughout the world. The fact that this is being rapidly implemented worldwide, rather than slowly and systematically, taking time to assess the negative effects and consequences, is a signal that there is an interest group aggressively pushing this against the will of the people.

Contrary to claims that the higher frequencies involved in 5G can only affect skin, 5G frequencies have been shown, by science declassified by the CIA in 2012, to cause biologic disturbance throughout the body (heart, liver, spleen, bone marrow and kidneys). This occurred with just minutes a day of exposure. Because the higher 5G frequencies are more easily blocked (by being absorbed by trees, plants and buildings), 5G “small cells” must be placed every few houses. **This new radiation spectrum will be superimposed on existing technologies and frequencies, producing synergistic toxicity**, not only with other frequencies of ambient radiation, but with chemical exposures as well. This will produce an inescapable hazard for humans, pets and wildlife.

With strong support from industry, the FCC leasing of RFR spectrum is flagrantly and irrationally being conducted without any safety testing of 5G, nor the complex mix of RFR which will be emitted. As Senator Blumenthal stated recently at a hearing of the Senate Commerce Committee, “So we are flying blind on health and safety.”

5G Marketed and Installed Without Oversight or Premarket Safety Testing

A newer design with phased arrays and beam-forming will be used in 5G phones and cell towers that will increase exposure to pulsed radiation signals seeking to connect with anything in the surroundings. 5G “test” installations have already been placed in some cities with no oversight or monitoring by any health agency.

New Risks with 5G in Space: Weather Forecasts

5G in space is also being planned with public/private partnerships without thoughtful discussion of the broad risks, although scientists from NASA and NOAA are now very concerned about electromagnetic interference with weather forecasting satellites, stating this “could threaten the safety of aircraft and naval vessels, and reduce military awareness of battlefield conditions.”

FCC Standards Only Consider Heat Injury-Not Biological Toxicity

The FCC standards only require testing for heat generation and not the broad adverse biological effects on all living organisms that have been demonstrated in decades of research on 2G, 3G and 4G radiation (**Pall 2018**) (**Sage and Carpenter 2014**) (**Saravanamuttu 2013**) (**Waldmann-Selsam 2016**). Some have claimed the energy of non-ionizing wireless radiation is insufficient to cause harm but research disproves this assertion. (**Belpomme 2018**) (**Hinrikus 2018**) (**Nielson 2019**)

Due to the Telecommunications Act of 1996, industry currently has the power to place cellular antennas even if they are deemed unsafe or harmful to humans or wildlife, and even if there are people experiencing demonstrable harm. Introduction of legislation to impose 5G upon us, has been coupled with the introduction of legislation to indemnify the government and industry from harm caused. The insurance industry will not insure against harms from this radiation.

5G Higher Frequencies with Different Health Concerns

Compared to current wireless technologies, 5G technology uses higher frequencies with shorter millimeter wavelengths (fractions of an inch) which are closer to the ionizing radiation spectrum. Whereas 3G and 4G microwave radiation used in cell phones, Wi-Fi, Smart Meters and cell towers passes through the body affecting cellular processes along the way, millimeter wavelengths penetrate only the superficial layers of skin and the eyes. There is some evidence of direct injury to the eyes as well as skin and underlying structures with millimeter waves. Considerable health effects can occur as well in all organ systems due to activation of

receptor structures in the skin leading to disturbances in the bone marrow, cardiovascular system, nervous system, immune system and the metabolic system. (**Zalyubovskaya 1977**)

Old and new studies indicate adverse effects of 5G. **Neufeld and Kuster (2018)** highlight in their research that the FCC standards will need to be raised for 5G, due to excessive heat with rapid short bursts of data transfer. **Zalyubovskaya (1977)** disturbingly describes research on both humans and animals showing a myriad of adverse effects from millimeter wavelengths. No evaluation of long term health effects from this type of millimeter radiation has been conducted, and in fact, there has not been the promised updated FCC reassessment of safety standards for 2G, 3G and 4G which we are continuously exposed to today. In addition, monitoring 5G millimeter wave radiation requires sophisticated and expensive equipment that is difficult to obtain, even for EMF consultants. The only indicator of harm from 5G will be long term illness requiring decades of epidemiologic research to uncover.

5G and the Environment: Trees, Bees and Agriculture

The potential environmental effects of 5G are profound. A diverse array of wildlife including bees, birds, turtles, dolphins, salamanders, salmon and amphibians use weak electromagnetic signals from the earth for navigation, foraging and breeding. Alteration of environmental electromagnetic fields has been shown to cause abnormal behavior, developmental abnormalities, impairment of reproduction and increased mortality. Effects have also been found in bacteria with changes in bacterial resistance patterns (**Soghomonyan 2016**). Research indicates that a domino effect of harm could occur on ecosystems.

Pollinating and wild insects are particularly vulnerable to 5G radiation. Thielens (**2018**) demonstrated that all insects examined showed increased RF power absorption at and above 6 GHz due to a resonance effect causing heat injury. 5G which uses 600 MHz to 300 GHz will stress ecosystems and contribute to the insect apocalypse experienced around the world now in “protected” and in urban areas. (**Hallman 2017**) (**Sanchez-Bayo and Wyckhuys 2019**)

Agriculture

Our California economy is largely based on agriculture. Pollinating insects are a critical part of that economy. Insects pollinate 87% of flowering plants. Insects are part of the nutrient cycle and are food for birds and other wildlife. The dramatic decline of insects in California (**Simons 2019**) could be due to many factors (habitat loss, pesticides, climate change), but increasing pervasive radiation from cell towers is just now being considered as a potential factor. It is economically wise to use all measures to prevent insect losses, preserve biodiversity and sustain our agricultural regions.

Summary of Risks from 5G

- Damage to the eyes- cataracts, retina
- Immune system disruption
- Metabolic disruption
- Damage to sperm
- Skin damage
- Collapse of insect populations, the base of food for birds and bats
- Rise in bacterial antibiotic resistance and bacterial shifts
- Damage to plants and trees

5G Moratorium in Brussels and Geneva Passed Due to Health Concerns

In 2018 the European Commission Scientific Committee on Health, Environmental and Emerging Risks (SCHEER) listed 5G radiation as an emerging health and environmental issue. In Brussels, Belgium, 5G was halted due to health concerns and a need to relax radiation standards if adopted. The Environment Minister Céline Fremault stated, "The people of Brussels are not guinea pigs whose health I can sell at a profit. We cannot leave anything to doubt." In the Canton of Geneva, Switzerland, which includes 45 municipalities, 5G was banned, in order to investigate health concerns. A petition to the German Parliament was signed by 54,000 people to stop the auction of 5G frequencies in April, 2019. The municipality of Rome, Italy has asked to halt the rollout of 5G.

Harmful impacts of current wireless technology have already been demonstrated and impacts will be expanded with the addition of other higher frequencies. We strongly believe that facilitating massive new radiofrequency exposures from 5G technologies while failing to conduct a formal FCC agency reassessment of current radiofrequency radiation exposure limits inexcusably imperils human health.

Summary

Citizens and governments worldwide are now realizing that the deployment of 5G has potentially irreversible consequences for human and environmental health that ultimately affects our national and economic security. Over 230 scientists and medical doctors around the world have called for a 5G moratorium (5G Appeal). Like tobacco, pesticides and toxic industrial chemicals, corporations have engaged in decades of denial of evidence-based risks to profit from their activities without the responsibility or liability for harm to others. Corporate speech drowns out the scientific warnings.

Radiofrequency radiation is not inert, it is bioactive. We believe in order to protect humans and the environment there needs to be:

- A moratorium on 5G deployment;
- Reevaluation of safety standards to consider non-thermal biologic effects of RFR; and
- Repeal of federal laws to allow states and local governments to consider health and environmental effects with cell tower placement and without automatic shot clock approvals

Physicians for Safe Technology urges you to

- Oppose any legislative bill or policy that accelerates (“streamlines”) the deployment of 5G or “small cell” towers;
- Advance legislation which places a moratorium on 5th Generation technologies; and
- Support policies which promote education, monitoring and independent research into 5G and other wireless technologies to elevate this issue in the medical and public health sectors. More analysis and research is needed prior to deployment.

We have bestowed upon our children one toxic legacy after another. Let’s be careful and not careless with their future. With a 5G moratorium, we can avoid creating more problems for Californians, especially our most vulnerable citizens. We cannot afford any more unintended consequences or experiments on our health.

Sincerely,

Cindy Russell, MD.
Executive Director
Physicians for Safe Technology

WWW.MDSafeTech.org

Our vision is a world where technology serves our needs without undermining our physical, psychosocial or environmental health.

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