September 5, 2023

To: Honorable Representative Anna Eshoo

Re: HR1123 and 5G Telecommunications Exclusion

Dear Representative Eshoo:

Thank you so much for your wisdom in broadly understanding the power and challenges with the rapidly expanding but inadequately regulated expansion of telecommunications. Cybersecurity and privacy are critical issues, alongside unresolved health concerns of wireless telecommunications systems.

HR 1123, which you sponsored, examines the vulnerabilities of mobile service networks. In section (d), however, the bill specifically excludes 5G systems. **We do not understand why this provision to exclude 5G was included. Please provide us information on why this provision was included in the bill.**

5G Wireless: Capabilities and Challenges

We have commented below regarding the Government Accountability Office (GAO) report *5G Wireless: Capabilities and Challenges for an Evolving Network report of 2020*, which discusses the evolving cybersecurity, privacy and health risks of 5G. We have also noted recent international insurance reports that highlight the emerging cybersecurity and privacy risk profiles of 5G telecommunications (*Swiss Re: 5G-“Off the Leash”*).

**ICBE-EMF**

In addition, a new group of independent scientists has formed, the *International Commission on Biological Effects of Electromagnetic Fields (ICBE-EMF)* to provide a different perspective and recommendations which challenges current International Commission on Non-Ionizing Radiation Protection (ICNIRP) standards arguing that they (and the FCC and FDA) are fundamentally flawed in their methodology and assumptions for health or environmental effects of electromagnetic fields. This is especially true for 5G. **Thus, any new reports published by the WHO, FCC, FDA or other government organizations that rely on the current methodology and assumptions of ICNIRP are fundamentally flawed, as they completely ignore biologic non-thermal effects of RFR demonstrated so well in the scientific literature.** Heat is the only measure of harm identified by radiofrequency radiation according to these government authorities.
DC Court of Appeals Court vs FCC 2021
The courts agreed when they concluded the FCC’s long term failure to reevaluate the radiofrequency exposure standards, excluding current science, to be arbitrary and capricious. The DC Court of Appeals Court on August 13, 2021 stated, “Under this highly deferential standard of review, we find the Commission’s order arbitrary and capricious in its failure to respond to record evidence that exposure to RF radiation at levels below the Commission’s current limits may cause negative health effects unrelated to cancer.”
In addition, interference of 5G systems in weather forecasting and astronomy research has not been addressed. This is especially critical in the face of climate change where rapid and accurate assessments are needed to protect people and property.

How 6G Will Change the World: AI and Virtual Reality Added to 5G
While there have been no safety studies or monitoring studies with regards to power and ambient RFR emissions of 5G systems, industry is now introducing us to the next generation, 6G, which will incorporate AI (artificial intelligence) and XR (which envelops augmented, virtual, and mixed reality) to 5G systems in the predicted year of 2030.
There is great concern from all sectors of society and academicians, but especially concerning is a direct warning from the computer scientists who invented AI. They wrote a very honest and disturbing open letter, “Pause Giant AI Experiments: An Open Letter”, now signed by 33,712 individuals, along with Yoshua Bengio, Elon Musk, Steve Wozniak, Max Tegmark, and Tristan Harris, as well as a multitude of esteemed ethics, AI and computer science professors. What is the government doing to do to insure that industry which is now marketing 6G, will not proceed until there are adequate guardrails which are mandatory. And what if it is felt this technology is just too dangerous, will the government have the authority to halt it? Who will make that decision?

This new addition (6G) to 5G technology is not discussed in your bill HR 1123 as 5G systems are excluded.

HR 1123- Understanding Cybersecurity of Mobile Networks Act seeks to obtain a report within a year “examining the cybersecurity of mobile service networks and the vulnerability of such networks and mobile devices to cyberattacks and surveillance conducted by adversaries.” It does, however, have a clause which excludes 5G systems. We wonder why 5G systems were deliberately left out of this evaluation. Could you explain?

Section (d) Scope of Report states:

(d) Scope Of Report.—The Assistant Secretary shall—

(1) limit the report required by subsection (a) to mobile service networks;

(2) exclude consideration of 5G protocols and networks in the report required by subsection (a);
5G Wireless: Capabilities and Challenges for an Evolving Network (GAO) 2020

The GAO Report of 2020 is comprehensive in its scope, pointing out the challenges of privacy, cybersecurity and health risks of 5G Wireless. Major telecommunications carriers and federal agencies were part of the discussion along with a few other officials.

Cybersecurity

With regards to cybersecurity risks the report highlights:

- **5G Supply Chain Risks** –
  - “The global reach of the 5G supply chain, as well as the technological complexity of the components of 5G technologies, present the risk that components from suppliers whose quality and security cannot be fully guaranteed may be used in 5G networks… [and] could expose U.S. entities to risks introduced by malicious software and hardware, counterfeit components, and component flaws …”
  - “5G security will, therefore, require continued monitoring of the threat landscape and increased public and private coordination.”

- **5G Architecture Risks**
  - Network Function Virtualization- “where routers and firewalls will be superseded by cloud-based servers using specialized software. This will increase the network’s vulnerability to attackers due to the increased reliance on software.”
  - “Developing Open Radio Access Network Alliance may be the source of another potential vulnerability in 5G architecture.”
  - “Another source of increased security risks in 5G network architecture is network slicing. according to a 5G Americas report, if the slices and the components within a slice are not adequately isolated, an attacker could attack the slice using components from another slice.”
  - “5G potentially introduces new modes of cyberattack and an expanded number of points of attack”
  - “5G requires continued assessments to identify future security vulnerabilities, as well as public-private collaboration to mitigate them.”

- **Vulnerability Reporting Recommended**
  - “The report recommends, among other things, that software and hardware component developers and manufacturers establish a publicly accessible process for vulnerability reporting, retain records documenting when a vulnerability was made known or discovered by the company, and maintain a vulnerability disclosure and patching policy for their products.”

**Note:** The report notes that 3GPP specifications which are intended to give enhanced security for 5G may not be properly implemented by cities, municipalities or carriers thus its protective benefits may be overrated and not realized as 5G infrastructure is deployed.
Privacy

- **Expansion of the Internet of Things (IoT)**
  - “5G networks will significantly increase the amount of IoT data, because devices will connect to vast networks of sensors that are located not only in workplaces, but also in home technology such as security systems and appliances…the use and storage of vast amounts of data without consent, including location data, which could compromise user privacy and lead to issues including **identity theft, discrimination, and other harm.**”
  - “As we have previously reported, gaps exist in the federal privacy framework regarding consumers’ right to know about or control the collection of their data. In addition, current privacy frameworks do not address new technologies such as mobile technology.
  - “We have previously recommended that Congress consider developing comprehensive legislation to enhance consumer protections related to securing the privacy of their personal information.

Health Effects

The GAO report states,

- **5G Millimeter Wave Technology is New and Different with Multiple Antennas and Beamforming Capabilities**
  - “No research has been conducted to characterize long-term exposure to the multiple active antennas with beamforming that are a feature of 5G.”
  - “It is unknown how the signals from these antennas may affect human health in the long-term. It could be computationally intensive to study the long-term exposure to these antennas due, in part, to their many possible configurations”
  - The report states that only the outer layer of skin is affected however an abundance of nerve cells reside in the superficial layers of the skin that 5G millimeter wavelengths will penetrate into and that connect to our complex nervous system. Some older research shows widespread internal organ biological effects from millimeter wavelengths applied to the skin surface Zalyubovskaya (1977) found “"millimeter waves caused changes in the body manifested in structural alterations in the skin and internal organs, qualitative and quantitative changes in the blood and bone marrow composition, and changes in the conditioned reflex activity, tissue respiration...and nuclear metabolism. The degree of unfavorable effect of millimeter waves depended the duration of radiation and individual characteristics of the organism."

- **No Long-term Studies on 5G Have Been Carried Out**
  - “While research on the biological effects of RF energy has been underway for decades, research on the long-term health effects of pre-5G technology is ongoing and research on the possibility of long-term health effects of 5G technology is largely unknown because the technology is still new and has not been widely deployed.”

- **Studies of 5G Will be AFTER the Roll Out - Only Then can “Observational” Research be Done on Adverse Health Effects**
  - There is a Catch 22 to the problem of health effects of any toxic exposure. Randomized control trials, considered to be the gold standard of research, are performed on drugs, not toxins. Epidemiological and occupational studies are performed to assess toxic exposures, however, this is after the toxin has been in commercial or military use, thus the damage to human lives and the environment has already been done. Basic science research using animals, and in-vitro and in vivo studies is useful to address a proactive strategy, in order to prevent a possible toxin from entering commercial use, however, these methods are criticized and often ignored. With no
safety studies being done on a toxin, a preventative strategy cannot be determined, and this is used to allow toxic exposures to be used especially with novel technologies, including nanotechnology and biomedical technologies. Emerging toxins then enter the public space with no or little regulation or monitoring and are “innocent until proven guilty”.

• **Effects of 5G May Not be Known for Decades After the Rollout**
  o The 5G Wireless report states, “‘However, no studies have been carried out on the long-term health effects of high-band 5G frequencies in observational studies, such as those in settings experienced by the general public, because the technology has not been deployed for long enough or widely enough to conduct these studies. According to an NCI scientist, even after high-band 5G technology has been put into use in the coming years, the long-term health effects on people, if any, may not be known for many years later because some health outcomes could take decades to develop. The high-band frequencies used in 5G will only be available for observational studies once 5G technology has been deployed widely. A National Institutes of Health scientist noted that the 5G frequencies are still not clearly defined, making it difficult to understand the impact on human exposure.”

**Insurance Companies State 5G is an Emerging Risk**

As you know, Insurance companies typically do not insure harm from radiofrequency radiation (RFR), it is an exclusion in almost all insurance policies. Special pollution insurance is required to cover this.

Swiss Re, the second largest insurance company in the world listed 5G as an emerging risk in the category over 3 years for cybersecurity as well as for health effects in 2019. In 2013 they listed Electromagnetic Radiation overall in the High Impact Category over 10 years. In their thorough 2019 report devoted to 5G, **“5G-Off the Leash”**, the report states, “5G – short for fifth generation – is the latest standard for cellular mobile communications. Providing ultrafast broadband connection with higher capacity and lower latency…Existing concerns regarding potential negative health effects from electromagnetic fields (EMF) are only likely to increase. An uptick in liability claims could be a potential long-term consequence.”

“Other concerns are focused on cyber exposures, which increase with the wider scope of 5G wireless attack surfaces. Traditionally IoT devices have poor security features. Moreover, hackers can also exploit 5G speed and volume, meaning that more data can be stolen much quicker. A large-scale breakthrough of autonomous cars and other IoT applications will mean that security features need to be enhanced at the same pace. Without, interruption and subversion of the 5G platform could trigger catastrophic, cumulative damage. With a change to more automation facilitated by new technology like 5G, we might see a further shift from motor to more general and product liability insurance.”

“There are also worries about privacy issues (leading to increased litigation risks), security breaches and espionage. The focus is not only on hacking by third parties, but also potential breaches from built-in hard- or software “backdoors.” In addition, the market for 5G infrastructure is currently focused on a couple of firms, and that raises the spectre of concentration risk…”

**5G: Industry Capture and Manufactured Needs**

A variety of industries have a well-used playbook of influence, along with denial of harm, that they have employed to maintain profits for many products found later by scientists to be harmful. Tobacco companies, fossil fuel companies and chemical manufacturing companies, among other industries, did know of the grave dangers of their products for years or decades and either did nothing to warn customers, or actually manipulated
the science (Monsanto Papers), hired sophisticated PR firms to undermine and distort emerging science (The Cigarette Papers), or used techniques of social engineering to “engineer consent” (Brandt 2012). Brandt (2012) states, “society and culture could be manipulated through public relations to create a marketing environment that favored a particular product…”

The opioid crisis is another modern example of industry influence in science, claiming the lives of more than 400,000 Americans in the last two decades with societal costs in the trillions (Marks 2020). The author writes in Lessons from Corporate Influence in the Opioid Epidemic: Toward a Norm of Separation, “In the face of these pervasive strategies, conflict of interest policies have proven insufficient for addressing corporate influence in medical practice, medical research, and public health policy. Governments, the academy, and civil society need to develop counterstrategies to insulate themselves from corporate influence and to preserve their integrity and public trust. These strategies require a paradigm shift—from partnerships with the private sector, which are ordinarily vehicles for corporate influence, to a norm of separation.”

The telecommunications industry has also been shown to be a captured agency. Erica Rosenberg, former FCC Assistant Chief of the Competition and Infrastructure Policy Division, wrote in A Case Study in Corporate Capture, that “the telecommunications industry leaves a significant environmental footprint: wetlands filled, viewsheds marred, cultural resources damaged, and habitat destroyed... In licensing and authorizing facilities associated with telecommunications, broadband, and broadcasting technologies, the FCC intentionally and routinely fails to meet its environmental obligations and epitomizes “regulatory capture.” It treats environmental laws as obstacles to be circumvented or ignored, first by promulgating rules that fall short of what NEPA requires and then by failing to properly implement and enforce its own substandard rules. The chronic failure has cumulative, incalculable, and largely unknown environmental impacts.” As human health depends on environmental health this is a critical issue to address. A Harvard Ethics Report, Captured Agency: How the Federal Communications Industry Is Dominated By the Industry It Presumably Regulates, concurs. All generations of telecommunications pose a risk to health and the environment, however, the vast 5G densification makes it imperative to address all the risks before implementation.

In a European Parliamentary report in 2019, 5G: State of Play in Europe, USA and Asia. In Depth Analysis, indicates 5G is a manufactured need. The report states, “As 5G is driven by the telecoms supply industry, and its long tail of component manufacturers, a major campaign is under way to convince governments that the economy and jobs will be strongly stimulated by 5G deployment.”

**What kind of future do we wish to have?**

The issues and decisions you have to make are difficult and critical to humanity, the environment and planetary health. Telecommunication and technology companies state that they will “shape the trajectory of our future”. We wonder just where that trajectory leads to. There are many stakeholders involved. Industry and military aspirations need to be examined carefully to control a “Dr. Strangelove” mentality of escalation and unbridled technological “innovations”, which may improve the bottom line for industry and serve short term military objectives, but at the risk of great harm to the living earth and its inhabitants.

We ask that you remove section d “(2) exclude consideration of 5G protocols and networks in the report” and instead add that 5G systems will be included as well. We also ask that you invite independent scientists, engineers and physicians who have done the research on radiofrequency radiation, and may have a different perspective than industry, to join the conversation and decision making.
In addition, we ask that policies be developed to provide separation between public and private interests, to address the systemic problem arising from webs of corporate influence with a variety of institutions in government. This will revive accountability, integrity and public trust.

We are happy to meet with you or your staff to discuss these issues in greater detail.

Thank you again for your efforts.

Sincerely,
Cindy Russell, MD
Physicians for Safe Technology

References

HR 1123- Understanding Cybersecurity of Mobile Networks Act

SONAR 2019: New emerging risk insights: Our SONAR report identifies new, changing and not-yet envisioned risks that the re/insurance industry needs to have on its radar.

https://www.stopumts.nl/pdf/Zwitserland%20Swiss%20Reinsurance%202013.pdf

https://www.gao.gov/products/gao-21-26sp


Pause Giant AI Experiments: An Open Letter. We call on all AI labs to immediately pause for at least 6 months the training of AI systems more powerful than GPT-4. March 3, 2023. https://futureoflife.org/open-letter/pause-giant-ai-experiments/


We Have No Reason to Believe 5G Is Safe. The technology is coming, but contrary to what some people say, there could be health risks. (2019) Scientific American. Joel M. Moskowitz. Oct 17, 2019. https://blogs.scientificamerican.com/observations/we-have-no-reason-to-believe-5g-is-safe/


Exxon Knew about Climate Change almost 40 years ago:

The Fossil Fuel Industry Documents Archive. UCSF. https://www.industrydocuments.ucsf.edu/fossilfuel/


