2. Describe the perspective your comments represent: Individual

3. My experiences/adverse health effects associated with exposure to RF/EMFs:
The first meeting I attended after my employer went wireless in the conference rooms I experienced fidgetiness, agitation, lack of concentration and a strange headache. Symptoms went away as soon as I left the room. The next day in a different wireless conference room with attendees that had cell phones and ipads I experienced cardiac and neurologic symptoms including heart palpitations and loss of fine motor skills in my left hand. Again symptoms went away when I left the room. Hindsight sleep disturbances I had attributed to menopause were attributable to the automatic meter reader on my power pole, precursor to the SMART meter. Symptoms went away after opting out of the automatic meter reader.

a) Type of wireless technology or RF/EMF sources involved:
mobile phones, cordless phone, other wireless devices such as computer mice and keyboards and vehicle beams and sensors, cell towers and antennas, SMART meters, WiFi including beacon signals in laptops, printers, and other SMART technology as well as high voltage power lines and transient electricity aka dirty electricity.

b) Nature, duration, frequency, and approximate timing of exposure(s):
Ambient levels have increased over the past 30 years.
Employer issued mobile phone (bag phone) in the mid to late 1990's I used it on a very limited basis.
A few years later my employer mobile phone was upgraded and I obtained a personal cell phone. My usage remained very infrequent.
In approximately 2010 I obtained a cordless phone with a base station.
July 8, 2014 employer went wireless in conference rooms.
Shortly thereafter I got rid of my cordless phone and opted out of the automatic meter reader on my power pole.
April 17, 2018 employer upgraded cell phones to 4G. I never used it and kept it off. I ceased to own a personal cell phone after 3G was phased out.
Dec 2019/Jan 2020 employer replaced corded desk phones with phones with wireless capabilities and a router was placed down the hall from my office. I was no longer able to work in the office and began working from home full time until my retirement in 2025.
Initially symptoms would go away when I left the exposure. Over time recovery took longer – days to weeks for higher exposures and some effects seem to be permanent.

c) adverse health effects experienced:
- neurologic effects
  - loss of fine motor skills
  - left sided delays
  - impaired concentration/foggy thinking
  - vertigo
- heart palpitations
- thyroid nodules and increased vascularity
- difficulty regulating blood glucose
- tinnitus
- sleep disturbances
- electric feeling in hands and legs
- headaches
- fatigue during exposure
- insomnia following exposure

d) When health effects appeared relative to exposure

Adverse health effects first appeared when attending my first meeting in a wireless conference room when the meeting began and subsided when I left the meeting. The adverse effects re-appeared with subsequent exposures. Over time recovery has taken longer and some adverse effects seem to be permanent.
Thyroid abnormalities were first observed by ultrasound in October 2014, three months after my employer went wireless in the conference rooms. By October of 2017 ultrasound was showing two nodules (abnormal growths). In July of 2018 I moved to an office in a remote location within the building and was attending all meetings virtually with wired technology. My November 2018 ultrasound showed the nodules were gone!

f) steps taken to reduce exposure; subsequent changes in adverse health effects

- got rid of cordless telephone
- opted out of automatic meter reader, precursor to the SMART meter, and later the SMART meter
- attended work meetings virtually from my private office
- moved my office to a low RF/EMF location in the building and later telecommuted from home full time
- used vacation to create a three day weekend to recover from the adverse effects of RF/EMF so that I could continue working
- no longer own a cell phone
- avoid public places and try to limit trips to town to once a month
- avoid major metro areas
- have no wireless devices in my home

Reducing exposure in the workplace resulted in resolution of thyroid nodules which had developed subsequent to employer transitioning to wireless devices. Other adverse health effects also improved with avoidance of RF/EMF.

g) supporting documentation

I have thyroid ultrasound reports which document averse changes in thyroid.
I have taken meter readings when experiencing RF/EMF adverse health effects that are well below $0.1\mu W/m^2$.
Research related to the effect of RF radiation on the thyroid:
https://pmc.ncbi.nlm.nih.gov/articles/PMC8451508/

5. n) What changes would improve assessment, disclosure, and regulation of wireless radiation exposure?

<u>Regulation</u>

- RF/EMF needs regulation, not just guidelines
- Biological harm needs to be addressed – we are electrical beings; need to address neurologic, cardiac effects not just thermal
- regulations need to be set based on how devices are actually used i.e. cell phones against the body and the multiplicity of exposure
- RF/EMF health and safety standards need to be based on long term exposure not just from individual devices but ambient levels
- the FCC is tasked with regulating communications by radio, television, wire, satellite and cable. They claim to be entrusted with developing policies that bring economic prosperity as well as safety of life. They are not a health organization. Economic prosperity and safety of life have competing demands. Establishing safety standards for RF/EMF exposure should be transferred to HHS or NIH. They should work collaboratively with FDA, EPA and OSHA.

<u>Assessment</u>

- fuses should be placed on cell towers to prevent exceeding current guidelines
- pre and post market testing of products is needed
- monitoring sites to evaluate ambient levels and cumulative exposures

Disclosure

The American people deserve full disclosure of RF/EMF information related to the devices they purchase and are exposed to, this information needs to be easily accessible not buried deep in the documentation. The public needs to be made aware of the limitations of the current guidelines so they can make informed decisions regarding the use of wireless devices. They need to be made aware that RF/EMF is not regulated. They need to be educated on the fact that the current guidelines are thermally based only. That they were based on limited exposure from a single source with a separation from the body. They need to know that wireless devices are approved under a low power exemption with no pre or post market testing. Commercials need to stop promoting improper use of cell phones, holding them directly against the body.

p) How should a classification system account for exposure-related characteristics, including operating frequency, power density, specific absorption rate (SAR), electric- and magnetic-field strength, modulation and pulse characteristics, duty cycle, beamforming, simultaneous exposure to multiple frequencies, duration of exposure, distance from the source, proximity to the body, and cumulative exposure over time?

All of these are important. The ones of greatest concern to me are:

- pulse modulated wave form including the peak amplitude
- simultaneous and cumulative exposure
- power density and duration of exposure
- frequency
- beam formation

7. What scientific methods are currently available for accurately characterizing RF radiation exposure?

Various meters are available for measuring RF/EMF field density. The Bug Hunter Professional TSCM Sweeper can produce an activity report showing each transmission by frequency type, the time of transmission, the length of time it was transmitting and the power level of the transmission.

9. What technical and exposure-related information should be disclosed to consumers, residents, workers, schools, healthcare providers, and local governments?

Full disclosure is needed.

10. data sources or surveillance systems to monitor adverse health effects associated with RF radiation exposure?

There would be a benefit to utilizing data sources and surveillance systems to monitor adverse health effects associated with RF radiation because currently people with adverse health effects are seen as just one person. Their symptoms are often attributed to other things. Utilizing data sources and /or surveillance systems can help identify trends, especially that occur over large populations or geographic areas. The challenge will be the multiple variables and privacy concerns.

11. Should exposure assessment or risk evaluation differ for sensitive populations?

Yes. Children, including the pre-born are not mini adults, their skulls are thinner, their brains contain more fluid and are still developing. A failure to consider these differences would constitute gross negligence.

Individuals with implanted medical devices including gold and amalgam dental fillings should also be reviewed for exposure risk. A person shouldn’t have to have a lifetime of dental work replaced at additional trauma to their teeth to accommodate new technology, especially technology that causes

biological harm. We should be looking at personal protective equipment for workers with elevated occupational exposure. Evaluating the risk of exposure to persons with preexisting medical conditions including those with multiple chemical sensitivity and autism spectrum disorder will be useful in obtaining accommodation. Since RF/EMF can't be seen, those who are adversely affected are often dismissed.

15. What types of scientific evidence should be considered when evaluating RF exposure associated with wireless infrastructure?
Proximity to homes, schools, childcare facilities, healthcare facilities, and/or workplaces; cumulative neighborhood exposure; antenna density; small-cell deployment; livestock are all important considerations. I would add the environment, the impact on trees, pollinators and any weather effects.

18. Please identify any additional scientific evidence, technical information, data, or recommendations that federal health agencies should consider when evaluating potential adverse health effects associated with RF/EMF radiation exposure.
Federal health agencies should promote a precautionary stance. Wired technology should be encouraged whenever possible in homes, schools, medical facilities, workplaces, and other public businesses. Fiber optic for internet and copper landlines for phones offer safe solutions. Adapters are available for connecting cell phones to fiber optic to reduce RF/EMF exposure. Additional engineering solutions for reducing cell phone RF/EMF exposure can be found in an article titled, Cell Phone Radiation Exposure Limits and Engineering Solutions, published in the International Journal of Environmental Research and Public Health 3 April 2023 (https://www.mdpi.com/1660-4601/20/7/5398).

Action should be taken to establish RF/EMF free areas in public places such as medical facilities similar to what was done for smoking.