HHS

My comments represent the perspective of an individual citizen. 3)a)For five and a half years now I have experienced "atypical migraine" (as diagnosed by a neurologist) which becomes severe during and following exposure to radiofrequency radiation from mobile phones, Wi-Fi routers, cell towers, smart meters and any radiating devices. These migraines are characterized by long episodes of afflictive, abnormal, painful, distressing neuropathy, pressure, burning, and palpations in the meninges region. They became severe and chronic starting in the spring of 2021, and at that time always started when I used a hotspot modem to connect to the internet, often for video conferencing. From that time I experienced the above-described form of intolerant physiological reaction while and after coming into close proximity to cell phones, Wi-Fi routers, cell towers, smart meters, wireless printers, and devices including bluetooth AirPods worn by someone nearby. The migraine is also characterized by sometimes severe brain fog, by near total deficit of executive function, memory issues, trouble concentrating, anxiety, and disturbing tingling in my hands, feet, and diaphragm. Over time, unable to establish a stable ongoing life free from exposure, the intolerance is worse. I am also affected by "dirty electricity," and electric and magnetic fields associated with wiring in my home, which has not been assessed by a credentialed professional with knowledge about idiopathic environmental intolerance and best mitigation practices.

The above illness and the impacts it has had on my life--social life, livelihood, family relationships--result in severe mental health detriments. My family have been severely negatively impacted by all of this.
The truth is that I can't work, I am severely isolated; my brain and body cannot tolerate "normal" environments anymore, and my life has been ruined because of this.

3e) I talked to my primary care physician about this and she documented it. A neurologist diagnosed "atypical migraine" in 2022, and he gave his opinion that migraines have various triggers, including radio frequency radiation.

I have learned: by participating in the support group directed by Sheena Symington who has worked with Dr. Magda Havas (University of Toronto); by networking with a few others who have developed chronic physiological illness characterized by intolerance to exposure to RF/ EMF; by reading "Toxic" and "Healing the Highly Sensitive Patient" by Dr. Nathan Neil. I have learned that Functional Medicine Doctors like Dr. Nathan Neil have been able to help individuals who experience intolerance and sensitivity similar to mine. Establishing an environment with very low artificial rf exposure (below .1 mw/m2), and

with no dirty electricity, highly mitigated artificial emf (low/well-grounded electric fields and elimination of high/frequently contacted magnetic fields) is a need for people whose health has been upset in the way described above. A 100% wired internet connection and a wired phone are needs. Accurate testing and effective treatments for lyme, bartonella, mold, and mercury toxicity, mast cell activation, as well as limbic system impairment, have been shown to help people regain some strength, health, and resilience. It is really important to appreciate the complexity, both of the kinds of environmental exposures humans are dealing with commonly today, and of each individual's health picture. People have different genetic profiles relevant to detoxification as well as nutrient absorption, among much else. The above described condition, known as RF-Injury, or Electromagnetic Radiation Syndrome, or Environmentally-Induced Complex Chronic Condition, is in dire need of respect, acceptance, and understanding today.

My medicaid health coverage does not allow me to be tested for mold or mercury toxicity. My current pop documented my symptoms arising from contact with rf/emf, but she could not give me a diagnosis of Electromagnetic Intolerance, or EMR-S. She has written on my behalf that my neurological symptoms prevented me from being able to serve as a juror. It is highly difficult for me to access help within the health services available to me, because going to appointments results in bad headaches, it is near impossible to have the exposures to wireless reduced in those environments, including because there isn't sufficient recognition and awareness of this intolerance as a health condition. The cognitive deficits that arise from being in an exposure environment, and related emotional distress have had a cumulative negative impact on my ability to interface with available covered services. I haven't and still don't have wired internet, so I have a tremendously difficult time with the necessity of the "patient portal" online interface.
3f) When I do not use the hotspot modem, avoid being nearby while family members use it, the severe headaches do not occur. When I spend time in an area that has no close range devices and is shielded from the cell tower, the pain and neuropathy lessen and subside. When I have the opportunity to spend a long time free from exposure--for instance, meeting a friend in a natural forest site, or spending time at the house of someone where there is no artificial rf and the emf are very low, my head feels better and I feel better.

3g)Dr. Nathan Neil's books "Toxic" and "Healing the Highly Sensitive Patient" and all of the many research studies included in the chapter bibliographies, especially the chapters mentioning EMFs, Mast Cell Activation, Lyme, Mold, and Genetics.

11f/g and 16. The acknowledgment of individuals who report intolerance of RF/EMF should be guided by the work of Functional Medicine Doctors who have treated such individuals. RF Injury,

Mercury-, Mold-toxicity, and chronic lyme all need to be acknowledged and treated within the hoo system with the knowledge and accuracy that has been demonstrated by functional medicine doctors. NIH and the CDC must lead the way in acknowledging the RF-injured/EMR-S, the wide-ranging risks of mold toxicity, Lyme and confections, mercury toxicity, and the complex challenges individuals face who may have different detox profiles. People on medicaid need a means to access the level of care provided by functional medicine, which is currently only available from physicians who operate largely outside of the insurance system and whose treatment requires a significant financial investment at the minimum. The public health and human services arms of the state must provide support for low-income people whose homes need emf and mold remediation, or who need to establish housing free from mold, rf pollution, and exposure to emf from wiring/neighbors. This is relevant to ADA but also vital for all people. It is a civil right to be able to live and work in a healthy environment. A person does not need to prove or fight for this right against institutionalized denial. It is an inalienable right--HHS and individuals with the ability must identify the sources of this large scale violation and restore people's sovereignty over their health in their homes, at school, in communities. This issue is akin to nonsmoker's rights in previous decades.

Numerous research studies have found a link between cell phone radiation and headaches. A 2017 review by Wang and colleagues found a significant association between mobile phone use and headache in children and adults, including a dose-response relationship between risk of headache and call duration and frequency. Similarly, Cho et al. (2016) and Szyjkowska et al. (2014) found an association between headache severity and average call frequency.

A 2012 study by Sudan et. al., on over 52, 000 children found children with cell phone exposure had higher odds of migraines and headache-related symptoms than children with no exposure. Mobile phone use was associated with vertigo/dizziness, fatigue, forgetfulness, sleep disturbance-insomnia, tension-anxiety, joint and bone pain, lacrimation of the eyes, hearing loss and tinnitus in a 2014 Turkish survey and these findings are replicated in other studies from other counties that utilized self report questionnaires.

A 2022 review of cell phone radiation and risk of headaches published in the International Archives of Occupational and Environmental Health found increasing call duration and mobile phone use in older individuals increased the risk of headache.

A 2021 study entitled “Trigger of a migraine headache among Thai adolescents smartphone users: a time series study” on high school students found correlations between smartphone use and migraine headaches. The researchers concluded that “Finally, the findings from the present study point out that smartphone electromagnetic radiation

is likely to be the trigger of migraine type headache."

In 2001 Microwave News reported on Dr. Pierre Aubineau's theory that EMF exposure leads to inflammation that leads to a severe headache. "He has shown that when rats are exposed to GSM radiation, the dura mater becomes inflamed. Aubineau points to a theory—advanced by Dr. Michael Moskowitz of Harvard Medical School in Boston—that such an inflammation in humans would lead to a severe headache."

Some researchers state that the research suggests that the mechanism by which headaches are increased by cellular radiation involves 1. The breakdown of the blood-brain barrier due to low intensity microwave exposure and 2. The dopamine-opiate system which also is affected by exposure.

A 1998 commentary by researcher Allen Frey,"Headaches from cellular telephones: are they real and what are the implications?" describes the "substantial body of data indicating that brain systems, particularly the opiate-dopamine systems, are influenced by exposure to brief, very low intensity electromagnetic fields. These systems could be involved in the reported headaches."

Published research has repeatedly found a link between cell phones, radio frequency and headaches. Please review a list of research studies on linking headaches to cell phone and radiofrequency radiation below.

DH Toffa & AD Sow (2020) The enigma of headaches associated with electromagnetic hyperfrequencies: Hypotheses supporting non-psychogenic algogenic processes, Electromagnetic Biology and Medicine, DOI: 10.1080/15368378.2020.1762638

Although an electrohypersensitivity (EHS) is reported in numerous studies, some authors associate hyperfrequencies (HF)-related pains with a nocebo effect while others suggest a biological effect. Therefore, we aimed to suggest hypotheses about the complex mechanisms of headaches related to HF-exposure. We crossed basic features of headaches with relevant studies (from the year 2000 up to 2018) emphasizing on the HF effects that may lead to pain genesis: neuroglial dysmetabolism, neuroinflammation, changes in cerebral blood perfusion, blood-brain barrier dysfunction and electrophysiological evidences of hyperexcitability. We privileged studies implying a sham exposure (for in vivo studies) and a specific absorption rate lower than 4 W/Kg. HF-induced headaches may involve an indirect inflammatory process (neurogenic, magnetogenic or thermogenic) as well as a direct biophysical effect (thermogenic or magnetogenic). We linked inflammatory processes to meningeal dysperfusion or primary neuroglial dysfunction triggered by non-thermal irradiation or HF-induced heating at thermal powers. In the latter case, HF-induced excitoxicity and oxidative stress probably play a crucial role. Such disorders may lead

to vascular-trigeminal activation in predisposed people. Interestingly, an abnormal oxidative stress predisposition had been demonstrated in overall 80% of EHS self-reporting patients. In the case of direct effects, pain pathways' activation may be directly triggered by HF-irradiation (heating and/or transcranial HF-induced ectopic action potentials). Further research on HF-related headaches is needed.

Durusoy, Raika, et al. "Mobile phone use, school electromagnetic field levels and related symptoms: a cross-sectional survey among 2150 high school students in Izmir." Environmental Health 16.1 (2017): 51.

"We found an association between mobile phone use and especially headache, concentration difficulties, fatigue, sleep disturbances and warming of the ear showing also dose-response. We have found limited associations between vicinity to base stations and some general symptoms; however, we did not find any association with school EMF levels."

"Decreasing the numbers of calls and messages, decreasing the duration of calls, using earphones, keeping the phone away from the head and body and similar precautions might decrease the frequencies or prevalence of the symptoms."

Wang, J., et al. "Mobile Phone Use and The Risk of Headache: A Systematic Review and Meta-analysis of Cross-sectional Studies." Scientific Reports 7.1 (2017): 12595.

"Headache is increasingly being reported as a detrimental effect of mobile phone (MP) use. However, studies aimed to investigate the association between MP use and headache yielded conflicting results. To assess the consistency of the data on the topic, we performed a systematic review and meta-analysis of the available cross-sectional studies."

"We found that the risk of headache was increased by 38% in MP user compared with non-MP user. Among MP users, the risk of headache was also increased in those who had longer daily call duration and higher daily call frequency."

"Our data indicate that MP use is significantly associated with headache, further epidemiologic and experimental studies are required to affirm and understand this association."

Excerpts:

"The underlying mechanism of the association between MP use and headache remains unclear but some suggest that breakdown of the blood-brain barrier due to exposure to low intensity MP frequency microwave energy may be involved 33,34,35,36. Also, the dopamine-opiate system may be involved in headaches and low intensity electromagnetic energy exposure affects those systems 37,38,39. However, since Frey's group first reported headaches occurring after microwave energy exposure at

approximately the same frequencies and incident energies that present day MP emit 40, the exact mechanism under this association is still not fully understood now."

"The results of our meta-analysis and lots of previous studies herein supported current clinical opinion that MP use may cause increased risk for headache. Therefore, it is advisable to admit that the use of MP is a risk factor for headache. In Stalin's study 18 and Chiu's study 19, the prevalence of MP usage among adult and children was 69.8% and 63.2% respectively in their study population, and that was only the data from two years ago. We could foresee the prevalence of MP usage will be higher in the future. So it is also advisable to suggest that excessive use of MP should be avoided by increasing social awareness through health promotion activities. It is imperative that health care professionals, clinicians and common people are educated about the deleterious influence of MP on headache. And it is reasonable to instruct children and adolescent about a prudent use of MPs. In addition, we encourage screening of headache patients during routine clinical visits to identify those patients to explore excessive MP use as a potential cause. Intervention and policies must be developed, evaluated and carry out at the population level to raise the awareness of the potential adverse health effect to decrease the headache caused by MP using."

Cho, Y.M., et. al. "A cross-sectional study of the association between mobile phone use and symptoms of ill health. Environmental Health and Toxicology (2016).

The average daily phone call frequency showed a significant correlation with the perceived stress scale score in female subjects. Mobile phone call duration was not significantly associated with stress, sleep, cognitive function, or depression, but was associated with the severity of headaches.

Stalin, P., et al. "Mobile phone usage and its health effects among adults in a semi-urban area of southern India." Journal of Clinical and Diagnostic Research: JCDR 10.1 (2016): LC14.

"The prevalence of mobile phone usage was 70%. Calling facility (94.2%) was used more than the SMS (67.6%). Health problems like headache, earache, tinnitus, painful fingers and restlessness etc., were found to be positively associated with mobile phone usage. There was negative association between hypertension and mobile phone usage."

Chiu, Chang-Ta, et al. "Mobile phone use and health symptoms in children." Journal of the Formosan Medical Association 114.7 (2015): 598-604.

"Mobile phone use was associated with a significantly increased adjusted odds ratio for headaches and migraine (1.42, 95% CI = 1.12–1.81) and skin itches (1.84, 95% CI = 1.47–2.29). Children who

regularly used MPs were also considered to have a health status worse than it was 1 year ago (β = 0.27, 95% CI = 0.17–0.37).”

“Although the cross-sectional design precludes the causal inference for the observed association, our study tended to suggest a need for more cautious use of MPs in children, because children are expected to experience a longer lifetime exposure to radiofrequency electromagnetic fields (RF-EMF) from MPs.”

Schoeni, Anna, Katharina Roser, and Martin Röösli. “Symptoms and cognitive functions in Adolescents in relation to mobile phone use during night.” PloS one 10.7 (2015): e0133528.

“Overall, being awakened during night by mobile phone was associated with an increase in health symptom reports such as tiredness, rapid exhaustibility, headache and physical ill-being, but not with memory and concentration capacity. Prevention strategies should focus on helping adolescents set limits for their accessibility by mobile phone, especially during night.”

Zheng, Feizhou, et al. “Association between mobile phone use and self-reported well-being in children: a questionnaire-based cross-sectional study in Chongqing, China.” BMJ open 5.5 (2015): e007302.

“The present study indicated that there was a consistent significant association between MP use and fatigue in children. Further in-depth research is needed to explore the potential health effects of MP use in children.”

Küçer N and T. Pamukçu. “Self-reported symptoms associated with exposure to electromagnetic fields: a questionnaire study.” Electromagnetic Biology and Medicine 33.1 (2014): 15–7.

Self-reported symptoms were headache, vertigo/dizziness, fatigue, forgetfulness, sleep disturbance-insomnia, tension-anxiety, joint and bone pain, lacrimation of the eyes, hearing loss and tinnitus.

As a result of the survey, the study has shown that users of mobile phone and computer more often complained of headache, joint and bone pain, hearing loss, vertigo/dizziness, tension-anxiety symptoms according to time of daily usage ($p < 0.05$).

Szyjkowska, A., et al. “The risk of subjective symptoms in mobile phone users in Poland – An epidemiological study. International Journal of Occupational Medicine and Environmental Health 27.2 (2014): 293–303.

Headaches were reported significantly more often by the people who talked frequently and long in comparison with other users.

Results show that the mobile phone users may experience subjective symptoms, the intensity of which depends on the intensity of use of mobile phones.

“Cell Phone Use and Prenatal Exposure to Cell Phone Radiation May Cause Headaches in Children.” Electromagnetic Radiation Safety (16 January 2014).

“A new, peer-reviewed study found that children who used cell phones or were exposed prenatally to cell phone radiation were at higher risk of developing headaches by age 7.”

“According to the study authors, “headache is the most common type of pain reported by children,” and headaches have become more common over time. “Should RF exposure from cell phones have a harmful effect on health, children may be at the highest risk and should be given high priority in research related to RF [radiofrequency] health effects.”

Redmayne, Mary, Euan Smith, and Michael J. Abramson. “The relationship between adolescents’ well-being and their wireless phone use: a cross-sectional study.” Environmental Health 12.1 (2013): 90.

The number and duration of cellphone and cordless phone calls were associated with increased risk of headaches

Texting and extended use of wireless phones was related to having a painful ‘texting’ thumb).

Using a wired cellphone headset was associated with tinnitus, while wireless headsets were associated with headache, feeling down/depressed, and waking in the night.

Several cordless phone frequencies bands were related to tinnitus, feeling down/depressed and sleepiness at school, while the last of these was also related to modulation.

Waking nightly was less likely for those with WiFi at home. Being woken at night by a cellphone was strongly related to tiredness at school.

Madhuri Sudan, et al. “Prenatal and Postnatal Cell Phone Exposures and Headaches in Children.” Open Pediatrics Medical Journal 6 (2012): 46-52.

Children with cell phone exposure had higher odds of migraines and headache-related symptoms than children with no exposure.

Röösli, Martin, et al. “Systematic review on the health effects of exposure to radiofrequency electromagnetic fields from mobile phone base stations.” Bulletin of the World Health Organization 88.12 (2010): 887-896.

“The majority of the papers (14) examined self-reported non-specific symptoms of ill-health. Most of the randomized trials did not detect any association between MPBS radiation and the development of acute symptoms during or shortly after exposure. The sporadically observed associations did not show a consistent pattern with regard to

symptoms or types of exposure. We also found that the more sophisticated the exposure assessment, the less likely it was that an effect would be reported."

Divan, H.A., et al. "Prenatal and postnatal exposure to cell phone use and behavioral problems in children." Epidemiology, vol. 19, no. 4, 2008, pp. 523–9.

Exposure to cell phones prenatally–and, to a lesser degree, postnatally–was associated with behavioral difficulties such as emotional and hyperactivity problems around the age of school entry. These associations may be noncausal and may be due to unmeasured confounding. If real, they would be of public health concern given the widespread use of this technology.

Khan, Muhammad. "Adverse effects of excessive mobile phone use." International Journal of Occupational Medicine and Environmental Health 21.4 (2008): 289–293.

"16.08% of the subjects complained of headache and 24.48% of fatigue. Impaired concentration was reported by 34.27% of respondents, memory disturbances by 40.56%, sleeplessness by 38.8%, hearing problems by 23.07%, and facial dermatitis by 16.78%. The sensation of warmth within the auricle and behind/around the ear was reported by 28.32%. Out of 286 subjects who participated in this study, 44.4% related their symptoms to mobile phone use."

"The findings of the present study indicate that mobile phones play a large part in the daily life of medical students. Therefore, its impact on psychology and health should be discussed among the students to prevent the harmful effects of mobile phone use."

Söderqvist, Fredrik, Michael Carlberg, and Lennart Hardell. "Use of wireless telephones and self-reported health symptoms: a population-based study among Swedish adolescents aged 15–19 years." Environmental Health 7.18 (2008).

"Watching TV increased the odds ratio for use of wireless phones, adjusted for age and gender. Some of the most frequently reported health complaints were tiredness, stress, headache, anxiety, concentration difficulties and sleep disturbances. Regular users of wireless phones had health symptoms more often and reported poorer perceived health than less frequent users."

Mortazavi, S. M. J., J. Ahmadi, and M. Shariati. "Prevalence of subjective poor health symptoms associated with exposure to electromagnetic fields among university students." Bioelectromagnetics 28.4 (2007): 326–330.

"Among self-reported symptoms, headache (53.5%), fatigue (35.6%), difficulties in concentration (32.5%), vertigo/dizziness (30.4%),

attention disorders (28.8%), nervousness (28.1%), palpitation (14.7%), low back pain (14.3%), myalgia (12.4%), and tinnitus (9.9%) were the main self-reported symptoms. No significant differences in the prevalence of these symptoms were found between CRT users and those who did not use CRTs. A significant association was found between cordless phone use and difficulties in concentration ($P < .05$) or attention disorders ($P < .05$). However, after correction of the gender role, these differences were not significant. No association was found between mobile phone use and the above-mentioned symptoms. No significantly higher prevalence of self-reported symptoms was found in individuals who had used mobile phones, video display terminals or cordless phones more frequently than others."

"Mass-media's lack of interest in the possible hazards of exposure to EMF in developing countries can explain the difference observed between the results of this study and those of other researchers in some developed countries who have shown an association between EMF exposure and the prevalence of self-reported subjective symptoms. This finding can confirm the results obtained in provocative studies which indicated the role of psychological factors in electromagnetic hypersensitivity. More research is needed to clarify whether daily environmental EMF may cause health problems."