2) I am responding as an individual consumer who was turned into a patient due to EMF exposure.

3) I used to be completely, 100% normal! Or at least that's what I like to tell myself. I was a typical kid that grew up in a rural logging community in North Idaho. I was always active in sports and being a small community, it wasn't abnormal to play varsity in 3 sports. I had the occasional injury and sickness but all in all I was healthy, got good grades, and did well in sports. After high school I set my sights on the Air Force. I always had a desire to fly planes and the military was the most logical path to get there. I joined the ROTC program and earned an undergraduate degree in Electrical Engineering. After graduation, I entered pilot training in the Air Force and eventually made my way to flying F-15E's. It was during this period of my life that my health started to change. I got to the point where I had to give up flying planes and I shifted to remotely piloted aircraft (RPA).....drones in laymen's terms. My health continued to deteriorate during this period of my life but fortunately I was able to get to 20 years and earn a retirement. The only reason I share this is break the idea that there is an "at risk" population. I would have never been placed in that category, when I got sick I was at the prime of my life....late 20s, active, everything in life going for me. It took me another 15 years to realize what was causing my sympoms and here I am in my late 40's, nearly disabled and unable to function around any electronics.

3 a) Bluetooth:

It was sometime in the fall of 2019, I had just purchased a pair of wireless Bluetooth earbuds, not the expensive Apple brand, but a mid-range pair from Amazon that had good reviews. The grass in the backyard needed to be cut so I figured this was the perfect opportunity to test them out. After making sure that they were charged up, I set out into the backyard to get started. I paired them with my phone, selected a playlist, and popped them in my ears to start rocking out. The excitement that I had over my new purchase instantly stopped when I realized something in my head wasn't right. I suddenly felt an unsteady, disorienting feeling and the sky started to spin. I steadied myself on the side of the house, ripped out the earbuds and sat down in the grass. After a few moments, my head calmed down and I felt mostly normal again. Sitting there in utter confusion, I couldn't make sense of what just happened. It was the strangest sensation that I had ever felt. I proceeded to mow the grass, this time without any music, and I continued to ponder what just happened. Should I be alarmed? Should I go to the doctor? I was an 18 year pilot in the Air Force. I knew that strange things like this could be the beginning of the end of my flying career or worse my military career if it turned out to be something serious. A week or so went by and I felt normal, no recurrences. But I couldn't stop wondering if what

had happened was because of the earbuds and not from something else. I mean, millions of people use these things every day. I've used Bluetooth devices for years and nothing like this had ever happened. Surely it had to be something else. I decided to test them out again, this time in a more controlled setting far away from any tools that could cause me any dismemberment if I were to pass out. I sat down on the couch, turned them on, paired them with my phone, hit play, and put them in. Sure enough, the exact same sensation happened within a few seconds. I was much quicker about getting them out of my ear this time so the recovery was a bit quicker but the experience was no less shocking. About 2 months later I saw the earbuds sitting in the drawer and thought, why not, let's test these things again……same result!

Fast forward to current times, I can feel all types of RF radiation. The closer it is to my body, the more severe the reaction. It makes me sad when I see people put Bluetooth devices in their ears. I know it's causing damage. Maybe they can't feel it right now, but the effects will eventually cause issues for them.

Currently, there are no warning labels on Bluetooth devices much less agreeance on the harmful affects of them. I hope my story shows the direct impact that this technology can have on a person. Someday I pray that the regulating agencies will accept that non-thermal affects of RF radiation are real and harmful.

RF Studies

Cakir, B., Tanaka, Y., Choe, M., et al. (2025). Radiofrequency regulates the BET-mediated pathways in radial glia differentiation in human cortical development. *Cell Reports*. https://www.sciencedirect.com/science/article/pii/S2211124725010095

Zhang, W., Deng, S., Guo, H., Hao, S., Ji, N., Xu, W., Yang, X., Liu, Q., & Jiang, G. (2026). Brain accumulation of airborne magnetite nanoparticles under earphone/smartphone-embedded magnetic fields triggers neurotoxicity. *ACS Nano, 20*(10), 8789–8800. https://doi.org/10.1021/acsnano.5c22066

Sage, C., & Hardell, L. (2018). Fatal collision? Are wireless headsets a risk in treating patients? *Electromagnetic Biology and Medicine, 37*(2), 95–99. https://doi.org/10.1080/15368378.2017.1422261

Zhou, N., Qin, W., Zhang, J. J., Wang, Y., Wen, J. S., & Lim, Y. M. (2024). Epidemiological exploration of the impact of Bluetooth headset usage on thyroid nodules using Shapley additive explanations method. *Scientific Reports, 14*(1), 14354. https://doi.org/10.1038/s41598-024-63653-0

3 a) ELF EMF Magnetic/Electric Fields

Perhaps the EMF that is talked about the least is ELF EMF Magnetic/Electric Fields. This is the type of EMF that goes through the wires in our walls, the power lines down the streets, it charges our never ending devices. It is potentially even more harmful than RF radiation because we are surrounded by it 24/7. The electric and magnetic fields that propagate from those wires and devices impact us.

As time has gone by, I've realized that I'm sensitive to all different types of EMFs but by far the most impactful for me deals more with ELF Magnetic/Electric Fields. To know exactly what frequency is causing what is extremely difficult. I'll share a couple of stories:

I can smell electricity! There I said it, I can smell electricity. Now before you think that I have some super K-9 sixth sense, or that I'm a few cards shy of a full deck upstairs, it's not exactly what it sounds like. Obviously electricity doesn't have an odor, but something in my brain is telling me that it does. Let me start by giving some context on how I got to this odd discovery. Flying RPA's in the Air Force (drones in laymen's terms) is much different than flying inside an actual aircraft but there are also a lot of similarities. The pilot sits in a room called the Ground Control Station (GCS) that has a cockpit of sorts where all the flight controls, screens, and buttons to fly the aircraft sit as well as many computers that take that information and put it into a format that can be sent and received by the aircraft. I had just stepped out of the GCS after a couple hours of flying and was sitting in the Squadron Operations Center. This area combines all of the information from multiple GCS's, intelligence personnel, weather forecasters, and an Operations Supervisor. It was a quiet weekend afternoon so not too many people were around. In aviation we always train for different Emergency Procedures (EPs) and a common one across all platforms is dealing with electrical fires. It's usually described as white acrid smoke, something that you don't want to breathe in but most importantly you want to turn the power source off as quickly as possible to stop whatever is causing the smoke and then evacuate the area. While I was sitting there, I noticed a smell, a smell that I had never encountered before but the first thought that popped into my mind was an electrical/chemical/metallic type smell.....possibly an electrical fire. I immediately asked the other individual in the room if they smelled something unusual and their response was, "I think someone just heated up some food in the microwave." I knew it wasn't that, so I got up to see if I could identify the source. I walked around to try and identify if the smell was stronger in any given area of the room but it seemed to be the same everywhere I went. I ventured into the hall; same smell, I went from room to room; same smell. As you can imagine, I was thoroughly confused. Finally, I walked outside because surely some fresh air would get rid of it; same smell! I continued to smell the same thing for the next two days. But it wasn't just the smell, it was

also accompanied by extreme brain fog and fatigue. This was yet again another unexplainable "thing" that popped up in my life.

After the smell dissipated I felt mostly normal for the rest of the week and hoped that I had just experienced a singular even, but then my next shift rolls around, I go back to work, take my seat in the SOC and the smell comes back within a few minutes, and then the two day cycle repeated itself. From that point on almost like clockwork, the first day of my work week, the two day cycle repeated itself. Eventually I went to the doctor and I got the "that's strange" remark. I eventually talked the doctor into sending me to an Ear Nose and Throat (ENT) doctor. After an MRI and having some long medieval instrument stuck up my nose I got the "looks normal to me" diagnosis but "here, try some of this nasal spray to see if it does anything." The only thing the nasal spray did was award me an epic migraine. I eventually landed at a neurologist and he said it "could" be an Epileptic condition. An EEG verified that something "abnormal" was going on but wasn't specific. That was the start of 5-6 different anti-seizure drugs, none of which helped and all carried their own set of side effects. To be clear, 6 years later, I've yet to ever experience a seizure or be diagnosed with Epilepsy. Meanwhile, the phantom smells continued like clockwork. Eventually, the smells would start in other places like grocery stores, restaurants, friends homes, etc. It took me nearly two years to realize that it was triggered by something in my environment, something electrical. At this point I can predict certain types of places that cause it, so as long as I avoid them or at least minimize my time there I am much better at heading off an episode before it starts. But how do I know it's electrical and not some other environmental trigger. I like to do a lot of woodworking (which I've largely given up due to the electrical tools) and I use my garage as my workshop. I can spend hours in my garage without any problems but for some reason, every time I use my table saw for more than a few minutes the smells are triggered. Absolutely nothing changes except for the use of the table saw and no it's not the sawdust because I can use my planer for hours which creates 10 times more sawdust and I have no problem at all. It's something to do with that specific motor, something about the electromagnetic field that it gives off. A second example, there is a restaurant that I use to meet up with some friends on a weekly basis. Every time I went to that restaurant, the phantom smells would trigger within a few minutes. Over time, I've learned that certain LED lights cause the issue. At my request, we stopped meeting at that restaurant and picked someplace different and I had no issues. Because this was a local chain restaurant, they are decorated the same and use the same lights. A few years later, I went to a different one on the other side of town with my family and guess what……phantom smells triggered after a few minutes.

So now I've had this strange encounter with Bluetooth headphones and I have these annoying phantom smells. I got COVID early on in the pandemic and was sick for a couple

of weeks with body aches, headaches, loss of taste and smell……the typical symptoms. It wasn't fun but at the same time I was glad to get over it. By now, the doctor had grounded me from flying because of the medication that I was on (not because of my issues because I still had no diagnosis). I was stuck behind a computer doing administrative tasks, every pilots greatest fear. Then the next phase of my issues started, the body aches…..flu like symptoms. After a solid week of constant body aches, I finally had to tell someone and wouldn't you know it, I was instantly sent home to quarantine in case it was COVID. The interesting thing is that you can test positive for COVID weeks after getting over it, up to 30 days was the current guidance at the time. So after I tested positive on day 35, they told me it was a new case of COVID. I believed it for about a day but after feeling better almost instantly when I was sent home I knew it was something else. But I wasn't going to totally complain about getting 10 days off of work at home with my family. After returning to work and spending an entire day behind a computer I left for home feeling ill again and the next morning I woke up feeling hungover and with body aches again. What in the world!!! This time I kept my mouth shut and pushed through the rest of the week feeling hungover each morning and my body hurting. I went home for the weekend and started to feel much better by the time Sunday rolled around. But then wouldn't you know it, by the end of the workday on Monday the same thing happened. So now I'm in this strange cycle of phantom smells and body aches. Eventually I figured out that as long as I avoided certain areas at work, primarily the flight operations area where all of the massive computer servers are, the phantom smells became less frequent, however, the body aches continued. They got to the point that if any one of my kids jumped on my lap I would cringe in a pain that propagated through every joint and muscle in my body. Not a fun place to be for a dad that can't wrestle with his kids. The pain in my hands made it nearly impossible to type on a keyboard or use a touchscreen device. The sensitivity in the ends of my fingers was excruciating. I had to start using a stylus type device to use a touch screen, whether it be a phone or aircraft simulator at work.

Power Lines: For me, exposure to cell phones, Wi-Fi, etc is painful and impactful but I can usually recover from an exposure within a matter of hours or a day. When I'm within close proximity to power lines for a period of time the effects are felt for days if not weeks. I've had a few instances where I felt like I never recovered. Two examples: 1) My son used to play junior high basketball against a team that had an outdoor court directly under giant power lines (the big metal supports with 6+ wires on them). I've been to this location 3 times. Each time, I arrived at the game feeling good (at least by my standards), but by the end of the games I was a mess…..body pain, headaches, fatigue, brain fog. Not a good place to be. After the third time I refused to ever go back. Example 2) I was asked to do some painting with a bunch of guys for a lady a church that needed some help. I had never

been to her house before. As I arrived, I knew I was in trouble because her home sat directly under some fairly large power lines. I had a choice to make…turn around and go home or suck it up and help. I decided I would do my best to fulfill my obligation to help but after a couple of hours I had to leave. I went straight home and went to bed for the rest of the day. That incident took the better part of a week before I started feeling better.

Sources:

Brabant, C., Geerinck, A., Beaudart, C., Tirelli, E., Geuzaine, C. and Bruyère, O. (2022) 'Exposure to magnetic fields and childhood leukemia: A systematic review and meta-analysis of case-control and cohort studies', *Reviews on Environmental Health*. Available at: https://doi.org/10.1515/reveh-2021-0112

Seomun, G., Lee, J. and Park, J. (2021) 'Exposure to extremely low-frequency magnetic fields and childhood cancer: A systematic review and meta-analysis', *PLOS ONE*, 16(5), e0251628. Available at: https://doi.org/10.1371/journal.pone.0251628

Karimi, A., Ghadiri Moghaddam, F. and Valipour, M. (2020) 'Insights in the biology of extremely low-frequency magnetic fields exposure on human health', *Molecular Biology Reports*, 47(7), pp. 5621–5633. Available at: https://doi.org/10.1007/s11033-020-05563-8

Carpenter, D.O. (2013) 'Human disease resulting from exposure to electromagnetic fields', *Reviews on Environmental Health*, 28(4), pp. 159–172. Available at: https://doi.org/10.1515/reveh-2013-0016

Wang, X., Ye, Y., Zuo, H. and Li, Y. (2024) 'Neurobiological effects and mechanisms of magnetic fields: A review from 2000 to 2023', *BMC Public Health*, 24, 3094. Available at: https://doi.org/10.1186/s12889-024-18987-9

IARC (2002) *Non-Ionizing Radiation, Part 1: Static and Extremely Low-Frequency (ELF) Electric and Magnetic Fields*. IARC Monographs. Available at: https://publications.iarc.fr/Book-And-Report-Series/Iarc-Monographs-On-The-Identification-Of-Carcinogenic-Hazards-To-Humans/Non-ionizing-Radiation-Part-1-Static-And-Extremely-Low-frequency-ELF-Electric-And-Magnetic-Fields-2002

Todorović, P. *et al*. (2026) 'Health effects of extremely low-frequency electromagnetic field exposure from high-voltage power lines and substations: A scoping review of primary empirical research', *IEEE Access*. Available at: https://ieeexplore.ieee.org/document/11424416

3 e) Did I seek medical evaluation and treatment? Because I was a pilot in the Air Force, health was always an important aspect of my life. Every time we flew, during the brief, we had to assess our physical status at the time. The last thing you want to do is put yourself or others in danger because you are trying to fly when you are sick. Because of this constant assessment, when there is an issue, you speak up….no harm no foul. When I started to get sick I went to the doctor, explained what was going on and then did whatever course of action was recommended. The first red flag that went up for me was in 2017 when I hit my first major crash. Fatigue like I'd never felt, brain fog like I'd never experienced, body aches, inability to focus, headaches, anxiety…….something that I had never experienced up until this point in my life. To be honest, I was a little scared. I was expecting to go to the doctor and have them tell me I had some incurable disease. I was completely shocked when they ran a bunch of tests and said that everything looked completely normal. My reaction is that they can't be normal, I can't feel like this and have things be normal. By now, I'm several months into this "crash" and no real path forward. Words like "Chronic Fatigue Syndrome" were thrown around, I was sent to a Psychologist to see if they could help. My medical records from my time in the Air Force are giant. I went to so many specialists: Neurologist, ENT, Rheumatologist, Cardiologist, Psychologist, Gastroenterologist, Allergist, Pain Specialist, and the list goes on. I had MRI's, CT scans, colonoscopies, upper GI scopes, lumbar punctures, and literally hundreds of blood tests……..ALL NORMAL!!! A lot of these doctor visits were from before I was aware of my EMF sensitivity. After I was aware, at first I would ask the doctors about it, but I would either be told that "no, that can't cause this", or get a blank stare. I learned quickly to not even mention anything about EMFs if I wanted them to take me seriously.

Many times I would ask my primary care doctor (in the Air Force you are given a random doctor that's on duty that day) about all of these seemingly "different" symptoms and how it didn't make any sense that they weren't related. Why would you send me to all of these different specialists that only focus on one symptom in one part of the body. To say that the medical community is frustrating would be an understatement. They are not trained to deal with this sort of environmental exposure.

3 f) What steps to reduce or eliminate exposure were taken. To date, I have paid 5 different EMF specialists to help me through this process. Three of them evaluated and helped me make changes to my home, and two of them were consultants that I talked with over the internet. Between medical expenses and home mitigation costs I'm sure I have easily spent over $100,000 trying to figure this thing out. This experience has taught me one very important lesson when it comes to EMFs and the human body. EMFs come from many

different places, in many different forms, and every person is different. We all react differently, and there is no such thing as a simple fix. What works for one person may either not work at all for someone else or make them feel worse.

Through this process I have moved once and need to move homes again. Not because I want to (in either case) but because I feel terrible and can't function in my current home. The process that I've gone through has three steps:

1) Remove the source. If it's not there it can't harm you.
2) Put as much distance between yourself and the source. This applies to cell towers, power lines, neighbors.
3) Shield/Mitigate. RF shielding, Electric Field shielding, and Electricity Filters

Step one is the easiest to accomplish. You would be surprised at what you can do without. Some things that are harder to deal with are smart meters because even the non-transmitting ones are still smart and put a lot of dirty electricity on your wires. Other things like A/C units, mini-splits, variable speed motors, and anything else that uses a switch mode power supply are also difficult and more expensive to deal with.

Step two often time requires moving all together. You can't tell the utility companies what to do and really can't control your neighbors either. What they do with RF and electricity really makes a difference. One regulation that I would make is that you aren't allowed to pollute the electric grid with solar panels, EV chargers, or anything that creates a lot of dirty electricity. It is fairly simple to filter those items but they need to happen at the source.

I have taken steps of turning off the electricity in my home at night. This causes the most relief for me, but it's also very inconvenient.

I have had to move from place to place on my property in order to find a place to sleep. I've spent time sleeping outside, in the car, in an RV, in every different room/shed on the property. You would be surprised at what extent you would go to in order to sleep at night.

The sad reality of being sensitive to EMFs is that there are really now completely safe places left in this country. The cellular companies are blanketing the entire country, satellites like starlink are blanketing the sky, and if you want electricity in your home then you are being exposed to everything that is feeding through the utility companies.

3 p) How should a classification system account for exposure-related characteristics?
Known hazardous materials must list what they are. Food labels list ingredients and highlight common allergens. What EMF levels a device gives off should also be listed….the type, and power level, and then let the consumer decide if they want to be exposed or not.

11) Should exposure assessment or risk evaluation differ for sensitive populations?
This is a yes and no question. There is risk to all populations and by creating a subcategory it will push those people not in that category to think that they are safe and that they don't need to worry.

Once a person becomes sensitive to EMFs there definitely needs to be different limits for exposure. This is probably one of the most important statements that I can make in this entire document. There are people like myself who are sensitive to EMFs at such an extreme level that we can't function in normal day to day life and exposure to EMFs leaves us pretty much disabled. It's that bad. People say "why don't you go camping more" or "just go get a cabin in the woods". That's really not practical for the long term and it really doesn't provide any way to work and provide for your family. There needs to be real government or private support that provides exclusion zones and resources for people to go to where the EMFs are kept as near zero as possible. For an individual person to do this on their own is nearly impossible. The cost of building a home the way it needs to be done is shocking.