

The Health Effects of Electromagnetic Frequency (EMF) and Radio Frequency Radiation (RFR) and Best Practices For Buildings

Summary of the Presentation by Devra Davis PhD, MPH and Theodora Scarato MSW for GWI Wellness Architecture Initiative July 2020

Wireless, Wi-fi and 5G signals are radio frequency radiation (RFR) and Dr. Devra Davis considers RFR the 'next asbestos'--a label given to telecommunications technology by the secondary insurance industry. In 2018 Miller et. al expert panel concluded that RFR is a carcinogen and should be placed in the International Agency for Research on Cancer, World Health Organization, Category 1 group of known carcinogens alongside tobacco and asbestos.

You can take personal actions to reduce cell phone and Wi-Fi radiation, but you can't keep a distance from 5G. 5G means locating hundreds of thousands of new cell antennas near or even inside our homes and schools. The exposure is involuntary. 5G networks will incorporate 3G and 4G cell tower frequencies--currently sited on building and mountain tops--and bring them closer to humans than at any time in history. Radiating antennas can be ten feet from your bedroom window.

[Current research](#) indicates numerous effects from wireless RFR including:

- Increased risks of highly malignant brain and thyroid cancer
- DNA changes
- Altered brain function and impacts to brain development
- Oxidative stress
- Headaches and other disabling neurological conditions
- Sperm damage and reduced fertility
- A peer-reviewed study on people living near cell antennas in India found numerous biochemical changes in their blood signaling damage, including statistically significant higher frequency of micronuclei and a rise in lipid peroxidation in their blood. These changes are considered biomarkers predictive of cancer and other chronic illnesses.
- Honeybee egg and honey production declined when in close proximity to cell phone towers and when studied experimentally.
- Damage to flora and fauna – harm to bird reproduction and damage to trees and other flora and fauna
- Studies on teenagers show reduced memory correlating to increased cell phone usage.
- Synergistic effects evident with children that have slightly higher levels of lead in their blood developing greater amounts of learning problems with more use of cellphones.

There is more than enough proof of harm to humans, wildlife and the natural environment. Dr. Davis' asks why do we continue to allow the unfettered roll out of telecommunications technology with little effort to reduce direct exposures? Why does the FDA not take this massive and mounting scientific evidence seriously? More

importantly, why are standards for testing and measuring exposures based solely on avoiding changes in temperature and unchanged since 1996 ? The answer is money. Industry has deep pockets, as the Harvard Law School, Safra Center for Ethics Report [“Captured Agency”](#) by Norm Alter details. Insurance Companies have mostly excluded coverage of adverse health or environmental effects from RFR and the [white papers of insurance authorities](#) deem the potential liability as “high”. 5G was rated by Swiss Re Insurance as a “High” off the leash risk.

Just because RFR is non-ionizing or a low non-heating level does not mean it cannot harm. It's not the power of the signal but instead the pulsed nature of the signal that can cause damage to our cells. Non-ionizing radiation can lead to biochemical changes and oxidative stress which can lead to a myriad of effects on the body. The fact that some forms of non-ionizing radiation are currently used to treat medical disorders, including cancer and problems of bone healing, is evidence that this radiation can have biological effects. There is no known medical intervention, whether aspirin, tylenol, or alcohol, that cannot also cause damaging effects at different doses, times of exposure, or vulnerability of underlying host conditions. To assume that non-ionizing radiation solely has positive effects and no negative impacts defies medical experience and logic stated Dr. Davis.

Research showing DNA damage and increased cancer are known but have long been downplayed by industry. Davis's book [“Disconnect-the truth about cellphone radiation,”](#) documents the industry strategy of employing “war-games” when inconvenient science emerges. Carrying a phone in the pocket further exposes the reproductive organs and research has shown reduced sperm count and increased damage and other impacts. Prenatal exposure to cell phone radiation has been linked to brain damage, memory damage and behavioral issues in both animals and in children. Children are [more vulnerable](#) to RFR because they have thinner skulls, more fluid in their tissues and because their brains, nervous systems and eyes are still developing. Research at the National Institutes of Health found increased glucose metabolism in the brain from cell phone radiation exposure in adult males.

Healthcare and building professionals need to have conversations with local government representatives and professional associations to raise awareness about the negative health consequences of 5G and wireless and the need to adopt safer, faster, more secure wired connections by providing ethernet outlets in every room. Dormitories and other group living facilities are especially important locations for such innovations. This will reduce costs, as wireless routers need to be replaced and upgraded frequently, and will dramatically reduce energy costs, as 5G wireless systems require up to 10 times [more energy](#) than wired systems.

Theodora Scarato, Executive Director of Environmental Health Trust presented on ways that RFR and other EMFs can be reduced in buildings through Low EMF Building designs. She presented the [Collaborative for High Performance Schools Best Practices for Buildings](#) and schools and how to [create a sleep sanctuary](#) so that the body can repair itself at night.

Reduce EMF in Homes and Buildings

- Replace cordless phones with wired telephones.
- Connect to the internet with wired ethernet networks rather than Wi-Fi systems. Unbeknown to many, wired internet is actually faster and more secure than wifi.
- Avoid fluorescent lights and dimmer switches as they create EMF.
- Avoid smart meters by swapping it with an analog meter.
- Avoid HVAC and building systems that rely upon wireless technology.
- Measure magnetic field levels to comply with below 1 mG and ensure compliance with currently adopted US National Electrical Code (NEC) in the local/state electrical code.

Create a Sleep Sanctuary at Night

- Have an off switch so that the house has no WiFi and as little EMF as possible overnight while sleeping.
- Keep electronics and screens out of sleeping spaces.
- Sleeping in a fully blacked out bedroom, in pure darkness, helps activate the production of the natural anti-oxidant melatonin which not only helps you sleep more deeply but also supports your health by repairing DNA damage that occurs from daily unavoidable exposures.
- Need an alarm on your phone? You can set the phone to Airplane/Flight Mode ON and the Wi-Fi and Bluetooth to OFF and still use the alarm feature.
- Many newer TVs, gaming systems, and computers plugged into electricity or on battery power will have radiation emissions even if in power off mode, so it is best to remove them from the bedroom or completely disconnect them from their power source.
- Be sure to charge cell phones and tech devices outside the bedroom, because charger gear generates other types of electromagnetic fields that are also linked to health issues and can pose special risks to those with implanted pacemakers, insulin pumps or other devices.

Reduce Your Cell Phone Radiation Exposure

- Minimize your overall cell phone use to decrease the time you are exposed.

- Use speaker phone or a plug-in earpiece to keep the phone away from your brain and body, and when you are not using the phone be sure to power off or set the phone on Airplane/Flight mode and the Wi-Fi to OFF and the Bluetooth to OFF.
- Prefer texting instead of voice/video calls and hold the phone out, away from your body.
- Do not carry a powered ON cell phone in your pocket or bra.
- Turn automatic updates off. Reduce active Apps. Cell phones emit radiation constantly, even when you are not actively using them. Even if you turn wireless antennas off, they are still emitting magnetic fields so power them 100% off before you carry them near your body.
- Children should not use mobile phones except for emergencies and are not permitted to use in schools in France, China and other high-tech nations.

Shielding Measures in Homes:

Shielding paint and fabrics are available to incorporate into homes, but it is important to consider what happens when someone brings a wifi or 5G device into the shielded space - is there amplification/reflection from shielding devices for example. Some devices ramp up their power (& signal) usage when in a shielded environment. Professional measurements are always needed when shielding. Consult with a trained EMF aware electrician or Building Biologist for measurements and options to reduce exposures.

Resources:

Environmental Health Trust at EHTrust.org

Building science and radiofrequency radiation: What makes smart and healthy buildings
Frank M. Clegg , Margaret Sears , Margaret Friesen , Theodora Scarato , Rob Metzinger. Available at <https://www.journals.elsevier.com/building-and-environment>

Cancer Epidemiology Update, following the 2011 IARC Evaluation of Radiofrequency Electromagnetic Fields (Monograph 102)

GSM mobile phone radiation suppresses brain glucose metabolism
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3323189/>

[Practical Steps to Reduce Cell Phone and Wireless at Home: Printable B/W PDF](#)

[How to Set up a Low EMF Computer Workstation](#)

[Disconnect--the truth about Cell Phone Radiation](#)

[More printable factsheets on how to reduce exposure from Environmental Health Trust](#)

[Devra L. Davis, PhD, MPH](#)

Fellow American College of Epidemiology

Visiting Prof., Ondokuz Mayıs Univ. Medical School

Associate Editor, Frontiers in Radiation and Health

President, [Environmental Health Trust](#)

ddavis@ehtrust.org

Presented by Devra Davis PhD, MPH, founder and President of Environmental Health Trust and Theodora Scarato, Executive Director of Environmental Health Trust MSW Summary compiled by [Environmental Health Trust](#) and WAI member Sarah McAllister www.fengshuiagency.com