Breast Cancer and Wireless Radiation
What do we know and what do we do now?

Devra Davis, PhD MPH FACE

In Honor of H. Leon Bradlow, a pioneer in endocrinology and my esteemed mentor and Tiffany Frantz, a brave breast cancer advocate

Founder and President of Environmental Health Trust

Massachusetts Breast Cancer Coalition
September 13, 2022
Devra Davis, PhD, MPH

- President and Founder of the Environmental Health Trust
- Visiting Professor of Medicine at the Hebrew University Hadassah Medical Center and the Ondokuz Mayis University Medical School
- Founding Director of Center for Environmental Oncology, University of Pittsburgh Cancer Institute
- Member of Team Awarded Nobel Peace Prize with Al Gore 2007 for working on Climate and Health
- Founder of National Academy of Sciences Board on Environmental Studies and Toxicology
- Author of 220 scientific publications, 3 popular books
• Decades of research documented serious biological effects, 2010

• Government limits are quarter of a century old and not protective, 2021
  EHTrust et al v. FCC
Fewer than 1 in 10 cases of breast cancer arises in women born with genetic defects

Reasons why “environment” is a cause of cancer

National Cancer Institute
Reasons why “environment” is a cause of cancer

- Cancer risk of adopted children mirrors that of their adopted (NOT their biologic) parents
- Fewer than half of identical twins get the same cancer
- Migrants develop risks of their new countries
- Workers have higher rates
- Patterns remain unexplained
Wireless Radiation

● Microwaves at non heating levels
● Artificial not natural
● Information carrying waves
● Radiofrequency radiation
● Non Ionizing radiation
● Digital Pulsed waves
Animal Carcinogens Cause Cancer in humans

• Every compound known to cause cancer in humans
• Also causes it in animals, when adequately studied.
• Therefore any animal carcinogen should be treated as a human carcinogen*
• *IBM Think Magazine, 1983
• NTP reports cellphone radiation clear cause of cancer and DNA damage in animals, 2018
What did the studies find?
The NTP studies found that high exposure to RFR (900 MHz) used by cell phones was associated with:

- Clear evidence of tumors in the hearts of male rats. The tumors were malignant schwannomas.
- Some evidence of tumors in the brains of male rats. The tumors were malignant gliomas.
- Some evidence of tumors in the adrenal glands of male rats. The tumors were benign, malignant, or complex combined pheochromocytoma.

NTP scientists found that RFR exposure was associated with an increase in DNA damage. Specifically, they found RFR exposure was linked with significant increases in DNA damage in:

- the frontal cortex of the brain in male mice,
- the blood cells of female mice, and
- the hippocampus of male rats.
Toxicologic Evidence on Causes of Cancer
Electromagnetic Fields Affect Breast Cancer Risk

Experimental studies show that EMF interfere with melatonin production and the therapeutic impacts of Tamoxifen:

2. Antiproliferative action of tamoxifen on MCF-7 cells disrupted

Epidemiological cross-sectional studies Clues to importance of melatonin

1. Blind women have half the risk of sighted women (Flynn-Evans et al, 2009
2. Women who work at night(lower melatonin) have increased risk

-
Induction of tamoxifen resistance in breast cancer cells by ELF electromagnetic fields

Fig. 1. Dose–response curves of tamoxifen at various intensities of 50 Hz electromagnetic fields. (A) Clone MCF-7 p40. (B) Clone MCF-7 p181.
EMF reduces efficacy of Tamoxifen against breast cancer

Rainer Gergert and Carsten Grundker, 2005
Microwaves Can Damage Blood Brain Barrier Permeability

Several Research Studies

Dr. Leif Salford, 2009
RF Below Safety Limits Promotes Tumors

24/7 RF Exposure, in utero ENU (a replication study)

- Higher liver and lung tumors
- 2.5 fold increases in Lymphoma
- Nonlinear effect “may be due to metabolic changes”

“Our findings may help to understand the repeatedly reported increased incidences of brain tumors in heavy users of mobile phones”

Lerchl 2015

Age-adjusted rates per 100,000
Source: American Cancer Society, Surveillance Research, 2005
Personal Risk Factors for Breast Cancer

- Use of HRT or LATE MENOPAUSE
- Early life RADIATION
- ALCOHOL
- Family HISTORY
- LACK OF EXERCISE/obesity
- LATE OR NO PREGNANCY
- EARLY MENSES
Higher Total Lifetime Exposure to Unbound Steroid Hormones Binding Globulin (SHBG)

Is the Common Link Between Most Known Risk Factors
Environmental Risks for Breast Cancer

- Pesticides
- Solvents / Fuels
- Radiation & Electromagnetic Fields
- Paints
- Metals
- Nutrition
- Plastics
Cumulative Risk of Breast Cancer in BRCA1 carriers born before or after 1940 (M. King, 2003)

Cancer risk by age
Jobs with increased risk of breast cancer

• Solvent workers
• Chemists
• Nurses/Dentists and Physicians
• Painters
• Hair Dressers
Strengths and Limits of Human Studies

• Time trends allow comparisons between ethnic and racial groups
• Biomarker and/or genetic analyses suggest causal factors
• Cross-sectional/observational studies suggest hypothesis
• Case-control retrospective provide further refinement on causation
Studying Humans Is Difficult

• People seldom know what they have been exposed to
• Breast cancer arises from prenatal, early-life and later-life exposures that cannot be easily measured at time of diagnosis
• Studying current levels or recent residues in cancer patients can be misleading — disease development affects storage of toxic compounds
American Cancer Society Funded Study: Thyroid Cancer Increased Significantly with Regular Cell Phone Use in Certain SNPs, 2020

- Luo and colleagues (2020) at Yale University case-control study found doubled risk of thyroid cancer in those using phones for 1+ hour a day who carried common Single Nucleotide Excisions (SNP) affecting DNA repair

Luo 2020 “Genetic susceptibility may modify the association between cell phone use and thyroid cancer: a population-based case-control study in Connecticut”
Cell Phone Radiation Links to Cancer in Humans

Brain cancer
Acoustic neuroma
Thyroid cancer
Breast cancer
Rectal cancer?
Leukemia?

For more information see: Ehtrust.org
Cancer is the tip of the iceberg.

- DNA damage
- Memory/Brain damage
- Sperm/Reproduction damage
- Synergistic effects
- Headaches
- Oxidative Stress
- Bees and insects
- Trees
Smartphone use linked to breast cancer risk (Shih et al, 2020)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Healthy Controls (N=894)</th>
<th>Patients with Breast Cancer (N=211)</th>
<th>AOR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>People without smartphone addiction and smartphone use of ≤4.5 min before night sleep</td>
<td>377 (42.2%)</td>
<td>56 (26.5%)</td>
<td>1.00</td>
</tr>
<tr>
<td>People with smartphone addiction and smartphone use of ≤4.5 min before night sleep</td>
<td>437 (48.8%)</td>
<td>67 (31.8%)</td>
<td>1.04 (0.69~1.58)</td>
</tr>
<tr>
<td>People without smartphone addiction and smartphone use of &gt;4.5 min before night sleep</td>
<td>31 (3.5%)</td>
<td>22 (10.4%)</td>
<td>3.24 (1.62~6.44)</td>
</tr>
<tr>
<td>People with smartphone addiction and smartphone use of &gt;4.5 min before night sleep</td>
<td>49 (5.5%)</td>
<td>66 (31.3%)</td>
<td>6.88 (4.07~11.61)</td>
</tr>
</tbody>
</table>

**Note:** The AOR was adjusted for age, family history of breast cancer, educational level, placement of smartphone, and quality of sleep.

**Abbreviation:** min, minutes.
Institute of Medicine Recommends Avoiding Unnecessary CT Scans

• The use of CT has increased five-fold over the last two decades and radiologists estimate that 30% or more of advanced imaging tests may be unnecessary.

• “Because the radiation doses delivered by computed tomography (CT) imaging are high, women should reduce any unnecessary exposure to CT.”

56 yo female presents with firm mass
Chemist working with benzene for many years without a hood
Risk of Breast Cancer Tied With Cell Phone Radiation

• The younger the breast the greater fluid and fat which equals greater microwave absorption.
• Published case reports of unusual breast cancers in young women with no family history.
Latinas put phones in bras

Dominican Republic, Credit Thos Robinson, 2010
Invasive multiple primary tumors in 34 year old, avid runner Chinese-American woman who used cell phone 4 hours a day in her bra for 10 years —reported by Robert Nagourney, MD, PhD
Case Reports - 21 yr old multi-focal tumors tied with cellphones kept in bra

John West et al
2017 CBC Report: Exposure Levels Exceed Limits When Tested Against the Body

LINK TO WATCH YOUTUBE on CBC https://www.youtube.com/watch?v=Wm69iQdb8
RF Exposure Modeling From a Cell Phone In Front of the Body
Image: Claudio Fernandez 2022
Environmental Health Trust

Link to Youtube Playlist of Scientific Imaging of RF Exposures
https://www.youtube.com/watch?v=FRPnXsEVGUY&list=PLT6DbkXhTGoDBB44rZNJGihsrPonU-Re
Impacts to Adolescents’ Memory Performance Associated With Brain Dose of Microwave Radiation from Wireless Communication

Foerster et al. 2018 in Environmental Health Perspectives

- 895 adolescents 12 and 17 years
- Modeled RF-EMF doses into brain
- Testing before/after one year of cell phone use.
- Decreased figural memory scores in association with increase in estimated cumulative RF-EMF brain dose
- Replicated findings of earlier 2015 study.
Effects of electromagnetic fields on neuronal ion channels: a systematic review.

Bertagna et al 2021 in Annals of the New York Academy of Sciences

- A significant correlation between EMFs and multiple changes in the electrophysiological properties of diverse neuronal tissues.
- Neuronal ion channels are particularly affected and differentially modulated by EMFs at multiple levels dependent on different parameters (type of field, cell or tissue.)
RF Radiation and the Developing Brain

STUDIES IN ADULTS
Fewer hippocampal granular cells in the dentate gyrus (DG) of newborn rats following prenatal 900 MHz EMF exposure. (Image) Odaci, Bas & Kaplan et al., 2008

Studies finding decreased and damaged brain cells in animals exposed as adults and prenatally (Suleyman et al., 2016, Sonmez et al., 2010, Bas et al., 2009, 2009)

STUDIES IN HUMANS
Behavioral problems after pre/post natal cell phone use. University of California School of Public Health (Divan et al., 2008, 2012).

Hyperactivity/inattention problems in child after higher prenatal exposure (Birks et al., 2017)
2022 South Carolina RF Measurement Study

Found RF hotspots and elevated RF exposures to people

When antennas were mounted close to ground on utility poles exceeded standards (Koppel and Hardell)

Figure 7. Gervais Street: Cell phone base station antenna placed close to street level and causing high exposure to pedestrians and nearby café visitors (exposure scenario illustration). The antenna appears camouflaged and seemingly part of a utility pole. The measurer only discovered the antenna due to the high radiofrequency levels in the vicinity.

Measurements of radiofrequency electromagnetic fields, including 5G, in the city of Columbia, South Carolina, USA.

TARMO KOPPEL, LENNART HARDEL WORLD ACADEMY OF SCIENCES JOURNAL 4: 23, 2022
NEWS ITEM: "ESTROGEN: IMITATING CHEMICALS IN THE ENVIRONMENT SUSPECTED OF WIDE-RANGING BIOLOGICAL ANOMALIES (INCLUDING HERMAPHRODISM IN ANIMALS AND LOWER SPERM COUNTS IN HUMAN BEINGS)."

We in the business community prefer a cautious 'wait-and-see' approach over needless media scare-mongering...
Better Safe than Sorry....

Eat low on the food chain
Reduce your fat
Exercise daily
Stop using toxic cleaning products
Don’t drink heavily
Avoid unnecessary x-rays
Limit pesticide use
Limit use of cordless cell phones
Don’t keep cell phone in bra or on body
Do NOT microwave or heat food in plastic
Nick Naylor doesn't hide the truth... he filters it.

THANK YOU FOR SMOKING

Based on the best-selling novel

© 2006 Twentieth Century Fox Film Corporation. All Rights Reserved.
Truth is Stranger Than Fiction

“Gentlemen, practice these words in front of the mirror: Although we are constantly exploring the subject, currently there is no direct evidence that links cell phone usage to brain cancer.”
"Give your throat a vacation...

Smoke a FRESH cigarette"

If the cigarette you have been smoking chokes or burns your throat, switch to Camels and see the difference.

It's the pepper dust left in tobacco by inefficient cleaning methods that makes you cough.

It's the unkindly hot smoke of harsh, dried-out tobacco that burns and irrates your throat.

There is no pepper dust in Camels—that's whisked away by a special vacuum-cleaning process.

There are no stale, crumby, pressed-inches—the fine Turkish and mild Domestic tobaccos of which Camels are blended come to you in prime, factory-fresh condition, thanks to the Humidor Pack.

This scientific gyno-safer wrapping—not plain ordinary Cellophone, but moisture-proof Cellophone which costs nearly twice as much—seals in all the natural aroma and freshness, seals it so tightly that wet weather cannot make Camels damp, nor drought weather make them dry.

Camels are milder and more throat-friendly because they are dust-free and fresh.

Give your throat a vacation, switch to Camels for just one day. Then leave them—if you can.


Camel Humidor—saves eight regular Camels.

Don't remove the moisture-proof wrapping from your package of Camels after you open it. The Humidor Pack is protection against dust and gases. In offices and homes, even in the dry atmosphere of artificial heat, the Humidor Pack delivers fresh Camels and keeps them right until the last one has been smoked.

CAMELS
Mild... NO CIGARETTE AFTER-TASTE
Fine Print Warnings

For more than three centuries, work as actuaries have predicted catastrophes will take place. Insurance companies make money when people go broke. On some level insurance pays a premium hoping that they will. We must have insurance against all.

We can't always trust our compensation systems. Know what advice you might be getting in a well-informed way. We need at least a bit in that direction.
For optimal mobile device performance and to be sure that human exposure to RF energy does not exceed the FCC, IC, and European Union guidelines, always follow these instructions and precautions: When on a call using the built-in audio receiver in iPhone, hold iPhone with the dock connector pointed down toward your shoulder to increase separation from the antenna. When using iPhone near your body for voice calls or for wireless data transmission over a cellular network, keep iPhone at least 15 mm (5/8 inch) away from the body, and only use carrying cases, belt clips, or holders that do not have metal parts and that maintain at least 15 mm (5/8 inch) separation between iPhone and the body.

iPhone’s SAR measurement may exceed the FCC exposure guidelines for body-worn operation if positioned less than 15 mm (5/8 inch) from the body (e.g., when carrying iPhone in your pocket).
“If you carry or use your phone in a pants or shirt pocket or tucked into a bra when the phone is ON and connected to a wireless network, you may exceed the federal guidelines for exposure to RF radiation. This potential risk is greater for children.”
Body-worn SAR testing has been carried out at a separation distance of 1.5 cm. To meet RF exposure guidelines during body-worn operation, the device should be positioned at least this distance away from the body. “

-Samsung Galaxy Z Fold 3 5G SAR Info SM-F711U on Samsung Site
“iPhone is evaluated in positions that stimulate uses against the head, with no separation, and when worn or carried against the torso of the body, with **5 mm** separation...To reduce exposure to RF energy, use a hands-free option, such as the built-in speakerphone, headphones or other similar accessories.”

-Apple iPhone 13 RF Exposure
“This device must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter”

Nanit Baby Monitor Manual
“FCC Radiation Exposure Statement
This equipment should be installed and operated with minimum distance 20 centimeters between the radiator and your body.”

Lollipop Smart Baby Camera User Manual

FCC Masterwork Aoitek Tech Lollipop Pro Baby Camera CABC-LOL03 FCC ID 2AE92CABC-LOL03

https://www.lollipop.camera/
STUDENT GUIDE: CELL PHONES, WIRELESS, AND YOUR HEALTH

Massachusetts Breast Cancer Coalition Education
“Let’s Talk Prevention” educational modules have been developed on cell phone radiation for high school, middle school, and elementary. Go to MBCC Let’s Talk Prevention Classroom Modules and download for Module 3 on Cell Phones https://mbcc.org/lets-talk-prevention-actions-you-can-take-student-modules/

What policies are in place by governments?
Over a dozen countries such as India, Russia, France, Belgium, Cyprus and Israel have issued clear recommendations to reduce RF exposure from cell phones. India, France and Korea label phones with their cell phone radiation levels. Many countries have policies in place to reduce exposures to children in schools. However US agencies only give the public two tips to reduce exposure “if you are worried.”

In the United States, the City of San Francisco passed a 2010 law to inform people how to reduce cell phone radiation. The law would make stores share information whenever someone went to buy a phone at a store. The wireless industry sued the City and halted implementation of the law but the City still has a website with information on how to reduce cell phone exposure. The City of Berkeley passed a similar law in 2015 and again, the Wireless Industry sued and took it to the Supreme Court. Some towns like Pembroke Pines Florida and Jackson Hole Wyoming passed cell phone proclamations to raise awareness about the issue.

How can we decrease exposure to radiofrequency radiation?
The American Academy of Pediatrics, California Department of Health, Maryland Council on Children's Environmental Health, Connecticut Department of Health, and several international medical organizations such as the Vasena Medical Association, Athens Medical Association and the International Society of Doctors for the Environment all recommend reducing exposure to radiofrequency radiation.

Recommendations to Reduce Exposure to Cell Phone Radiation
- Use cell phones in speaker mode or with the use of an airtube headset.
- Keep phone at a distance from your head and body as general rule of thumb.
- Avoid carrying your phone against the body like in a pocket, sock, or bra. Cell phone manufacturers can’t guarantee that the amount of radiation you’re absorbing will be at a safe level.
- If you plan to watch a movie on your device, have movies pre-downloaded rather than streaming. Prefer wired computers to watch movies and do social media.
- Keep an eye on your signal strength (i.e. how many bars you have). The weaker your cell signal, the harder your phone has to work and the more radiation it gives off.
- Avoid making calls in cars, elevators, trains, and buses. The cell phone works harder to get a signal through metal, so the power level increases.
- Children should be given toys, not cell phones to play with.
- Make only short or essential calls on cell phones.
- Stop sleeping with your phone or wireless device.
- Turn the phone on airplane mode if you need to use your phone as an alarm clock.
- Use a handsfree cabled (not wireless) mouse, speaker, printer and keyboard with your computer.
- Turn Wi-Fi off and unplug wireless devices at night or when not in use.
- Hard wire devices in your home that connect to the internet whenever possible.
- Use corded phones (with a curly cord from handset to base) instead of cell phones. Home cordless phones whenever possible, especially for your long voice calls.
- Remove screens and electronics from the bedroom for a healthier sleep.
- Educate your elected officials for policy changes that inform and protect the community.
Chapter on Cell Phone, Cell Tower and Wi-Fi Radiation and Electromagnetic Fields.

https://envirn.org/e-textbook/
All Wireless Devices Emit Radio Frequency Radiation

Microwave Radiation

- Wireless Phones
- Laptops
- Computers
- Tablets
- Video Game Consoles
- Wi-Fi Printers
- Wi-Fi Router
- Access Points
IARC CLASSIFIES RADIOFREQUENCY ELECTROMAGNETIC FIELDS AS POSSIBLY CARCINOGENIC TO HUMANS

Lyon, France, May 31, 2011 -- The WHO/International Agency for Research on Cancer (IARC) has classified radiofrequency electromagnetic fields as possibly carcinogenic to humans (Group 2B), based on an increased risk for glioma, a malignant type of brain cancer¹, associated with wireless phone use.

This classification applies to all RF-emitting devices, including WiFi.

- Robert A. Baan, PhD, IARC
Cancer epidemiology update, following the 2011 IARC evaluation of radiofrequency electromagnetic fields (Monograph 102)*

Anthony B. Millera,*, L. Lloyd Morgana, Iris Udasinc, Devra Lee Davisd,e

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ARTICLE INFO

Keywords:
Brain cancer
Vestibular schwannoma
Salivary gland tumor
Electric hypersensitivity
Glioma
Meningioma
Radio frequency fields
Cell phones
Mobile phones

ABSTRACT

Epidemiology studies (case-control, cohort, time trend and case studies) published since the International Agency for Research on Cancer (IARC) 2011 categorization of radiofrequency radiation (RFR) from mobile phones and other wireless devices as a possible human carcinogen (Group 2B) are reviewed and summarized. Glioma is an important human cancer found to be associated with RFR in 9 case-control studies conducted in Sweden and France, as well as in some other countries. Increasing glioma incidence trends have been reported in the UK and other countries. Non-malignant endpoints linked include acoustic neuroma (vestibular Schwannoma) and meningioma. Because they allow more detailed consideration of exposure, case-control studies can be superior to cohort studies or other methods in evaluating potential risks for brain cancer. When considered with recent animal experimental evidence, the recent epidemiological studies strengthen and support the conclusion that RFR should be categorized as carcinogenic to humans (IARC Group 1). Opportunistic epidemiological studies are proposed that can be carried out through cross-sectional analyses of high, medium, and low mobile phone users with respect to hearing, vision, memory, reaction time, and other indicators that can easily be assessed through standardized computer-based tests. As exposure data are not uniformly available, billing records should be used whenever available to corroborate reported exposures.
Captured Agency: How the Federal Communications Commission Is Dominated by the Industries It Presumably Regulates

by Norm Alster

Harvard Report
“Captured Agency”

“...consumer safety, health, and privacy, along with consumer wallets, have all been overlooked, sacrificed, or raided due to unchecked industry influence.”

“It is these hardball tactics that recall 20th century Big Tobacco tactics.”
- Investigative reporter Norm Alster, Harvard Center for Ethics
2021 Conclusions on Commonly Used RF Frequencies (450 to 6000 MHz)

1) Cancer
EMF are probably carcinogenic for humans, in particular related to gliomas and acoustic neuromas;

2) Reproductive Developmental Effects
These frequencies clearly affect male fertility and possibly female fertility too. They may have possible adverse effects on the development of embryos, foetuses and newborns
Save the Girls!

Protect yourself

Protect yourself

CELL PHONES AND BREAST CANCER

Women are developing breast cancer in the exact same place they kept cell phones in their bras, according to an increasing number of medical reports.

Cell phones emit microwave radiation linked to brain cancer and damaged DNA.

Cell phone manuals contain fine print directing users to put some distance between the phone and the body.

Learn how to reduce your exposure. Do not carry your cell phone in your bra.

MORE AT EHTrust.org
#PracticeSafeTech
@saferphones

DOCTORS’ RECOMMENDATIONS

1. PROTECT YOUR BODY
Do not carry cell phones in your pockets or bra. No laptops or tablets on your lap.

2. PROTECT YOUR BRAIN
Prefer a corded landline phone. Hold cell phones away from the head and body by using speakerphone.

3. PROTECT YOUR FERTILITY & YOUR PREGNANCY
No wireless devices near reproductive organs or near a pregnant woman’s abdomen.

4. REDUCE WIRELESS
Turn off Wi-Fi and use cords to connect routers, phones, computers and other devices. Airplane Mode ON with Wi-Fi OFF turns off wireless.
5G = Millions of New Cell Antennas Near Homes and Schools
2022 cell tower radiation study concluded that mobile phone base station antennas located close to people results in highly elevated exposure levels.
Published research on bees has found:

- Reduced motor activity of worker bees.
- Biochemical changes indicating stress.
- Inducing the worker piping signal. In natural conditions, worker piping either announces the swarming process of the bee colony or is a signal of a disturbed bee colony.
- Decline in colony strength Queen egg laying rate
Radiofrequency radiation injures trees around mobile phone base stations

Cornelia Waldmann-Selsam, Alfonso Balmori-de la Puente, Helmut Breunig, Alfonso Balmori

Section of red oak tree, August 2013

Section of red oak tree, August 2015
60% increase per year in production of wireless peripherals (Wi-Fi/Bluetooth speakers, appliances, wearables)

700% increase in mobile data traffic globally projected between 2017 and 2022
The 5G appeal

Scientists and doctors call for a moratorium on the roll-out of 5G. 5G will substantially increase exposure to radiofrequency electromagnetic fields RF-EMF, that has been proven to be harmful for humans and the environment.

Read more

Over 400 Scientists are calling for a moratorium on 5G
www.5gappeal.eu
The Need for Healthy & Sustainable Technology

- Increased energy consumption
- Damage to trees.
- Harm to wildlife.
- Human rights abuses - conflict minerals
- Manufacturing pollution
- Inadequate recycling - e-waste
Verizon Total Mobile Protection Insurance
Defines Non-ionizing Microwave Radiation as “Pollution”

LIBERTY INSURANCE UNDERWRITERS INC., or one of its insurance company affiliates.

WIRELESS COMMUNICATIONS EQUIPMENT COVERAGE INSURANCE POLICY

B. EXCLUSIONS

This insurance does not apply to loss or damage identified in any of the following or directly or indirectly caused by or resulting from any of the following:

16. Pollution

The discharge, dispersal, seepage, migration or escape of pollutants. Pollutants means any solid, liquid, gaseous, or thermal irritant or contaminant including smoke, vapor, soot, fumes, acid, alkalis, chemicals, artificially produced electric fields, magnetic field, electromagnetic field, sound waves, microwaves, and all artificially produced ionizing or non-ionizing radiation and/or waste. Waste includes materials to be recycled, reconditioned or reclaimed.
Statement of Fact

- No systematic review of the totality of evidence.
- No risk or hazard assessment for health effects.
- No science based evaluation/review of FCC limits.
- By any U.S. regulatory agency with health, environment or safety expertise.
Make the Bra a No Cell Phone Zone.
Save the Girls!

Protector yourself
#PracticeSafeTech

**Cell Phones and Breast Cancer**

Women are developing breast cancer in the exact same place they kept cell phones in their bras, according to an increasing number of medical reports.

- Cell phones emit microwave radiation linked to brain cancer and damaged DNA.
- Cell phone manuals contain fine print directing users to put some distance between the phone and the body.
- Learn how to reduce your exposure. Do not carry your cell phone in your bra.

More at EHTrust.org
#PracticeSafeTech
@saferphones

**Doctors’ Recommendations**

1. **Protect Your Body**
   - Do not carry cell phones in your pockets or bra. No laptops or tablets on your lap.

2. **Protect Your Brain**
   - Prefer a corded landline phone. Hold cell phones away from the head and body by using speakerphone.

3. **Protect Your Fertility & Your Pregnancy**
   - No wireless devices near reproductive organs or near a pregnant woman’s abdomen.

4. **Reduce Wireless**
   - Turn off Wi-Fi and use cords to connect routers, phones, computers and other devices. Airplane Mode ON with Wi-Fi OFF turns off wireless.
“Do not sleep with your phone in your bed or near your head.”
“Disable WiFi, Bluetooth & Data options from your cell phone and other mobile devices when not needed.”

-Athens Medical Association
“Fewer apps means less radiation – Minimize the number of apps and disable the most unnecessary background services on your smartphone.”

-Vienna Medical Association
Minimize Wireless Phone Use

“Make shorter phone calls. Less time with a phone next to your ear means less exposure.”

“Scientists also agree that it is wise to reduce exposure to RF energy from cell phones whenever possible.”

-Connecticut Department of Health, 2015
Keep the Cell Phone Out of The Pants
Elvie Wireless Breast Pump

“This equipment generates, uses and can radiate radio frequency energy...”

-FCC Elvie Manual
Could the Increases in Colo-rectal Cancer in Young Adults be Tied to Cell Phone Radiation?

- 4-fold increase in rectal cancer in last decade in American young adults
- Colo-rectal cancer cells are exquisitely sensitive to RF
- Phones are ‘on’ and radiating into the abdomen unless turned to airplane mode or off
- Research has found that the effect of exposure to mobile phone radiation and 3Gy gamma radiation have similar impacts on treated colon tissues of rats compared to the controls

Davis et al., 2020 Increased Generational Risk of Colon and Rectal Cancer in Recent Birth Cohorts under Age 40 - the Hypothetical Role of Radiofrequency Radiation from Cell Phones published in Annals of Gastroenterology and Digestive Disorders
Reviewed studies related to neurotransmitters 21 on short-term exposures and 19 on long-term EMR exposure.

- Research is complicated by the numerous parameters in experimental studies.
- However, studies do document a variety of impacts to neurotransmitters: dopamine, norepinephrine and epinephrine and acetylcholine.
- EMR increases the intracellular calcium and the formation of ROS, which would alter the cellular function eventually and lead to numerous biological effects including neurotransmitter imbalance.
Children’s Vulnerability Ignored by FCC’s Outdated Safety Limits

- Unchanged for 25+ years.
- Based on body of large adult-man with big head.
- Do not consider the sensitivity of the developing brain.
Environmental Health Trust et al. v FCC
2021 U.S. Court of Appeals DC Circuit

“Provide a reasoned explanation for its decision that FCC limits do not need to be updated.

FCC must address:

- the impacts of RF radiation on children,
- the health implications of long-term exposure to RF radiation,
- the ubiquity of wireless devices, and other technological developments that have occurred since the Commission last updated its guidelines”

The FCC must address the impacts of RF radiation on the environment
No Agency is Ensuring Cell Tower Radiation is Safe

- No premarket safety testing.
- No post market surveillance for health effects.
- No reports/reviews on long term exposure.
- No monitoring of radiation levels in country—since the 80s.

No budget. No government staff tasked to ensure cell towers are safe.
5G Deployment and 4G Densification
Over 800,000 new sites in USA.

- 70.2 million “small cell” tower bases to be installed by 2025
- 500 billion devices are expected to be connected to the Internet by 2030
- 8.9 billion mobile phone subscriptions worldwide by 2024
No Safety Limits Nor Systematic Evaluation of Harm by ANY US Agency For Birds, Bees and Trees

3 Part Part Review in Reviews of Environmental Health

“exponential increases” of EMF in nearly all environments.

“Broad wildlife effects have been seen on orientation and migration, food finding, reproduction, mating, nest and den building, territorial maintenance and defense, and longevity and survivorship...It is time to recognize ambient EMF as a novel form of pollution and develop rules at regulatory agencies that designate air as 'habitat' so EMF can be regulated like other pollutants.”

“Effects of non-ionizing electromagnetic fields on flora and fauna, part 1. Rising ambient EMF levels in the environment”
Blake Levitt, Henry Lai, Albert Manville
"If you plan to watch a movie on your device, download it first, then switch to airplane mode while you watch in order to avoid unnecessary radiation exposure."

-American Academy of Pediatrics
Use radio equipment in good reception conditions to reduce radiation.

Use a hands-free kit or a loudspeaker.

Children and adolescents should limit calls.

Keep radio equipment away from the stomachs of pregnant women & adolescents.
Laptop Connected by a Wire to Internet
Connection by a Wire not Wi-Fi to the Internet
How To Reduce RF Exposure During Pregnancy

● Do not rest a cellphone or a wireless laptop/tablet on your abdomen.
● Use electronics on a table, not your lap.
● Distance cell phone and wireless devices away from brain and abdomen.
● Power off cell phone before carrying near your body.
● Minimize overall wireless use by using corded phones and hardwired internet.
● Reduce time in high RF environments.
INFOGRAPHICS

Download and share our infographics on all your social media sites. We hope you will also share links to our website so friends can learn more.

Cell Phone Radiation

50% of radiation from your cell phone can be absorbed into the head and body.

Cell Phones are tested at a distance from the body. When phones come on the market, SAR tests use a distance between the phone and body. Phones are not tested in body contact positions. All phones instruct us to keep a distance.

Why Fry for Wi-Fi?

Simple steps to reduce your cell phone radiation

1. Look Out for Signal Strength
   Signal strength, or how many bars you have on your cell phone, plays a big role in its radiation. When your cell signal is weaker, your phone has to work harder. Research finds low signal can equal up to 4,000 times more radiation.

2. No Pocket Carrying
   As tempting as it may be to instinctively shove your phone into the nearest pocket, please avoid carrying your phone against the body in a pocket, sock, or bra. The amount of radiation you’re absorbing can exceed government limits.

3. Take Shorter Calls
   On cell phones, take shorter or essential calls, preferably on speaker mode. Avoid making calls in cars, elevators, trains, and buses, as the cell phone works harder to get a signal through metal.

Wireless STINGS!

How Wireless Technology Makes it Hard to Be(e) a Bee

Into the Beehive of Science...

ALL ABOUT BEES

Whether your knowledge on bees stems from 3rd grade science class or The Bee Movie, there’s one thing we can all agree on: Bees are vital to a healthy environment, their pollination allows the wildflowers we admire and our farms and fruits to flourish; Pretty unBEElievable if you ask me.

Enter Wireless

Bees do so much for our planet that it stings to think that our wireless technology could be harming those MVPs. And yet, the radiation emitted by our cell phones, cell towers, and wireless tech have been found to negatively alter bee behavior, induce biochemical changes, and impact bee reproduction. Don’t BEElieve it? Check out the science below.
Protect the ones you love.

https://ehtrust.org/resources-to-share/printable-resources/
Human Health and the Environment

CLICK HERE FOR SIMPLE WAYS TO REDUCE CELL PHONE RADIATION

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