June 12, 2026

To Whom It May Concern,

Please add these to the file for this case, to be reviewed by the hearings officer. These are relevant because this scientific research about health impacts, specifically to our children in the neighborhood, is more current than the regulation guidelines used to determine safety standards for this communications tower. The information refers to both schools and homes. It should be noted, this tower is directly next to the neighborhood park, and also our homes, so we, and our kids won't only be exposed during school hours, but consistently.

Thank you,
Briana Song

VIA ELECTRONIC FILING

June 17, 2020

Ms. Marlene H. Dortch
Secretary, Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

RE: Comments on the FCC's Proposed Rule (Docket No. 19-226): "Targeted Changes to the Commission's Rules Regarding Human Exposure to Radiofrequency Electromagnetic Fields"

Dear Ms. Dortch,

As medical and public health professionals, we are writing to express our opposition to the above captioned rule because of the Commission's failure to adequately consider the established and newly emerging science on RF microwave radiation and its impact on human health, particularly for vulnerable populations.

First and foremost, the proposed rule completely ignores the documented adverse health effects that can occur at the FCC's current radiofrequency (RF) exposure limits, much less those that may occur at the expanded range of frequencies contemplated in the proposed rule. That the Commission fails to even mention 'health effects', 'toxicity', or 'carcinogenicity' anywhere in this document is astonishing, given the extensive and expanding scientific literature currently available and the Commission's obligation to ensure the "safety of life" for all Americans as set forth in the Communications Act of 1934.

To address the specific issues raised in the proposed rule, we offer these comments:

Response to Paragraphs 125 and 126 - The Commission appears to be pushing ahead with plans for the next generation of wireless while scientists are still documenting evidence of cancer and other biological harms from 2G, 3G and 4G exposures. There are no human or animal studies yet on these much higher frequencies, but an absence of studies does not mean an absence of harm. The Commission's own admission that it is unaware of adverse non-thermal effects demonstrates either a failure to actively investigate the issue and engage with scientists studying the short and long-term biological impacts to the human population and possible interference with systems of the natural world, or a conscious effort to disregard science to facilitate the rapid deployment of new technologies to benefit industry.

Response to Paragraphs 131-135 - Averaging RF microwave exposures over time may be convenient for manufacturers seeking to comply with FCC limits, but this is not how humans experience these exposures. To our knowledge, there is no scientific basis for the claim that periodic, high-level exposures are not harmful. As one scientist remarked recently, the average wind speed in Tornado Alley is 6 miles per hour.

As such, we do not support the proposed change to allow manufacturers to produce wireless devices that govern their own radiation power output by averaging radiated power, especially for notebooks and tablets frequently used by children who, according to the International Agency for Research on Cancer (IARC), are more vulnerable to RF radiation than adults. Given the increasing use of wireless devices by children and adolescents, we encourage the FCC to seek out and utilize testing protocols that reflect real-world situations as has been suggested by the American Academy of Pediatrics (AAP). The FCC should establish temporal limits for both Specific Absorption Rate (SAR) and power density.

Response to Paragraphs 141-143 - We recommend that before the Commission considers even tentative approval of Wireless Power Transfer (WPT) devices operating at ranges in excess of 50 cm., that it first require manufacturers to conduct pre-market testing to demonstrate the safety of such devices when used in all possible "worst case" scenarios, and to develop mitigation techniques that can limit or eliminate inadvertent or collateral damage to the public. Such an analysis must include consideration of non-thermal biological impacts.

* * *

Science moves slowly, and while this may be inconvenient for the restless purveyors of wireless technologies, it does not excuse the Commission from its obligation to protect public health and safety. Thus, considerations of human safety must come first in any decisions made by the Commission and we strongly urge the FCC to reconsider and re-evaluate its RF exposure standards with full consideration of potential adverse health effects for the general public as well as for occupational exposures.

Americans are entitled to know the full extent of any potential health risks associated with exposure to RF microwave radiation, particularly at this time when wireless companies are busy installing hundreds of thousands of new wireless antennas in close proximity to homes and apartments. The determination of risk can best be evaluated from properly conducted, independent studies. The alternative of waiting for decades to learn whether or not these exposures increase disease rates in human populations and in the natural world is a dangerous and irresponsible strategy.

Thank you for your consideration of these comments.

Sincerely,

Fatima Saleh Ahmed AlHammadi, MD
Bill Akpinar, MD
George Allibone, MD
Jeffrey L Anderson, MD
Anthony M Aurigemma, MD
Tiffany Baer, MD
Ricardo Bartelme, MD
Chandramohan Batra, MD
Alex Bekker, MD
Les Berenson, MD
Robin A Bernhoft, MD
Mario Brus, MD
Marie-Claire Buckley, MD
Larry Burk, MD
Julie Calderwood, MD
Dawn L Cannon, MD
Dawn L Cannon, MD
Hyla Cass, MD

Ram Chandra, MD
Perry A Chapdelaine Jr., MD
Rowena Chua, MD
Catherine Clark, MD
Wendy S Cohen, MD
Angela Colbeck, MD
Eric Cordon, MD
Rabbi Gabriel Cousens, MD
Jennifer M Cunningham, MD
Scott Cunningham, MD
Geraldine DePaula, MD
Laurel DeStefano, MD
B Dudney, MD
Ron Dushkin, MD
Larysa Dyrszka, MD
David Eisenberg, MD
Erica Elliott, MD
Barbara Entl, MD
Darren Esposito, MD
Jill Fetell, MD
Mitchell A Fleisher, MD
Barbara Rugo Focht, MD
Kelly Fox, MD
Jonathan T Franklin, MD
Tracy Freeman, MD
Mary Gabriele, MD
Kathryn Gill, MD
Sharon Goldberg, MD
Martha M Grout, MD
George Guess, MD
Korianne Haas, MD
Travis L Herring, MD
Richard Horowitz, MD
Jason Hurbanek, MD
April M Hurley, MD
Toril H Jelter, MD
Richard Johnson, MD
Janis Johnson, MD
Sudha Kailas, MD, PhD
Faiz Khan, MD
Benjamin Kohn, MD
Laura Koniver, MD
Athena Kostidis, MD
Constantine A Kotsanis, MD
Daciana Lancu, MD
Kim Lane, MD
Laura Lasater, MD
Chris Lawinski, MD
Carol Lien-Kieu Thi Le, MD
Ching Lee, MD
Alice Lee, MD
Megan Leivant, MD
Edward Levitan, MD
Tudor Marinescu, MD
Anton Mathey, MD
Sherman McCall, MD, PhD
Stephanie McCarter, MD
Julia W McCutcheon, MD
Joseph McNamara, MD
Richard Mills, MD
Joseph T Morgan, MD, FAAP
Leah Morton, MD
Jeffrey Mueller, MD
Gudrun Murti, MD
Sonya Naryshkin, MD
Neil Nathan, MD
Raymond Richard Neutra, MD, PhD
Mona Nicolae, MD
Kathleen Nolan, MD
Baran Nosratpour, MD
Nicholas J Nossaman, MD
Michelle O'Neill, MD
Michelle Perro, MD
Alan Peterson, MD
Laura Pines, MD
Lawrence A Plumlee, MD
Angel Polimeni, MD
Divray Prahbat, MD
Edwin M Quiñones, MD
Miriam Rahav, MD
Rohit Ramanath, MD
Ezra B Riber, MD
Bruce Rind, MD
Ronald D Rosen, MD
Robert Jay Rowen, MD
Steven Roy, MD
Cindy Lee Russell, MD
Natalie Sadler, MD
Yusef Saleeby, MD
Irene Sebastian, MD, PhD
Michael Selden, MD
Mark Shebuski, MD

Debbi Silverman, MD
Marjorie Slankard, MD
Allan Spreen, MD
Yai Supawit Burankul, MD
MaryKelly Sutton, MD
Carol Taccetta, MD
Wallace Taylor, MD
Shadi Tehrani, MD
Glenn A Thomas, MD
Glenn Tillery, MD
Judy Tsafrir, MD
Jonathan Vellinga, MD
Alan R. Vinitsky, MD
Drue O. Wagner, MD
Mignon Walker, MD
Bradford S Weeks, MD
Richard Wilkerson, MD
Jane Deborah Williams, MD
Kenneth A Wolkoff, MD
Savely Yurkovsky, MD
Anne Zuzelski, MD
Reem Abu-Sbaih, DO
Judith Aldrich, DO
Muneer Ali, DO
Runa Basu, DO
Sunil Bhat, DO
Anthony Biano, DO
Elliott S Blackman, DO
Jacqueline Chan, DO
Sheree Cloer, DO
Karin Cseak, DO
Anthony M Fernandez, DO
Bill Foley, DO
Rebecca Frye, DO, MPH
James E. Gaydos, DO
Daniel Gibbons, DO
Melanie Gisler, DO
Jacey Goddard, DO
Harold Goodman, DO
Edward Hagen, DO
Robert Lee, DO
Patricia Leone, DO
Claudia Marcelo, DO
Lisa Milder, DO
Christine Mitchell, DO
Jason Nurnberg, DO
Kate Peters, DO
Zohra F Siddiqi, DO
Kim Tripp, DO, PhD
Michelle Veneziano, DO
Rajiv Yadava, DO
Kelly Butler, DDS
Harry Chadha, DDS
Fen-Hui Chen, DDS
Richard Crum, DDS
Marc C Bricca, ND
Sally Boyd Daughtrey, ND
Lindsey Louise Donahue, ND
Alexander Haskell, ND
Rachel Roberts Oppitz, ND
John Ruhland, ND
Lee Samatowic, ND
Steven Sandberg-Lewis, ND
Ed Grauke, DC
Rachna Kapoor, MPH
Abby Kurth, MPH
Angelo Aguila, RN, MSN
Alexandra J Attie, RN, BSN
Rebekah Bankowski, RN
Tuesday Benavidez-Knight, RN
Betty Bente, RN
Pamela M Berndt, RN
Chris Calkins, RN
Francine Cannata, RN
Manju Carrow, RN
Su Chase-Ziolek, RN
Virginia Corliss, RN
Huguette Cormier, RN
Barbara Cruickshank, RN, MSN
Jennifer Dages, RN, BSN
Veronica DeMaria, RN
Jennifer Erenberg, RN
Diane Ferguson, RN, MSN
Janice Flatto, RN
Judy Fleming, RN
Natalie Ford, RN
Ella Gonik, RN
Cindy Gough, RN
Teresa Gregurek, RN
Christen Renee Greto, RN
Diane Grevell, RN
Chauna L Hall, RN

Sharon Hansen, RN
Terry Hawkinson, RN
Diane Hayes, RN, BSN
Joanne Hibbert, RN
Sabre Reign King, RN
Gayle Klor, RN
Shirlynn LaChapelle, RN, BSN, MSN
Ronda L. Lawrence, RN
Deborah Lazar, RN
Sara Lobato, RN, BSN
Denise LoGuidice, RN
Terra Louise, RN
Alexandra J Lynch, RN, BSN
Angela Lyubarsky, RN
Mary Ann Masesar, RN, BN
Cynthia McGrane, RN
Pat Metcalf, MSN
Thomas Messinger, RN
Rabab Mohsin, RN
Janine Morrell, BSN, MSN
Julie Mummert, RN
Sarah Murray, RN BSN
Tracy Navar, RN
Jessica O'Byrne, RN
Susan Pegram, RN
James Perloff, RN
Anna Pritchard, RN
Joseph A. Querciagrossa, RN
Aleka Ruggiero, RN
Cynthia Saint Cyr, RN, MSN
Melinda Salvestrin, RN
Jeanne Sandecki, RN, BSN
Rebecca Serkez, RN
Laura Sheehan, BSN, DC
Rebecca J. Smith, RN
Jindriska Stewart, RN
Margaret Sutherlin, RN
Mary E Tiplady, RN
Kathy Urratia, RNC
Carolyn Walker, MSN, ARNP
Marki Webber, RN
Amy Weiss-Friedman, RN, BSN
Randye L. Williams, RN
Laura Williams, RN
Nancy Williams, RN
Mara Williams, RN, MSN
Brenda S. Wolfe, RN
Kathy Allard, PhD
Ruth Anderson, PhD
Bhaskar Banerji, PhD
Forian Braich, PhD, DDS
Marissa Brand, PhD
Tom Bulter, PhD
William Collinge, PhD, MPH
Steven Fenwick, PhD
Roberta Godbe-Tipp, PhD
Joaquim I Goes, PhD
Molly Hauck, PhD
Paul Héroux, PhD
Olle Johansson, PhD
Ellen Kamhi, PhD, RN
Mahin Khatami, PhD
Henry Lai, PhD
M. Lynn Lamoreux, PhD
Kathryn Luchok, PhD
Trevor Marshall, PhD
Grettel Martinez, PhD
Deb Moore, PhD
Robin Nemeroff, PhD
Sylvia P Onusci, PhD, CNS
Molly Perkins, PhD
Quila Rider, PhD
Steven Schram, PhD, DC
Richard Shane, PhD
Diane M Testa, PhD
Lisa Tully, PhD
Christine VanderWoude, PhD
Linda (Angelique) Varsou-Papadimitriou, PhD, MPH
Carolyne Yakaboski, PhD
Kay A Baker
Angela Agrios
Shelly Allen
Ivy Amar
Katharine Ayers
Carolyn B. Welcome
Mercedes Barnek
Stacy Barnes
Debby Baskin
Raylene Blandino
Michael Bohdan Slonetsky
Joe Bonacci

Susann Brady
Kelley Brooksher
Joyce Brown
George Burdi
Audrey Burstein
Rita Campbell
Antoinette Caruso
Laurie Chaikin
Karen Christensen
Susan Clark Laughlin
Lacey Cohen
Carol Cuenca
Heather Cunningham
Deana Darby
Lori Deutsch
Fred DiDomenico
William Domb
Petra Dorfsman
Jane E Maier
Laurie Eisler
Howard F Robins
Chris Fabijanic
Debra Falkenberg
Brandon Ferro
Jennifer Finkbeiner
Adriana Finnie
JoAnn Fox
Ariela Friedman
Elizabeth G Eisenberg
Spencer G Williams
Larisa Goldin
Susan Greenberg
Jacqueline Greenfield
Shelley H Lane
Nicholas H Schar
Maureen Hartker
Diane Hashem
Michon Hawkins
Rita Heinz
Pauline Helen Spiros
Shila Helmer
Christina Hilderbrandt
David Holm
Randy Ice
Loretta Ivory
Elizabeth J Meaney
Jere Jarrett
Keith Jassy
Elva Jo Edwards
Allison Jobke
Alexandra Kaufman
Lummiel Kim
Gabriele Knaus
Shirley Knight
Sue L Johnson
Barbara L Lockwood
Brandon LaGreca
Emma Lam
Robert Lee
Michael Legge
Stephanie Leraris
Tina Lewis
Lindsay Louise Donahue
Edward Lucey
Kathleen Lynn Cliff
Margaret M Glaser
Suzanne M Harris
Deborah Manke
Gaye Mason Walden
Karen McBride
Harriet McCoy
Wayne Mosteller
Nic Niculture
Robin Numeroff
Gustavo Padilla
Keith Pelletier
Linda Piatt
John R De Cotiis
Joan R Polzin
Sara Reeder
Sarah Reilly
Colleen Reiter
Christine Renaud
Jillian Rifkind
Renee Russo
Michael S Evangel
Rena Salyer
Sylvia Sanchez
Annie Scheppach
Dale Schusterman
Benjamin Schwarcz
David Schwietert

Ingrid Shequin
Joanne Sherrow
Melissa Sophia Joy
Robert Sprinkle
Darina Stoyanova
Jennelle Thimmesch
Angie Thompson
Robert Thompson
William Thornton
Alice Tobin
Jody Truesdale
Thomas Tumbarello
Nancy Van Dover
Kris Van Oeveren
Star Weiderman-Tyrrell
Janice Winton
Carol Wong
Rick Wren

ENVIRONMENTAL HEALTH TRUST

5G, CELL TOWERS AND SMALL CELLS

SCIENTIFIC RESEARCH

WWW.EHTRUST.ORG

CHILDREN'S VULNERABILITY TO WIRELESS RADIOFREQUENCY (RF) RADIATION

The American Academy of Pediatrics states:

"In recent years, concern has increased about exposure to radio frequency (RF) electromagnetic radiation emitted from cell phones and phone station antennas. An Egyptian study confirmed concerns that living nearby mobile phone base stations increased the risk for developing:

- Headaches
- Memory problems
- Dizziness
- Depression
- Sleep problems

Short-term exposure to these fields in experimental studies have not always shown negative effects, but this does not rule out cumulative damage from these fields, so larger studies over longer periods are needed to help understand who is at risk. In large studies, an association has been observed between symptoms and exposure to these fields in the everyday environment."

–American Academy of Pediatrics
HealthyChildren.org

Cell towers and cell phones emit wireless radiofrequency (RF) radiation.

Children are more vulnerable to RF radiation, just as they are to other environmental exposures. They have proportionately more exposure to RF compared to adults. More importantly, a child's brain is rapidly developing and more sensitive. Even very low exposures in childhood can have serious impacts later in life.

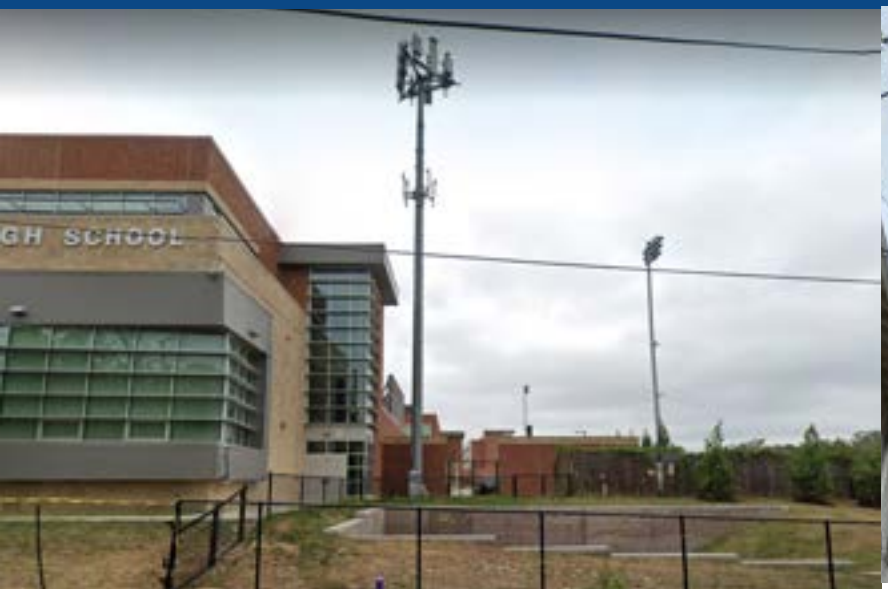
Children absorb higher levels of RF radiation deeper into their brains and bodies because they have:

- Thinner skulls allow RF radiation to move easier into the brain.
- Higher water content in brain tissue which is more conductive to electricity.
- Smaller heads result in a shorter distance for the RF to travel from the skull to critical brain regions important for learning and memory.

Children are more sensitive to RF impacts because:

- Their brains are still developing.
- Children have more active stem cells- a type of cell scientifically found to be uniquely impacted by RF.
- Children will have a longer lifetime of higher exposures, starting from before they are born.

PUBLISHED RESEARCH STUDIES



RESEARCHERS RECOMMEND CELL TOWERS BE DISTANCED AWAY FROM HOMES AND SCHOOLS

The review paper entitled "**Limiting liability with positioning to minimize negative health effects of cellular phone towers**" reviewed the "large and growing body of evidence that human exposure to RFR from cellular phone base stations causes negative health effects." The authors recommend restricting antennas near homes, and restricting antennas within 500 meters of schools and hospitals to protect companies from future liability (**Pearce 2020**).

An **analysis** of 100 studies published in *Environmental Reviews* found approximately 80% showed biological effects near towers. "As a general guideline, cell base stations should not be located less than 1500 ft from the population, and at a height of about 150 ft" (**Levitt 2010**).

A **review** published in the *International Journal of Occupational and Environmental Health* found people living less than 500 meters from base station antennas had increased adverse neuro-behavioral symptoms and cancer in eight of the ten epidemiological studies (**Khurana 2010**).

A **paper** by human rights experts published in *Environment Science and Policy* documented the accumulating science indicating safety is not assured, and considered the issue within a human rights framework to protect vulnerable populations from environmental pollution. "We conclude that, because scientific knowledge is incomplete, a precautionary approach is better suited to State obligations under international human rights law" (**Roda and Perry 2014**, **PDF**).

CELL TOWERS NEAR SCHOOLS

SCHOOL CELL TOWER SETBACKS

Many communities have policies, ordinances or zoning that ensures cellular antennas are restricted to a specific minimum distance from schools. Hempstead, New York requires a special use permit for cell towers near schools.

Examples of cell tower/4G/5G small cell setbacks/preferred placements for schools:

- Palo Alto, California: 1,500 feet
- Copake, NewYork :1500 feet
- Los Altos , California: 500 feet
- Walnut City, California: 1,500 feet
- Bar Harbor, Maine: 1,500 feet
- Sallisaw, Oklahoma: 1,500 feet
- Shelbourne , Massachusetts: 1,500 feet
- Stockbridge, Massachusetts: 1,500 feet
- San Diego County California 1,000 feet
- Encinitas California:500 feet
- Scarsdale New York: 500 feet
- Ithaca, New York: 250 feet

CELL TOWERS REMOVED FROM SCHOOL GROUNDS

- Milpitas California: School Board asked Crown Castle and T-Mobile to relocate the cell tower to remote location.
- Ripon California: Sprint moved the cell tower at elementary after students and staff developed cancer and parents argued children should not be guinea pigs.
- Alameda California cancelled cell tower contracts.
- Dekalb County Georgia dropped school tower plan.

SCHOOL BOARDS

- Palo Alto Unified School District Cell Tower Resolution supports the City 1,500 setback and opposes cell tower "on or in close proximity to schools to ensure individuals, especially children, are protected from the potential negative effects associated with radiation exposure."
- West Linn-Wilsonville Oregon School Board prohibits cell towers on school property.
- Vancouver School Boards Resolution: 1,000 feet
- Greenbelt Maryland Council opposes school towers.

DID YOU KNOW?

- The International Association of Firefighters passed a Resolution opposing cell towers on its stations in 2004 after a study found neurological damage in firefighters with antennas on their fire stations.

LOS ANGELES UNIFIED CA SCHOOL DISTRICT

- 3 resolutions opposing cell towers on school property.
- The District Office of Health and Safety developed a "cautionary level" for radiofrequency radiation 10,000 times lower than FCC regulations because, *"it is believed that a more conservative level is necessary to protect children, who represent a potentially vulnerable and sensitive population."*

SCHOOL BOARDS THAT REVERSED COURSE

- Montgomery County Maryland Schools policy does not allow cell towers on elementary schools.
- Prince George's County Maryland School Board decided not to renew a cell tower construction master leasing agreement that had allowed over 60 schools to be marketed as cell tower sites.
- Portland Oregon Schools ended new leases for cell towers.

EXPERT RECOMMENDATIONS

- The New Hampshire State Commission 5G Health and Environment Report recommends a setback of 1640 feet for schools.
- The Collaborative For High Performance Schools (Green building rating program) has LOW EMF Criteria which includes no cell towers on school property.

THE EPA SCHOOL SITING GUIDELINES

Lists exposure to electromagnetic fields and the fall distance as "potential hazards" from cell towers. The EPA guidelines recommend schools "identify and evaluate cell towers within ~200 feet of prospective school locations."

PUBLISHED RESEARCH

- 500 meter buffer recommended for schools to reduce liability and minimize risk (Pearce 2019)
- A moratorium on 5G pending safety research (Frank 2020)
- A precautionary approach is better suited to State obligations under international human rights law (Roda and Perry 2014)
- Increased cancer deaths near cell antennas (Rodrigues 2021)
- Studies find: DNA Damage(Zothansiama 2017), Diabetes (Meo 2015), Cognitive effects (Meo 2018), sleep problems and headaches (Abdel-Rassoul 2007, Levitt & Lai 2010, Shahbazi-Gahrouei 2013)

CELL TOWERS & WIRELESS

BC CONFEDERATION OF PARENT ADVISORY COUNCILS

- Two resolutions. One calls on each Board of Education to have one public school at each education level that is free of Wi-Fi, cordless phones, and cell phones.
- The second calls on the Boards of Education to "cease to install Wi-Fi and other wireless networks in schools where other networking technology is feasible."

CALIFORNIA PTA

- Resolution on Electromagnetic Fields
- PTA can educate and inform districts, councils and units about the potential hazards of EMFs to encourage school districts and schools to develop risk reduction policies and to disseminate information on the subject."

PALO ALTO, (CA) PTA

- Fact sheet on "Safe Use of Technology" which distributed to all the schools in the Palo Alto Unified School District

PACIFIC GROVE (CA) PTAs

- Forest Grove Elementary Pacific Grove Middle School and Pacific Grove High School PTAs sent a letter to City Council opposing a high school cell tower.

FLETCHER HILLS (CA) PTA

- Resolution encouraging schools to use cable lines Internet connections and to avoid wireless networks on campus.

FLETCHER HILLS (CA) PTA

- Resolution encouraging schools to use cable lines Internet connections and to avoid wireless networks on campus.

PHOENICIA ELEMENTARY NY PTA

- Sent a letter to the Onteora School District calling for the Wi-Fi to be turned off.

NEELSVILLE MIDDLE SCHOOL PTA (MD)

- Voted to oppose proposed cell tower.
- Hosted parent information session with both the cell tower company and Environmental Health Trust.

NEW YORK STATE PTA

- Resolution on Cell Towers supporting:

1. laws that regulate tower placement near schools
2. research into the long-term effects of RFR
3. education for parents and school officials regarding cell towers and health.

CASTLE HILL HIGH SCHOOL (AUSTRALIA) P&C COMMITTEE

- Funded ethernet plugs to reduce wireless exposure in classroom.
- Developed "Mobile Phone Safety Tips & Cyberbullying Information," which includes how to reduce cell phone and wireless radiation

MONTGOMERY COUNTY (MD) PTA

- Safe Tech PTA Committee shares online and print resources on reducing RFR exposure and on digital safety issues such as privacy.
- Meets monthly with school IT department.

HILLSMERE ELEMENTARY SCHOOL PTA (MD)

- Sent letters to the school board in opposition to cell towers near the school.

BRIARLAKE ELEMENTARY (GA)

- Voted to oppose cell tower after board approved towers on schools.

Bold blue on this PDF are hyperlinked. For more setbacks go to ehtrust.org

ENVIRONMENTAL HEALTH TRUST

WI-FI IN SCHOOLS

UNITED EDUCATORS OF SAN FRANCISCO

- Resolution on Safer Technology calls for the California cell phone advisory on how to reduce cell phone exposure be disseminated to students and staff.
- Webinars on reducing RF exposure.

CANADA TEACHER FEDERATION

- Briefing document "Wi-Fi in School" recommends limiting Wi-Fi.

UNITED TEACHERS OF LOS ANGELES

- 2013 Resolution "UTLA will advocate for technological solutions that maintain technology upgrades while not increasing employees exposure to electromagnetic radiation."

UNITED FEDERATION OF TEACHERS

- Website shares Dr. Moskowitz's "Reducing Exposure to Wireless" brochure and The BabySafe Project "What You Need to Know About Wireless Radiation and Your Baby."

ELEMENTARY TEACHERS FEDERATION OF ONTARIO

- Call for Wi-Fi moratorium until health studies done (Limestone).

BC TEACHERS FEDERATION

- Resolution supporting members suffering from electromagnetic hypersensitivity by ensuring that their medical needs are accommodated in the workplace.

NEW JERSEY EDUCATIONAL ASSOCIATION

- Recommendations in "Minimize health risks from electronic devices" detail how to reduce physical health risks from devices including wireless radiation.

ONTARIO ENGLISH CATHOLIC TEACHERS

- Position Statement recommends wired networks as WI-FI "may present a potential health and safety risk or hazard in the workplace."

GREATER VICTORIA TEACHERS ASSOCIATION

- Recommends minimal or non-use of Wi-Fi.

NEW YORK STATE UNITED TEACHER UNION

- Resolution "Hazards of Wireless Radiation Emission"and "Best Practices" recommend wired ethernet connections.
- Webinar "Risks of wireless technologies and protecting children and staff in schools."

AMERICAN FEDERATION OF TEACHERS

- National Conference presentation about wireless radiation posted online.

NEW JERSEY EDUCATIONAL ASSOCIATION

- Put devices on desks, not laps.
- Hard wire all devices that connect to the internet.
- Hard wire all fixed devices such as printers, projectors and boards.
- Use hard-wired phones instead of cell or cordless phones.
- Put devices in airplane mode, which suspends EMF transmission in the device, disabling Bluetooth, GPS, phone calls, and WiFi.

"All educational facilities must have healthy indoor air quality, be smoke-free, be safe from environmental and chemical hazards, and be safe from hazardous electromagnetic fields."
— National Education Association

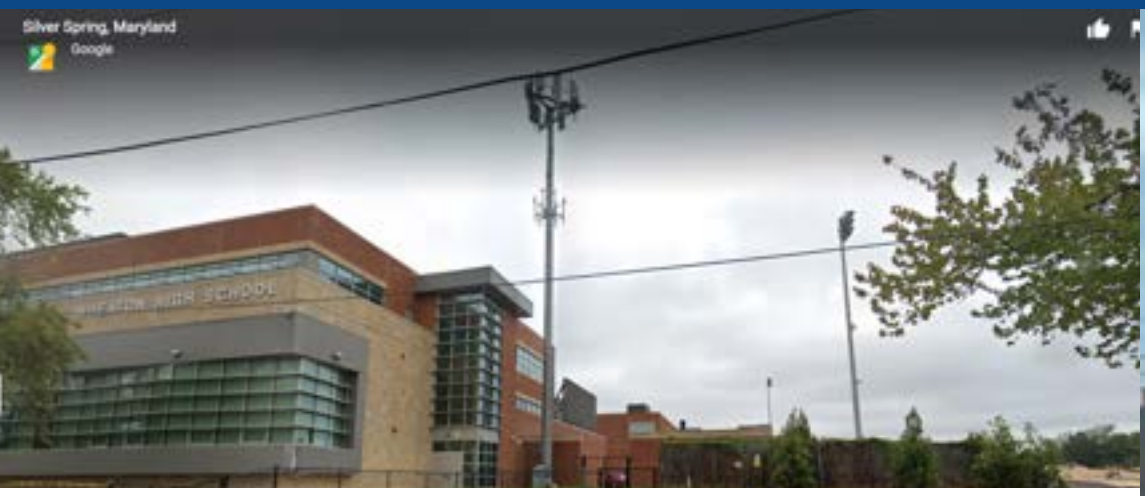
"Students and/or their parents/guardians, education employees, and the public should be notified of actual and potential hazards."
— National Education Association
2013-2014, C-19

Bold blue on this PDF are hyperlinked. For more setbacks go to ehtrust.org

ENVIRONMENTAL HEALTH TRUST

PARENT TEACHER ASSOCIATIONS

OPPOSE CELL TOWERS



CONEJO PTA WANTS CELL TOWER MOVED
Op-ed in Thousand Oaks Acorn Journal

The California PTA advocates on behalf of children and families. They advocate against electromagnetic field radiation your schools.

The Conejo PTA urges the use of the precautionary principle in making decisions regarding public health this means if something cannot be proven to be safe it is best to avoid exposure. Most people don't realize that the 1996 FCC state standards for safe levels of omission was actually based on a level set by the American national standards institute in 1982. Well this standard has not been changed in 30 years it has usurped all local authority."

"For this reason, Conejo Council PTA made up of 9000 parents and teachers has decided to take action. We're calling on our local leaders to put in place policies that would ensure parents are notified when cell towers are propose near schools and then encourage a buffer zone around schools."

-Kim Huber, legislative chair of the Conejo Council PTA.

NEW YORK STATE PTA
-Adopted TWO Resolutions 2014

"CELLULAR PHONE TOWERS – 2014 (R-'07, R-'00); Resolved that the New York State Congress of Parents and Teachers, Inc. support legislation that would encourage local communities, including parents and school officials, to regulate the placement of cell towers and cell tower antennas particularly in schools and areas where children congregate,

and be it further Resolved that the New York State PTA support continued research into the long-term effects of radio frequency and microwave frequencies on humans especially as they apply to children, and be it further Resolved that the New York State PTA seek to educate parents and school officials as to the current debate over the placement of cell towers and antennas."

NEELSVILLE MIDDLE SCHOOL PTA (MD)

- Voted to oppose proposed cell tower.
- Hosted parent information session with both the cell tower company and Environmental Health Trust.

HILLSMERE ELEMENTARY SCHOOL PTA (MD)

- Sent letters to the school board in opposition to cell towers near the school.

BRIARLAKE ELEMENTARY (GA)

- Voted to oppose cell tower after board approved towers on schools.

PACIFIC GROVE (CA) PTAs

- Forest Grove Elementary Pacific Grove Middle School and Pacific Grove High School PTAs sent a letter to City Council opposing a high school cell tower.

OPPOSE CELL TOWERS

Exhibit A

August 6, 2018

Pacific Grove City Council
City Hall
300 Forest Ave.
Pacific Grove, CA 93950

Dear members of Pacific Grove City Council,

I am writing you on behalf of Pacific Grove High School PTA in regard to the Pacific Grove Planning Commission's vote on July 26, 2018, which approved a request by Verizon Wireless to install and maintain a cell tower adjacent to Pacific Grove High School (PGHS). For the reasons described below, the Pacific Grove High School PTA **is strongly opposed** to the location of the Verizon cell tower and is requesting that the City Council consider and support the appeal that is being filed by a group of concerned parents who live in Pacific Grove and send their children to PG schools.

The installment of a cell tower adjacent to PGHS poses significant potential health dangers to both students and staff at PGHS. While some argue that radiation emitted from a cell tower is not a health danger, data from many studies indicate the opposite. Research shows that children and pregnant women are the most vulnerable – two demographics most likely to be on PGHS school grounds on a regular basis. The actual placement of the cell tower– near the back of PGHS and very close to Forest Grove Elementary School- only increases the concerns of the frequency in exposure.

Cell towers also pose a risk to students due to fire hazard. Many cell towers throughout the United States have caught fire and collapsed, posing a significant safety concern, especially in an area with young students walking to and from school every day.

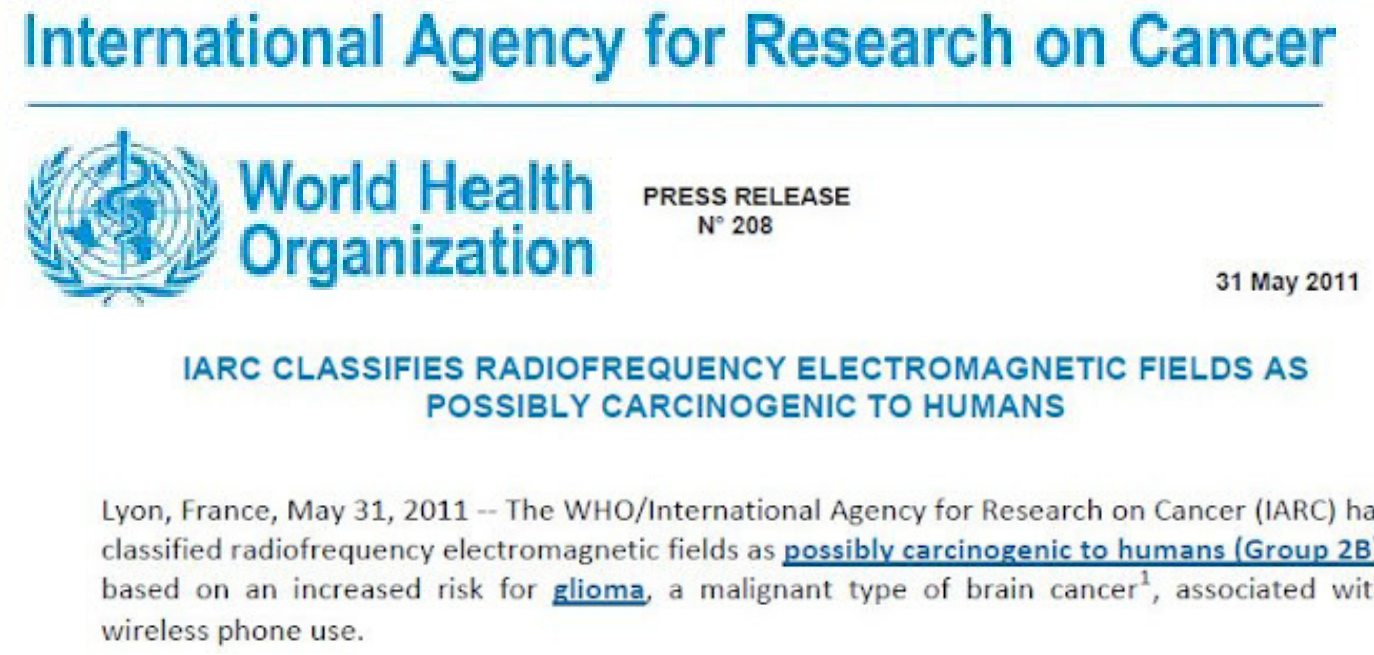
The mission of all PTAs nationwide is to make every child's potential a reality by engaging and empowering families and communities to advocate for all children. Our local PTA is very active in expressing our support for or opposition to issues dealing with the health, safety, education, or general well-being of children and youth in our community.

The members of the Pacific Grove High School PTA strongly urge you to please reconsider the Pacific Grove Planning Commission's previous vote and rescind approval for the Verizon cell tower at Pacific Grove High School.

Sincerely,

Julie Kavanaugh
President, Pacific Grove High School PTA

CELL TOWER RF RADIATION AND CANCER



International Agency for Research on Cancer

World Health Organization

PRESS RELEASE
N° 208

31 May 2011

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 cancer[1], associated with wireless phone use.

The World Health Organization International Agency for Research on Cancer Classified Radiofrequency Radiation as a "Possible" Carcinogen in 2011

In 2011, radiofrequency electromagnetic fields (RF-EMF) were classified as a Group 2B possible carcinogen by the World Health Organization's International Agency for Research on Cancer (WHO/IARC).

The WHO/IARC scientists clarified that this determination was for RF-EMF from any source be it cell phones, wireless devices, cell towers or any other type of wireless equipment.

Since 2011, the published peer-reviewed scientific evidence associating RF-EMF (also known as RF-EMR and RFR) to cancer and other adverse effects has significantly increased.

A large-scale animal study published in Environmental Research found rats exposed to RF levels comparable to cell tower emissions had elevated cancers, the very same cancers also found in the US National Toxicology Program animal study of cell phone level RF that found "clear evidence" of cancer in carefully controlled conditions (Falcioni 2018).

In 2019, the WHO/IARC advisory committee recommended that radiofrequency radiation be re-evaluated as a "high" priority in light of the new research. The date of the re-evaluation has not been set.

Currently, several scientists conclude that the weight of currently available, peer-reviewed evidence supports the conclusion that radiofrequency radiation is a proven human carcinogen (Hardell and Carlberg 2017, Peleg et al. 2022, Miller et al. 2018).

SCIENTIFIC RESEARCH STUDIES

European Parliament requested a research report "**Health Impact of 5G**" which was released in July 2021 and concluded that commonly used RFR frequencies (450 to 6000 MHz) are probably carcinogenic for humans and clearly affect male fertility with possible adverse effects on the development of embryos, fetuses and newborns.

A review entitled "**Evidence for a health risk by RF on humans living around mobile phone base stations: From radiofrequency sickness to cancer**" reviewed the existing scientific literature and found radiofrequency sickness, cancer and changes in biochemical parameters (**Balmori 2022**).

A **study** published in Electromagnetic Biology and Medicine found changes in blood considered biomarkers predictive of cancer in people living closer to cell antenna arrays (**Zothansiama 2017**).

A **study** published in the International Journal of Environmental Research and Public Health found higher exposure to cell network arrays linked to higher mortality from all cancer and specifically lung and breast cancer (**Rodrigues 2021**).

A 10-year **study** published in Science of the Total Environment on cell phone network antennas by the local Municipal Health Department and several universities in Brazil found a clearly elevated relative risk of cancer mortality at residential distances of 500 meters or less from cell phone towers (**Dode 2011**).

A **study** commissioned by the Government of Styria, Austria found a significant cancer incidence in the area around the RF transmitter as well as significant exposure-effect relationships between radiofrequency radiation exposure and the incidence of breast cancers and brain tumors (**Oberfeld 2008**).

A **review** published in Experimental Oncology found "alarming epidemiological and experimental data on possible carcinogenic effects of long term exposure to low intensity microwave (MW) radiation." A year of operation of a powerful base transmitting station for mobile communication reportedly resulted in a dramatic increase of cancer incidence among the population living nearby (**Yakymenko 2011**).

WORLDWIDE POLICY

5G & CELL TOWERS

EUROPE

- Resolutions to halt 5G in numerous European cities including Trafford, UK, Lille, France, Ormidia, Cyprus, Councils in Ireland and more.

ITALY

- 600 municipalities have passed resolution to halt 5G.

UNITED STATES

- Los Angeles CA Public Schools: RFR Limit 10,000x less than FCC.
- Resolutions to halt 5G passed in Hawaii County HI, Farragut TN, Keene NH & Easton CT.
- Numerous cities restrict cell antennas near homes including: Los Altos, Petaluma, Mill Valley, Malibu and San Diego County CA, Bedford NH and more.
- New Hampshire 5G Commission's 15 Recommendations include increasing transparency, reduce public exposure, research health effects and protect wildlife and trees.
- Oregon investigating health effects of wireless.
- Palo Alto, Los Angeles LA Schools Greenbelt MD, Bar Harbor ME; No school cell towers

CHILE

- Cell antennas prohibited in “sensitive areas" - kindergartens, hospitals and nursing homes.

BANGLADESH

- No cell towers on homes, schools, colleges, playing fields, populated areas and heritage areas.

FRANCE

- 60 mayors/officials petition to halt 5G.
- Federal health agency investigating 5G
- 5G antenna RFR is measured.

SWITZERLAND

- Parliament refused to weaken radio frequency radiation (RFR) limits after 5G Report.

NETHERLANDS

- Health Council recommends against 26 GHz for 5G due to lack of safety data.

RUSSIA

- No cell towers near schools.

ISRAEL

- Cell tower setback 100m from schools/ homes.

CANADA

- City of Toronto "Prudent Avoidance Policy" for Cell Towers.

BULGARIA

- Mezdra and Balchik have banned 5G.

GREECE

- The installation of cell towers at the premises of schools, kindergartens, hospitals or eldercare facilities is prohibited.

CYPRUS

- Cyprus National Committee on Environment and Child Health 5G Position Paper calls for 5G free zones.

AUSTRALIA

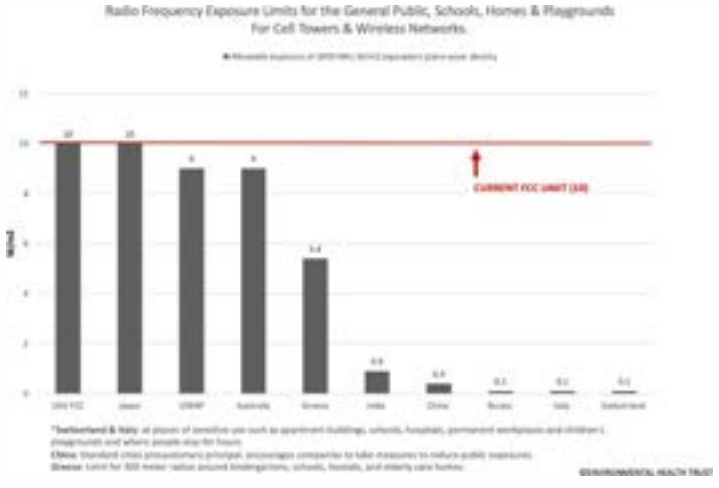
- New South Wales Dept. of Education policy objects to towers on/near schools.

LITHUANIA

- Cell antennas prohibited on kindergartens and hospitals.

INDIA

- RFR limit tightened to 1/10 of CNIRP limits after Inter-Ministerial Report on impacts to wildlife.
- Mumbai, Zilla Parishad & Karnataka: Cell towers prohibited/removed near schools, colleges, orphanages and old age homes.
- Brihanmumbai Municipal: Cell towers banned at parks and playgrounds.
- State of Rajasthan: Supreme Court of India upheld removal of “hazardous to life" cell towers from vicinity of schools, hospitals/playgrounds.



UNITED STATES OF AMERICA

5G & CELL TOWERS

CALIFORNIA

Numerous CA cities restrict cell antennas near homes with setbacks and strict ordinances including: Los Altos, Petaluma, Mill Valley, Malibu, Santa Barbara, Nevada City, Suisin, Calabasas, San Clemente, Westlake, Sonoma, Sebastopol, San Rafael, Ross Valley, Encinitas, Fairfax, Palo Alto, Walnut City and San Diego County.

As an example of CA ordinances, the Los Altos City ordinance:

- prohibits installation of small cells on public utility easements in residential neighborhoods
- 500 foot setbacks for small cells for multi-family residences in commercial districts
- 500 ft separation from schools
- 1500 ft separation between nodes

San Diego County, California

- "SCWs shall not be located within 1,000 feet of schools, child care centers, hospitals, or churches."

CONNECTICUT

- Easton CN City Council passed a 5G cease and desist resolution
- Warren, Connecticut Policy defines "adequate coverage" and "adequate capacity." and was designed "to locate towers and/or antennas in a manner which protects property values, as well as the general safety, health, welfare and quality of life of the citizens." Coverage is considered to be "adequate" within that area surrounding a Base Station where the predicted or measured median field strength of the transmitted signal is such that the majority of the time, transceivers properly installed and operated will be able to communicate with the base station.

FLORIDA

- Coconut Creek FL Commission adopted a Resolution on 5G and radiofrequency radiation.
- Hallandale Beach FL Resolution urges the federal government to initiate independent health studies on 5G.
- Lavallette FL Resolution 2021-58: Applicant shall obtain certification from the Federal Aviation Administration and the United States Dept. of Defense demonstrating that the installation does not emit RF frequencies which may interfere with avionics of any approaching civil or military aircraft." The City also requires the applicant to provide RF meters used by their technicians and train City employees. Verizon cannot install more than a total of 20 "small cell" nodes throughout the Borough to support 5G.

HAWAI'I

- Hawai'i County Council passed a Resolution to halt 5G

IILLINOIS

- Oak Brook IL Resolution calls for local control re small cels.

INDIANA

Carmel City IN Council resolution asks state lawmakers, FCC and Congress to limit 5G until health effects fully understood.

MASSACHUSETTS

Randolph MA 500 ft setback. Yearly RFR measurements.
Lunenburg and Great Barrington MA 500 ft setback
Stockbridge MA prohibits a tower from being built 1000 feet from a school, park or athletic field and 600 ft from residence.

NEW JERSEY

- Little Silver, NJ Carriers should provide notice to property owners within 500 feet of proposed facility.

NEW YORK

- Scarsdale NY: 500 foot setbacks to homes preferred.
- Copake NY: Pre/post testing by RF engineer. No repeater closer than 200 ft to dwelling. No tower closer than 1500 ft to residence/church.
- Community Boards issuing Moratoriums on 5G poles

NEW HAMPSHIRE

- Proposed State Bill - 1640 ft setbacks.
- Keene NH Resolution to halt 5G
- Bedford NH 750 ft. setback

OHIO

- Mason OH Zoning Ordinance No small cells in residential areas or within 100 feet of residential prop; 2000 feet apart (unless colocated); equipment should be underground or wholly contained.

OKLAHOMA

- Sallisaw OK 1,500 feet setback

TENNESSEE

- Farragut City Resolution to halt 5G

WISCONSIN

- Greendale WI passed Resolution R2018-20 referring to the FCC's actions stripping local authority as "an unprecedented attack on local control."

PUBLISHED RESEARCH STUDIES

OUTDOOR LEVELS OF RF ARE INCREASING DUE TO THE DENSIFICATION OF WIRELESS NETWORKS

An **article** published in *The Lancet Planetary Health* documents how RF exposures are increasing and so is the scientific research linking exposure to adverse biological effects. "It is plausibly the most rapidly increasing anthropogenic environmental exposure since the mid-20th century..."

A **2021 report** by the French government on 5G analyzed more than 3,000 measurements and found that while RF levels had *not yet* significantly increased, this was due to the lack of 5G traffic. Additional study specific to 5G in the 3500 MHz band with artificially generated traffic concluded that, "initial results suggest an eventual increase of about 20% in overall exposure."

A **2018 multi-country study** published in *Environment International* measured RF in several countries and found cell tower/base station radiation to be the dominant contributor to RF exposure in most outdoor areas. Urban areas had higher RF.

A **study** measuring RF exposure in the European cities of Basel, Ghent and Brussels found the total RF exposure levels in outdoor locations had increased up to 57.1% in one year (April 2011 to March 2012) and most notably due to mobile phone base stations.

A **2018 study** published in *Oncology Letters* documented "unnecessarily high" RF levels in several locations in Sweden and concludes that "using high-power levels causes an excess health risk to many people."

A **2017 Swedish** study of Royal Castle, Supreme Court, three major squares and the Swedish Parliament found that despite the architecturally camouflaged RF-emitting antennas, the passive exposure was higher than RF levels associated with non-thermal biological effects. The researchers noted that the heaviest RF load falls on people working or living near hotspots.

A **2016 study** at Stockholm Central Railway Station in Sweden documented higher RF levels in areas where base station antennas were located closest to people. Importantly, the RF from the downlink of UMTS, LTE, GSM base station antennas contributed to most of the radiation levels.

Bold blue on this PDF are hyperlinked.

APARTMENTS & CONDO BUILDINGS
INCREASED RF RADIATION FROM CELL ANTENNAS

The study "**Radiofrequency radiation from nearby mobile phone base stations-a case comparison of one low and one high exposure apartment**" published in *Oncology Letters* by **Koppel et al. (2019)** measured 2 apartments and found that the apartment with high RF levels had outdoor areas as close as 6 meters (about 19.6 feet) from transmitting base station cell antennas. In contrast, the apartment with low RF exposure had cell antennas at 40 meters (about 131 feet) away from the balcony.

Furthermore, the researchers also found that both high- and low-RF apartments had good mobile phone reception, and they concluded,"therefore, installation of base stations to risky places cannot be justified using the good reception requirement argument."

A measurement study by **Baltrėnas et al. (2012)** published in *Journal of Environmental Engineering and Landscape Management* investigated RF power density levels from cell phone antennas located 35 meters away from a 10-story apartment building. The transmitting antennas were approximately at the same height as the 6th floor of the building. The researchers found the highest RF levels at floors 5, 6 and 7. The RF at the 6th floor balcony was three times higher than the 3rd floor balcony. The RF power density at the 6th floor was about 15 times the RF measured at the first floor.

A **case report by Hardell et al. (2017)** of RF levels in an apartment in close proximity to rooftop cellular network antennas used an exposimeter to measure levels of different types of RF in the apartment and balconies including TV, FM, TETRA emergency services, 2G GSM, 3G UMTS, 4G LTE, DECT cordless, Wi-Fi 2.4 GHz and 5 GHz and WiMAX. The closest transmitting antennas were 6 meters away from the balcony. The researchers found 97.9% of the mean RF radiation was caused by downlink from the 2G, 3G and 4G base stations. (Downlink means frequencies emitted "down" from the base station cellular antennas.) The researchers found that if the base station RF emissions were excluded, the RF radiation in the children's bedrooms was reduced approximately 99%.

The researchers conclude, "due to the current high RF radiation, the apartment is not suitable for long-term living, particularly for children who may be more sensitive than adults."

Bold blue on this PDF are hyperlinked.

ENVIRONMENTAL HEALTH TRUST

INCREASED EXPOSURE FROM 5G/4G "SMALL" CELL ANTENNAS LOCATED CLOSE TO PEOPLE

A study entitled "**Very high radiofrequency radiation at Skeppsbron in Stockholm, Sweden from mobile phone base station antennas positioned close to pedestrians' heads**" published in *Environmental Research* by Koppel et al. (2022) created an RF heat map of RF measurements, finding that the highest RF measurements were in areas of close proximity to the base station antennas. The researchers concluded with recommendations to reduce close proximity placements such as positioning antennas "as far as possible from the general public" like in high-elevation locations or more remote areas.

A study entitled "**Measurements of radiofrequency electromagnetic fields, including 5G, in the city of Columbia, South Carolina, USA**" published in the *World Academy of Sciences* Journal found the highest RF levels in areas where the cell phone base station antennas were placed on top of utility poles, street lamps, traffic lights or other posts near to the street. The scientists compared their **2022 findings** to an earlier **2019 published review** on the mean outdoor exposure level of European cities and they found the South Carolina measurements to be higher.

The researchers concluded that the highest exposure areas were due to two reasons: cell phone base antennas on top of high-rise buildings provide "good cell coverage reaching far away, but creating elevated exposure to the radiofrequency electromagnetic fields at the immediate vicinity; and cell phone base station antennas installed on top of utility poles have placed the radiation source closer to humans walking on street level."

Measurements of radiofrequency electromagnetic fields, including 5G, in the city of Columbia, SC, USA

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.

Bold blue on this PDF are hyperlinked.

ENVIRONMENTAL HEALTH TRUST

HEALTH SYMPTOMS REPORTED BY PEOPLE LIVING CLOSE TO CELL ANTENNAS

Image: Figure 1: Top floor apartment adjacent to base stations. Nilsson M, Hardell L. (2023) Development of the Microwave Syndrome in Two Men Shortly after Installation of 5G on the Roof above their Office. Ann Clin Case Rep

RESEARCH ON ANTENNAS CLOSE TO HOMES, SCHOOL AND WORK

Surveys of people living near cell tower antennas in **France**, **Spain**, **Iraq**, **India**, **Germany**, **Egypt**, **Poland** have found significantly higher reports of health issues including sleep issues, fatigue and headaches (See **Santini et al. 2003**, **López 2021**, **Alazawi 2011**, **Pachuau and Pachuaua 2016**, **Eger et al. 2004**, **Abdel-Rassoul et al. 2007**, **Bortkiewicz et al., 2004**).

A **study** published in *American Journal of Men's Health* linked higher cell tower RFR exposures to delayed fine and gross motor skills and to deficits in spatial working memory and attention in school adolescents (**Meo 2018**).

A **study** published in *Environmental Research and Public Health* found higher exposures linked to higher risk of type 2 diabetes (**Meo 2015**).

A study following people for 6 years linked increased cell phone and cell phone tower antenna exposure to altered levels of hormones including cortisol, thyroid, prolactin and testosterone (**Eskander et al. 2021**).

A **study** that followed people in a German town after a cell tower was erected found stress hormones adrenaline and noradrenaline significantly increased over the first 6 months after the antenna activation and decreased dopamine and PEA levels after 18 months (**Buchner 2011**).

Two published case report document illness that developed after 5G antennas were installed. In **Hardell and Nilsson 2023,** a couple developed microwave syndrome symptoms (e.g., neurological symptoms, tinnitus, fatigue, insomnia, emotional distress, skin disorders, and blood pressure variability) after a 5G base station was installed on the roof above their apartment.

Similarly, in **"Development of the Microwave Syndrome in Two Men Shortly after Installation of 5G on the Roof above their Office**" two men developed symptoms after 5G antennas were activated on the roof of their workplace. The symptoms disappeared in both men within a couple of weeks (case 1) or immediately (case 2) after leaving the office.

PUBLISHED RESEARCH ON 5G

New York City Jumbo 5G poles with 5 tiers to house transmitting antennas from numerous carriers.

New York City "small cell" antennas in front of living room window.

Scientists state that 5G's higher frequencies cannot be assumed safe.

5G systems are using low band frequencies well associated with harmful effects **(ICBE-EMF 2022, European Parliament 2021, Panagopoulos et al. 2021)**. However 5G networks are *also using higher frequencies* such as 3.5 GHz and into the mmWave range with 24 GHz and higher.

Contrary to claims that the 5G's higher frequencies simply "bounce" off the skin, researchers have documented that the coiled portion of the skin's sweat duct can be regarded as a helical antenna in the sub-THz band and the skin, our largest organ, can intensely absorb the higher 5G frequencies **(Feldman and Ben Ishai 2017).**

Reviews of 5G health effects caution that the expected real-world impact would be far more serious due to the complex waveforms and other combinations with other toxic stimuli in the environment **(Kostoff et al 2020, Russell, 2018, Belyaev 2019, McCredden et al 2023).**

Researchers will often experiment with zebrafish, rodents and fruit flies to gain data on potential health effects to humans. An Oregon State University study on zebrafish exposed to 3.5 GHz **(Dasgupta et al. 2022)** found "significant abnormal responses in RFR-exposed fish" which "suggest potential long-term behavioral effects. Yang et al 2022 found 3.5 GHZ induced oxidative stress in guinea pigs.

A study on 3.5 GHz exposure to both diabetic and healthy rats (**Bektas et al 2022)** found an increase in degenerated neurons in the hippocampus of the brains, changes in oxidative stress parameters and changes in the energy metabolism and appetite of both healthy and diabetic rats. The researchers conclude that, "5G may not be innocent in terms of its biological effects, especially in the presence of diabetes."

PUBLISHED RESEARCH ON 5G

5G's higher frequencies will be combined with the lower frequencies from current networks already present in the environment.

Studies on rats have found exposure to both 1.5 and 4.3 GHz microwaves induced: cognitive impairment and hippocampal tissue damage **(Zhu et al 2921)**; impairments in spatial learning and memory, *with the combined simultaneous exposures* resulting in the most most severe effects **(Wang et al 2022)**; and immune suppressive responses **(Zhao 2022)**.

Long-term exposure to 2.856 and 9.375 GHz microwaves impaired learning and memory abilities as well as EEG disturbance, structural damage to the hippocampus, and differential expression of hippocampal tissue and serum exosomes **Wang et al. 2023)**.

Studies on fruit flies exposed to 3.5 GHz have found the exposure led to increases in oxidative stress, changes in the microbial community **(Wang et al 2022)** and alterations of the expression of several types of genes (Wang et al 2021).

A review by **Russell 2018** found evidence for millimeter wave effects to the skin, eyes, immune system, gene expression, and bacterial antibiotic resistance.

Recent experimental research on high-band 5G impacts to animal fertility found that 27 GHz damages sperm quality in mussels **(Pecoraro et al 2023).**

Yet the US government is not funding any research on biological effects of frequencies at 3.5 GHz or above 6 GHz to humans.

Bold blue on this PDF are hyperlinked.

5G, CELL TOWERS AND WIRELESS

LEGAL & LIABILITY ISSUES

When a new cell tower is proposed, the first question to ask is: "Do you have insurance for damages from long-term exposure to the radiofrequency radiation (RFR)?"

Usually the answer is "No." Why? Insurance companies rank the risk as "HIGH."

5G and Cell Towers Are an Uninsurable Risk

- Insurers rank wireless, cell tower, and 5G RFR non-ionizing electromagnetic field (EMF) radiation as a “high” risk, comparing the issue to lead and asbestos.
- Most insurance plans have “electromagnetic field exclusions” and do not insure for long-term RFR damages.
- Additionally, some insurance plans will not provide a defense for any supervision instruction or recommendation given *"or which should have been given"* in connection to EMFs.
- Wireless RFR and non-ionizing electromagnetic radiation are defined as a type of “pollution” by wireless companies themselves.
- U.S. mobile operators have been unable to get insurance to cover liabilities related to damages from long-term RFR exposure.
- Wireless companies warn their shareholders of RFR risk but do not warn users of their products, nor do the companies warn the people exposed to emissions from their infrastructure.

This PDF is hyperlinked. For more on legal liability issues go to ehtrust.org

ENVIRONMENTAL HEALTH TRUST

Cell Tower Companies Warn Shareholders of Risk From Cell Tower Radiation

Why Don't They Warn Families Living Near Cell Towers?

Verizon 10-K Report

"Our wireless business also faces personal injury and wrongful death lawsuits relating to alleged health effects of wireless phones or radio frequency transmitters. We may incur significant expenses in defending these lawsuits. In addition, we may be required to pay significant awards or settlements."

Crown Castle 10-K Report

"We cannot guarantee that claims relating to radio frequency emissions will not arise in the future or that the results of such studies will not be adverse to us...If a connection between radio frequency emissions and possible negative health effects were established, our operations, costs, or revenues may be materially and adversely affected. We currently do not maintain any significant insurance with respect to these matters."

AT&T 10-K Report

"In the wireless area, we also face current and potential litigation relating to alleged adverse health effects on customers or employees who use such technologies including, for example, wireless devices. We may incur significant expenses defending such suits or government charges and may be required to pay amounts or otherwise change our operations in ways that could materially adversely affect our operations or financial results."

T- MOBILE 10-K Report

"Our business could be adversely affected by findings of product liability for health or safety risks from wireless devices and transmission equipment, as well as by changes to regulations or radio frequency emission standards."

This PDF is hyperlinked. For more on legal liability issues go to ehtrust.org

Cell Tower Companies Warn Shareholders of Risk From Cell Tower Radiation

Why Don't They Warn Families Living Near Cell Towers?

American Tower 10-K

"If a scientific study or court decision resulted in a finding that radio frequency emissions pose health risks to consumers, it could negatively impact our tenants and the market for wireless services, which could materially and adversely affect our business, results of operations or financial condition. We do not maintain any significant insurance with respect to these matters."

Nokia 10-K

"Although our products are designed to meet all relevant safety standards and other recommendations and regulatory requirements globally, we cannot guarantee we will not become subject to product liability claims or be held liable for such claims, which could have a material adverse effect on us."

Qualcomm 10-K

"If wireless handsets pose health and safety risks, we may be subject to new regulations, and demand for our products and those of our licensees and customers may decrease."

Ericsson Annual Report

"Any perceived risk or new scientific findings of adverse health effects from mobile communication devices and equipment could adversely affect us through a reduction in sales or through liability claims."

This PDF is hyperlinked. For more on legal liability issues go to ehtrust.org

ENVIRONMENTAL HEALTH TRUST

T-Mobile Warns of the Risk of 5G and Lawsuits

The Data on Risk Could Change, Impacting Cash Flow

T-Mobile advertises to the public about going "live" but omits the warnings they give to shareholders regarding 5G, regulatory changes and risk perception.

T-Mobile

T-Mobile 10-K Report 2/2023

"Negative public perception of, and regulations regarding, the perceived health risks relating to 5G networks could undermine market acceptance of our 5G services" (page 13)

"We, along with equipment manufacturers and other carriers, are subject to current and potential future lawsuits **alleging adverse health effects arising from the use of wireless handsets or from wireless transmission equipment such as cell towers."**

"In addition, **the FCC has from time to time gathered data regarding wireless device emissions, and its assessment of the risks associated with using wireless devices may evolve based on its findings.** Any of these allegations or changes in risk assessments could result in customers purchasing fewer devices and wireless services, could result in significant legal and regulatory liability, and could have a material adverse effect on our business, reputation, financial condition, cash flows and operating results." (T- Mobile 10-K Report page 21)

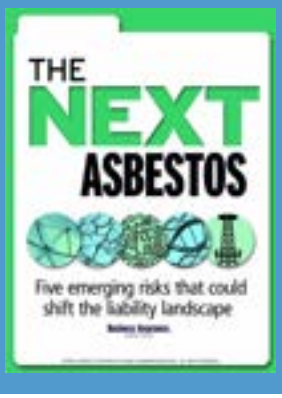
A 2000 Ecolog Institute Report commissioned by T-Mobile and DeTeMobil Deutsche Telekom MobilNet recommended an RF exposure limit 1000x lower than the FCC's current power density limit after reviewing the research on biological effects, including impacts to the immune system, central nervous system, hormones, cancer, neurotransmitters and fertility.

This PDF is hyperlinked. For more on legal liability issues go to ehtrust.org

ENVIRONMENTAL HEALTH TRUST

5G, CELL TOWERS AND WIRELESS

LEGAL & LIABILITY ISSUES SHAREHOLDER WARNINGS



"Some research has shown biological effects from lower -level "non thermal" exposure and people exposed at lower levels have reported headaches, dizziness, nausea, mood disorders, mental slowing and memory loss."
Business Insurance White Paper, The Next Asbestos: Five Emerging Risks That Could Shift the Liability Landscape

Insurance Authorities Rate 5G as "High Risk."
5G mobile networks are classified as a "high," "off-the-leash" risk. "Existing concerns regarding potential negative health effects from electromagnetic fields (EMF) are only likely to increase. An uptick in liability claims could be a potential long-term consequence" and "as the biological effects of EMF in general and 5G in particular are still being debated, potential claims for health impairments may come with a long latency." — Swiss Re Institute (2019)

Insurance Companies Have Electromagnetic Field Exclusions As the Industry Standard
Electromagnetic field exclusions" are clear and common in most insurance companies. It is applied as a market standard. This exclusion serves to exclude cover for illnesses caused by long-term EMF (non-ionizing radiation) exposure." — Complete Markets

"Exclusions: This insurance does not apply to: Bodily injury, personal injury, advertising injury, or property damage arising directly or indirectly out of, resulting from, caused or contributed to by electromagnetic radiation, provided that such loss, cost or expense results from or is contributed to by the hazardous properties of electromagnetic radiation.
— Portland Oregon Public School Insurance (page 30)

Insurance Plans Not Only Exclude EMF Damages, But Some Even Exclude Defending Decision Makers From Actions

"This policy does not apply to and we will not provide a defense for: a. bodily injury... arising out of ... exposure to or contact with electromagnetic radiation... b. costs of abatement .. of EMF" or c. any supervision, instruction, recommendation, warning or advice given or which should have been given in connection with a or b. above."- City of Ann Arbor Michigan Insurance Policy page 14.

Wireless Companies Rank EMF as a Risk with High Impact
"Electro-magnetic signals emitted by mobile devices and base stations may be found to pose health risks, with potential impacts including: changes to national legislation, a reduction in mobile phone usage or litigation." — Vodaphone 2017 Report ranks EMF as a "Principal Risk with "High" impact.

Wireless Companies Warn Shareholder About Risk But Not People Living Near Their Wireless Infrastructure

Crown Castle says:
"We cannot guarantee that claims relating to radio frequency emissions will not arise in the future or that the results of such studies will not be adverse to us...If a connection between radio frequency emissions and possible negative health effects were established, our operations, costs, or revenues may be materially and adversely affected. We currently do not maintain any significant insurance with respect to these matters."

Wireless Companies Define Pollution in Their Own Policies as Including EMFs, Microwaves and Non-ionizing Radiation.

Verizons Total Mobile Protection Plan says: "Pollution" is defined as "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."

ENVIRONMENTAL HEALTH TRUST

Verizon Total Mobile Protection Plan Defines Non-ionizing Radiation as "Pollution"

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.

AT&T, Sprint and T -Mobile also have similar "pollution" definitions and they refuse to cover damages.

Click on image to view the policy.

Insurance Companies Exclude EMF As Industry Standard

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ELECTROMAGNETIC RADIATION EXCLUSION

This endorsement modifies insurance provided under the following:

GENERAL LIABILITY COVERAGE PART
PUBLIC RISK GENERAL LIABILITY RETAINED LIMIT COVERAGE FORM
LAW ENFORCEMENT COVERAGE PART
LAW ENFORCEMENT LIABILITY RETAINED LIMIT COVERAGE FORM
PUBLIC OFFICIALS COVERAGE PART
PUBLIC OFFICIALS LIABILITY RETAINED LIMIT COVERAGE FORM
EMPLOYMENT PRACTICES LIABILITY COVERAGE PART
EMPLOYMENT PRACTICES LIABILITY RETAINED LIMIT COVERAGE FORM

The following **Exclusion** is added:

This policy does not apply to and we will not provide a defense for:

a. "Bodily injury," "property damage", "personal and advertising injury", "employee benefits wrongful acts", "personal injury", "law enforcement wrongful acts", "public officials wrongful acts", "educator's legal wrongful acts", or "employment practices wrongful acts" arising out of, or which result in, the actual, alleged, threatened, perceived, latent, sudden and accidental or incidental exposure to or contact with electromegnetic radiation in any form, from any source.

b. The costs of abatement or mitigation of:

(1) Electromagnetic radiation; or

(2) Exposure to electromagnetic rediation.

c. Any supervision, instruction, recommendation, warning or advice given or which should have been given in connection with **a.** or **b.** above.

Electromagnetic radiation includes but is not limited to, magnetic energy, waves, fields or forces generated, produced, transmitted or maintained by the charges, currents, frequencies, energy or forces of electricity that is generated, flowing or otherwise transmitted through or via the medium, methods and equipment designed to generate, produce, distribute, trensport or transmit the electrical charges, currents, frequencies, energy or forces.

ENVIRONMENTAL HEALTH TRUST

ENVIRONMENTAL HEALTH TRUST

ehtrust.org
wildlifeandwireless.org
healthytechhome.org

The Scientific Evidence To Support Setbacks and Restrictions for Cell Towers Near School Property and Homes

Today, we are writing to advise you of the scientific grounds for enacting strong school policy to mitigate student, teacher and staff exposures to the non-ionizing electromagnetic field emissions from cell towers. Wireless radio frequency (RF) electromagnetic (EMF) radiation is a relatively new and rapidly increasing environmental exposure in classrooms today. Significant sources include cell towers, cell boosters and 5G/4G networks on and near school property.

Extensive published scientific evidence indicates that radiofrequency radiation at levels compliant with federal government limits can cause cancer, increased oxidative stress, genetic damage, structural and functional changes of the reproductive system, memory deficits, behavioral problems, and neurological impacts. We consider radiofrequency radiation (RFR) to be a human carcinogen based on the current body of evidence. Many of these effects could be irreversible with grave consequences for our children's future.

The American Academy of Pediatrics states children are more vulnerable to wireless radiation. Children receive proportionately higher exposures into their more sensitive brain tissue and organs.

We recommend policies to reduce human exposure to RF, especially in schools. We note that schools are now taking measures to reduce cell tower radiation from nearby cell towers.

- The Desert Sage High School in central Tucson, a public charter school has installed shielding along the wall facing the cell tower to reduce the cell tower radiation exposures in the classroom.
- The Los Angeles Unified School District has 3 resolutions opposing cell towers on school property and the District Office of Health and Safety developed a "cautionary level" for radiofrequency radiation 10,000 times lower than FCC regulations because, "it is believed that a more conservative level is necessary to protect children, who represent a potentially vulnerable and sensitive population."
- Several school boards have passed resolutions or taken actions to restrict cell towers at schools including the Temecula Valley Unified (CA), Palo Alto Unified (CA), and West Linn-Wilsonville Oregon.
- The EPA School Siting Guidelines lists exposure to electromagnetic fields and the fall distance as "potential hazards" from cell towers. The EPA guidelines recommend schools "identify and evaluate cell towers within ~200 feet of prospective school locations."

Schools cannot rely on on U.S. government Federal Communications Commission (FCC) limits for cell tower radiation exposure to protect the health of students and staff. These regulations are outdated and

unchanged since 1996. As the EPA has repeatedly stated, U.S. FCC RF radiation limits do not address risk from long-term, nonthermal exposures. They are designed to protect against injury from short term high intensity exposure only. Yet, cell towers create full body exposure to radiofrequency (RF) for hours a day.

This lack of protection for long term effects is why the New Hampshire State Commission on 5G and Santa Clara Medical Association recommend restricting cell towers near schools.

On August 13, 2021, the United States Court of Appeals for the District of Columbia Circuit ruled in our case against the FCC that its refusal to update its human exposure limits (which includes cell tower emissions) was "arbitrary and capricious." One of the most important aspects of the court decision was that the court found the FCC did not adequately explain why it ignored scientific evidence on impacts from long term wireless radiation exposure, especially in regards to children. The court ordered the FCC to examine the record evidence regarding long term exposure to children. So far, the FCC has not responded. Thus, this landmark ruling highlights how no federal health agency has reviewed the full body of current research to ensure current safety standards are protective.

In 2000, the Ecolog Institute Report, commissioned by T-Mobile, reviewed the existing science (over two decades ago) and recommended a wireless radiation exposure limit 1000 times lower than the FCC's current power density limit.

The scientific research indicating serious safety issues has significantly increased. A literature review on people living near cell towers entitled "Evidence for a health risk by RF on humans living around mobile phone base stations: From radiofrequency sickness to cancer by Balmori (2022) found associations between exposure and radiofrequency sickness, cancer and changes in biochemical parameters. We have attached this study for your review.

Studies on people living near cell antennas have found increases in molecular markers in the blood that predict cancer. Zothansiama et al. 2017 evaluated effects in the human blood of individuals living near mobile phone base stations (within 80 meters) compared with healthy controls living more than 300 meters from a base station. The study measured higher RFR levels in the homes of people living in homes within 80 meters from the cell antennas (documenting the impact of increased RFR radiation from the antenna installations) and found statistically significant differences in their blood. The group living closer to the antennas had statistically significant higher frequency of micronuclei and a rise in lipid peroxidation in their blood; these changes are considered biomarkers predictive of cancer.

Please note the following scientific publications regarding cell towers and cell phone radiation:

- In 2011, radiofrequency radiation was classified as a Class 2B possible carcinogen by the World Health Organization's International Agency for Research on Cancer. Between then and now, the

published peer-reviewed scientific evidence has significantly increased. Now, many scientists are of the opinion that the weight of current peer-reviewed evidence supports the conclusion that radiofrequency radiation should be regarded as a human carcinogen (Hardell and Carlberg 2017, Peleg et al, 2018, Miller et al 2018).

- The U.S. National Toxicology Program $25 million animal study on long-term exposure to radiofrequency radiation found DNA Damage, heart damage, increased brain tumors, and increased heart tumors deemed "clear evidence of cancer." Researchers with the renowned Ramazzini Institute in Italy then published findings that lab animals exposed to levels of RFR comparable to cell tower base stations' networks developed the same types of cancers as the US National Toxicology Program found in its large-scale animal study.

- An Australian study looked at RFR levels to which kindergarten children were exposed, depending on how close their school was to base stations/cell towers. Researchers equipped the children with RFR measuring devices. Researchers found that kindergartens located nearby base stations/cell towers (closer than 300 meters or approximately 330 yards) had total exposure to radiofrequency radiation (RFR or RF-EMF) more than 3 times higher than children at schools where base stations were further away than 300 meters.

- A review by Yakymenko 2015 found that in 93 out of 100 studies, RFR exposure caused oxidative stress. Many well-known carcinogens (such as asbestos and arsenic) are understood to induce oxidative stress. Schuermann et al., 2021 again confirmed non-ionizing radiation has oxidative effects in the majority of animal and cell studies.

- The International Association of Firefighters has officially opposed cell towers on their stations since 2004 after a study found neurological damage in firefighters with antennas on their fire station. In 2017, when 5G "small cells" were coming to California via a 5G streamlining bill (SB 649), firefighter organizations came out in strong opposition to the bill and requested that towers not be installed on firehouses. They were successful and SB649 was amended to exempt their stations from the deployment due to their health concerns.

- A study by Meo et al., 2019 of students in schools near cell towers found their higher RF exposure was associated with impacts on motor skills, memory, and attention. Examples of other health issues associated with cell towers in research studies include neuropsychiatric problems, diabetes, headaches, sleep problems, altered hormones and genetic damage. Such research continues to accumulate after the 2010 landmark review study on 56 studies that reported biological effects found at very low intensities of wireless radiation, including impacts on reproduction, permeability of the blood-brain barrier, behavior, cellular changes and metabolic changes, and increases in cancer risk (Lai and Levitt 2010).

- The International EMF Scientist Appeal was submitted to the United Nations urging immediate protective policy action in light of the scientific evidence that has found adverse biological effects from electromagnetic radiation, including radiofrequency radiation, and, as of July 2023, this Appeal is signed by 259 scientists from 44 nations; these are scientists who have published peer-reviewed articles about electromagnetic fields. They state, “numerous recent scientific publications have shown that EMF affects living organisms at levels well below most international and national guidelines. Effects include increased cancer risk, cellular stress, increase in harmful free radicals, genetic damages, structural and functional changes of the reproductive system, learning and memory deficits, neurological disorders, and negative impacts on general well-being.”

- The European Parliament Study Service “Health Impact of 5G” report concludes that the electromagnetic field emission frequencies of 450 to 6,000 MHz “are probably carcinogenic for humans, in particular related to gliomas and acoustic neuromas” and in regards to 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, fetuses and newborns.”

A review paper by Pearce 2020 titled “Limiting liability with positioning to minimize negative health effects of cellular phone towers” reviewed the “large and growing body of evidence that human exposure to RFR from cellular phone base stations causes negative health effects.” The authors recommend restricting antennas near homes and within 500 meters of schools and hospitals to protect companies from future liability.

Cell towers on school properties present serious liability issues.

- Insurers rank 5G and electromagnetic radiation as a “high” risk, comparing the issue to lead and asbestos. A 2019 Report by Swiss Re Institute, a world leading provider of insurance, classifies 5G mobile networks as a “high”, “off-the-leash” risk stating, “Existing concerns regarding potential negative health effects from electromagnetic fields (EMF) are only likely to increase. An uptick in liability claims could be a potential long-term consequence” and “as the biological effects of EMF in general and 5G in particular are still being debated, potential claims for health impairments may come with a long latency.”
- Due to their understanding of the magnitude of this future financial risk most insurance plans have “electromagnetic field exclusions” applied as the market standard. As an example, Portland Oregon Public School Insurance[41] (Pg 30) states, ”Exclusions: This insurance does not apply to: Bodily injury, personal injury, advertising injury, or property damage arising directly or indirectly out of, resulting from, caused or contributed to by electromagnetic radiation, provided that such loss, cost or expense results from or is contributed to by the hazardous properties of electromagnetic radiation.”

- U.S. mobile operators have been unable to get insurance to cover liabilities related to damages from long term exposure to radiofrequency emissions for over a decade.
- Wireless and non-ionizing electromagnetic radiation are defined as a type of "pollution" by wireless companies themselves. According to pg. 10 of the Verizon Total Mobile Protection Plan, "Pollution" is defined as "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 nonionizing radiation and/or waste." We found similar definitions for pollution in the product protection plans for AT&T, Sprint, Verizon, T-Mobile and Asuria.
- Wireless companies warn their shareholders of this potential future risk related to radiofrequency radiation exposure but they do not warn the users of these products, nor do they warn the people exposed to emissions from their products and infrastructure. Corporate investor warnings by companies such as T-Mobile, AT&T, Verizon, Vodaphone and Crown Castle are contained in their Annual Reports filed on Form 10-K (or Form 20-F or 40-F for foreign companies) with the Securities and Exchange Commission (SEC).

  Verizon stated in its 10-K for 2022 under the section "Legal and Regulatory Risks" that:

  > *"We are subject to a substantial amount of litigation, which could require us to pay significant damages or settlements. We are subject to a substantial amount of litigation and claims in arbitration, including, but not limited to, shareholder derivative suits, patent infringement lawsuits, wage and hour class actions, contract and commercial claims, personal injury claims, property claims, environmental claims, and lawsuits relating to our advertising, sales, billing and collection practices. In addition, our wireless business also faces personal injury and wrongful death lawsuits relating to alleged health effects of wireless phones. or radio frequency transmitters. We may incur significant expenses in defending these lawsuits. In addition, we may be required to pay significant awards or settlements.*

  Companies clearly inform shareholders that companies may incur significant financial losses related to non-ionizing electromagnetic fields. Safety is not assured.

Please note that in several countries, governments have set policies to protect children, pregnant women and medically fragile persons by classifying areas with homes, hospitals and schools as "sensitive areas." These countries reduce exposure in "sensitive" areas and have strict oversight and compliance measures in place. The U.S. has zero protections for children and zero RF compliance oversight programs.

ENVIRONMENTAL HEALTH TRUST

ehtrust.org
wildlifeandwireless.org
healthytechhome.org

Our position is that children require special protections from radiofrequency radiation and their exposures should be reduced to as low as possible. Teachers and staff should work in a healthy environment. We strongly recommend mitigating RFR exposure at schools.

EHT has been joined by other experts and organizations in offering expertise to support the development of protective measures. Please see the attached resources with additional documentation. We are available to meet and present more about how to reduce and mitigate RF risks and answer any questions.

Thank you for your consideration and action on this important issue.

References

Balmori, A. (2022). Evidence for a health risk by RF on humans living around mobile phone base stations: From radiofrequency sickness to cancer. Environmental Research, 214, 113851. https://doi.org/10.1016/j.envres.2022.113851

Balmori, A. (2010). Mobile phone mast effects on common frog (Rana temporaria) tadpoles: The city turned into a laboratory. Electromagnetic Biology and Medicine, 29(1–2), 31–35. https://doi.org/10.3109/15368371003685363.

Blettner, M., Schlehofer, B., Breckenkamp, J., Kowall, B., Schmiedel, S., Reis, U., Potthoff, P., Schüz, J., & Berg-Beckhoff, G. (2009). Mobile phone base stations and adverse health effects: Phase 1 of a population-based, cross-sectional study in Germany. Occupational and Environmental Medicine, 66(2), 118–123. https://doi.org/10.1136/oem.2007.037721.

Bortkiewicz, A., Zmyślony, M., Szyjkowska, A., & Gadzicka, E. (2004). [Subjective symptoms reported by people living in the vicinity of cellular phone base stations: Review]. Medycyna Pracy, 55(4), 345–351. https://pubmed.ncbi.nlm.nih.gov/15620045/.

Broom, K. A., Findlay, R., Addison, D. S., Goiceanu, C., & Sienkiewicz, Z. (2019). Early‐Life Exposure to Pulsed LTE Radiofrequency Fields Causes Persistent Changes in Activity and Behavior in C57BL/6 J Mice. Bioelectromagnetics, 40(7), 498–511. https://doi.org/10.1002/bem.22217

Buchner, K., & Eger, H. D. I. (2011). Changes of Clinically Important Neurotransmitters under the Influence of Modulated RF Fields A Long-term Study under Real-life Conditions. https://www.avaate.org/IMG/pdf/Rimbach-Study-20112.pdf.

Carlberg, M., Hedendahl, L., Koppel, T., & Hardell, L. (2019). High ambient radiofrequency radiation in Stockholm city, Sweden. Oncology Letters, 17(2), 1777–1783. https://doi.org/10.3892/ol.2018.9789.

Environmental Health Trust

Choi, J., Min, K., Jeon, S., Kim, N., Pack, J.-K., & Song, K. (2020). Continuous Exposure to 1.7 GHz LTE Electromagnetic Fields Increases Intracellular Reactive Oxygen Species to Decrease Human Cell Proliferation and Induce Senescence. Scientific Reports, 10(1), 9238. https://doi.org/10.1038/s41598-020-65732-4

Dode, A. C., Leão, M. M. D., Tejo, F. de A. F., Gomes, A. C. R., Dode, D. C., Dode, M. C., Moreira, C. W., Condessa, V. A., Albinatti, C., & Caiaffa, W. T. (2011). Mortality by neoplasia and cellular telephone base stations in the Belo Horizonte municipality, Minas Gerais state, Brazil. The Science of the Total Environment, 409(19), 3649–3665. https://doi.org/10.1016/j.scitotenv.2011.05.051.

Eger, et al., The Influence of Being Physically Near to a Cell Phone Transmission Mast on the Incidence of Cancer (2004). Umwelt·Medizin·Gesellschaft. http://www.tetrawatch.net/papers/naila.pdf.

Eskander, E. F., Estefan, S. F., & Abd-Rabou, A. A. (2012). How does long term exposure to base stations and mobile phones affect human hormone profiles? Clinical Biochemistry, 45(1–2), 157–161. https://doi.org/10.1016/j.clinbiochem.2011.11.006.

Eşmekaya, M. A., Seyhan, N., & Ömeroğlu, S. (2010). Pulse modulated 900 MHz radiation induces hypothyroidism and apoptosis in thyroid cells: A light, electron microscopy and immunohistochemical study. International Journal of Radiation Biology, 86(12), 1106–1116. https://doi.org/10.3109/09553002.2010.502960.

Falcioni, L., Bua, L., Tibaldi, E., Lauriola, M., De Angelis, L., Gnudi, F., Mandrioli, D., Manservigi, M., Manservisi, F., Manzoli, I., Menghetti, I., Montella, R., Panzacchi, S., Sgargi, D., Strollo, V., Vornoli, A., & Belpoggi, F. (2018). Report of final results regarding brain and heart tumors in Sprague-Dawley rats exposed from prenatal life until natural death to mobile phone radiofrequency field representative of a 1.8 GHz GSM base station environmental emission. Environmental Research, 165, 496–503. https://doi.org/10.1016/j.envres.2018.01.037

Gandhi, G., Kaur, G., & Nisar, U. (2015). A cross-sectional case control study on genetic damage in individuals residing in the vicinity of a mobile phone base station. Electromagnetic Biology and Medicine, 34(4), 344–354. https://doi.org/10.3109/15368378.2014.933349.

Gandhi, G., Naru, J., Kaur, M., & Kaur, G. (2014). DNA and Chromosomal Damage in Residents Near a Mobile Phone Base Station. International Journal of Human Genetics, 14(3–4), 107–118. https://doi.org/10.1080/09723757.2014.11886234.

Gómez-Perretta, C., Navarro, E. A., Segura, J., & Portolés, M. (2013). Subjective symptoms related to GSM radiation from mobile phone base stations: A cross-sectional study. BMJ Open, 3(12), e003836. https://doi.org/10.1136/bmjopen-2013-003836.

Hardell, L., & Koppel, T. (2022). Electromagnetic hypersensitivity close to mobile phone base stations—A case study in Stockholm, Sweden. Reviews on Environmental Health. https://doi.org/10.1515/reveh-2021-0169.

Hardell, L., Carlberg, M., Hedendahl, L. K., Koppel, T., & Ahonen, M. (2019). Environmental radiofrequency radiation at the Järntorget Square in Stockholm Old Town, Sweden in May, 2018 compared with results on brain

and heart tumour risks in rats exposed to 1.8 GHz base station environmental emissions. World Academy of Sciences Journal, 1(1), 47–54. https://doi.org/10.3892/wasj.2018.5.

Hardell, L., Carlberg, M., & Hedendahl, L. K. (2018). Radiofrequency radiation from nearby base stations gives high levels in an apartment in Stockholm, Sweden: A case report. Oncology Letters, 15(5), 7871–7883. https://doi.org/10.3892/ol.2018.8285.

Hardell, L., Carlberg, M., Koppel, T., & Hedendahl, L. (2017). High radiofrequency radiation at Stockholm Old Town: An exposimeter study including the Royal Castle, Supreme Court, three major squares and the Swedish Parliament. Molecular and Clinical Oncology, 6(4), 462–476. https://doi.org/10.3892/mco.2017.1180.

Hardell, L., Koppel, T., Carlberg, M., Ahonen, M., & Hedendahl, L. (2016). Radiofrequency radiation at Stockholm Central Railway Station in Sweden and some medical aspects on public exposure to RF fields. International Journal of Oncology, 49(4), 1315–1324. https://doi.org/10.3892/ijo.2016.3657.

Hardell, L., & Sage, C. (2008). Biological effects from electromagnetic field exposure and public exposure standards. Biomedicine & Pharmacotherapy, 62(2), 104–109. https://doi.org/10.1016/j.biopha.2007.12.004.

Hecht, K., Savoley, E.N., (2007). Overloading of Towns and Cities with Radio Transmitters (Cellular Transmitter): a hazard for the human health and a disturbance of eco-ethics, IRCHET – International Research Centre of Healthy and Ecological Technology, Berlin, Germany. https://ecfsapi.fcc.gov/file/7521097890.pdf.

Hutter, H.-P., Moshammer, H., Wallner, P., & Kundi, M. (2006). Subjective symptoms, sleeping problems, and cognitive performance in subjects living near mobile phone base stations. Occupational and Environmental Medicine, 63(5), 307–313. https://doi.org/10.1136/oem.2005.020784.

Khurana, V. G., Hardell, L., Everaert, J., Bortkiewicz, A., Carlberg, M., & Ahonen, M. (2010). Epidemiological evidence for a health risk from mobile phone base stations. International Journal of Occupational and Environmental Health, 16(3), 263–267. https://doi.org/10.1179/107735210799160192.

Koppel, T., & Hardell, L. (2022). Measurements of radiofrequency electromagnetic fields, including 5G, in the city of Columbia, SC, USA. World Academy of Sciences Journal, 4(3), 1–12. https://doi.org/10.3892/wasj.2022.157

Koppel, T., Ahonen, M., Carlberg, M., & Hardell, L. (2022). Very high radiofrequency radiation at Skeppsbron in Stockholm, Sweden from mobile phone base station antennas positioned close to pedestrians' heads. Environmental Research, 208, 112627. https://doi.org/10.1016/j.envres.2021.112627.

Koppel, T., Ahonen, M., Carlberg, M., Hedendahl, L. K., & Hardell, L. (2019). Radiofrequency radiation from nearby mobile phone base stations-a case comparison of one low and one high exposure apartment. Oncology Letters, 18(5), 5383–5391. https://doi.org/10.3892/ol.2019.10899.

Kundi, M., & Hutter, H.-P. (2009). Mobile phone base stations-Effects on wellbeing and health. Pathophysiology: The Official Journal of the International Society for Pathophysiology, 16(2–3), 123–135. https://doi.org/10.1016/j.pathophys.2009.01.008.

Levitt, B., & Lai, H. (2010). Biological effects from exposure to electromagnetic radiation emitted by cell tower base stations and other antenna arrays. Environmental Reviews, 18, 369–395. https://doi.org/10.1139/a10-903.

López, I., Félix, N., Rivera, M., Alonso, A., & Maestú, C. (2021). What is the radiation before 5G? A correlation study between measurements in situ and in real time and epidemiological indicators in Vallecas, Madrid. Environmental Research, 194, 110734. https://doi.org/10.1016/j.envres.2021.110734.

Lv, B., Chen, Z., Wu, T., Shao, Q., Yan, D., Ma, L., Lu, K., & Xie, Y. (2014). The alteration of spontaneous low frequency oscillations caused by acute electromagnetic fields exposure. Clinical Neurophysiology, 125(2), 277–286. https://doi.org/10.1016/j.clinph.2013.07.018.

Marinescu, I. E., & Poparlan, C. (2016). Assessment of GSM HF-Radiation Impact Levels within the Residential Area of Craiova City. Procedia Environmental Sciences, 32, 177–183. https://doi.org/10.1016/j.proenv.2016.03.022.

Meo, S. A., Almahmoud, M., Alsultan, Q., Alotaibi, N., Alnajashi, I., & Hajjar, W. M. (2019). Mobile Phone Base Station Tower Settings Adjacent to School Buildings: Impact on Students' Cognitive Health. American Journal of Men's Health, 13(1), 1557988318816914. https://doi.org/10.1177/1557988318816914.

Meo, S. A., Alsubaie, Y., Almubarak, Z., Almutawa, H., AlQasem, Y., & Hasanato, R. M. (2015). Association of Exposure to Radio-Frequency Electromagnetic Field Radiation (RF-EMFR) Generated by Mobile Phone Base Stations with Glycated Hemoglobin (HbA1c) and Risk of Type 2 Diabetes Mellitus. International journal of environmental research and public health, 12(11), 14519–14528. https://doi.org/10.3390/ijerph121114519.

Miller, A. B., Morgan, L. L., Udasin, I., & Davis, D. L. (2018). Cancer epidemiology update, following the 2011 IARC evaluation of radiofrequency electromagnetic fields (Monograph 102). Environmental Research, 167, 673–683. https://doi.org/10.1016/j.envres.2018.06.043.

Navarro, E. A., Segura, J., Portolés, M., & Gómez-Perretta de Mateo, C. (2003). The Microwave Syndrome: A Preliminary Study in Spain. Electromagnetic Biology and Medicine, 22(2–3), 161–169. https://doi.org/10.1081/JBC-120024625.

Oberfeld, G., Navarro, E., Portoles, M., Maestu, C., & Gómez-Perretta, C. (2002). THE MICROWAVE SYNDROME - FURTHER ASPECTS OF A SPANISH STUDY. https://www.researchgate.net/publication/237410769_THE_MICROWAVE_SYNDROME_-_FURTHER_ASPECTS_OF_A_SPANISH_STUDY.

Özdemir, E., Çömelekoğlu, Ü., Degirmenci, E., Bayrak, G., Yildirim, M., Ergenoglu, T., Coşkun Yılmaz, B., Korunur Engiz, B., Yalin, S., Koyuncu, D. D., & Ozbay, E. (2021). The effect of 4.5 G (LTE Advanced-Pro network) mobile phone radiation on the optic nerve. Cutaneous and Ocular Toxicology, 40(3), 198–206. https://doi.org/10.1080/15569527.2021.1895825.

Pachuau, Lalrinthara & Pachuau, Zaithanzauva. (2014). Study of Cell Tower Radiation and its Health Hazards on human body. IOSR Journal of Applied Physics (IOSR-JAP) e-ISSN: 2278-4861. Volume 6, Issue 1 Ver. 1, PP 01–06. https://www.iosrjournals.org/iosr-jap/papers/Vol6-issue1/Version-1/A06110106.pdf.

Pachuau, Lalrinthara & Pachuau, Zaithanzauva. (2016). Health Effects of Mobile Tower Radiation on Human — Case Study. International Journal of Applied Physics and Mathematics. 6. 72–79. 10.17706/ijapm.2016.6.2.72-79.

Pearce, J. M. (2020). Limiting liability with positioning to minimize negative health effects of cellular phone towers. Environmental Research, 181, 108845. https://doi.org/10.1016/j.envres.2019.108845.

Richter, E. D., Berman, T., & Levy, O. (2002). Brain cancer with induction periods of less than 10 years in young military radar workers. Archives of Environmental Health, 57(4), 270–272. https://doi.org/10.1080/00039890209601409.

Roda, C., & Perry, S. (2014). Mobile phone infrastructure regulation in Europe: Scientific challenges and human rights protection. Environmental Science & Policy, 37, 204–214. https://doi.org/10.1016/j.envsci.2013.09.009.

Rodrigues, N. C. P., Dode, A. C., de Noronha Andrade, M. K., O'Dwyer, G., Monteiro, D. L. M., Reis, I. N. C., Rodrigues, R. P., Frossard, V. C., & Lino, V. T. S. (2021). The Effect of Continuous Low-Intensity Exposure to Electromagnetic Fields from Radio Base Stations to Cancer Mortality in Brazil. International Journal of Environmental Research and Public Health, 18(3), 1229. https://doi.org/10.3390/ijerph18031229.

SA, M., Alsubaie, Y., Almubarak, Z., Almutawa, H., AlQasem, Y., & Hasanato, R. (2015). Association of Exposure to Radio-Frequency Electromagnetic Field Radiation (RF-EMFR) Generated by Mobile Phone Base Stations with Glycated Hemoglobin (HbA1c) and Risk of Type 2 Diabetes Mellitus. International Journal of Environmental Research and Public Health, 12, 14519–14528; https://doi.org/10.3390/ijerph121114519.

Santini, R., Santini, P., Le Ruz, P., Danze, J. M., & Seigne, M. (2003). Survey Study of People Living in the Vicinity of Cellular Phone Base Stations. Electromagnetic Biology and Medicine, 22(1), 41–49. https://doi.org/10.1081/JBC-120020353.

Santini, R., Santini, P., Danze, J. M., Le Ruz, P., & Seigne, M. (2002). Investigation on the health of people living near mobile telephone relay stations: I/Incidence according to distance and sex. Pathologie-Biologie, 50(6), 369–373. https://doi.org/10.1016/s0369-8114(02)00311-5. [Article in French].

Shinjyo, T. & Shinjyo, A. (2014) Significant Decrease of Clinical Symptoms after Mobile Phone Base Station Removal – An Intervention Study, Tetsuharu Shinjyo and Akemi Shinjyo UmweltMedizinGesellschaft, 27(4), S. 294–301.

Souffi, S., Lameth, J., Gaucher, Q., Arnaud-Cormos, D., Lévêque, P., Edeline, J.-M., & Mallat, M. (2022). Exposure to 1800 MHz LTE electromagnetic fields under proinflammatory conditions decreases the response strength and increases the acoustic threshold of auditory cortical neurons. Scientific Reports, 12(1), 4063. https://doi.org/10.1038/s41598-022-07923-9

Vecsei, Z., Knakker, B., Juhász, P., Thuróczy, G., Trunk, A., & Hernádi, I. (2018). Short-term radiofrequency exposure from new generation mobile phones reduces EEG alpha power with no effects on cognitive performance. Scientific Reports, 8, 18010. https://doi.org/10.1038/s41598-018-36353-9

Wei, Y., Yang, J., Chen, Z., Wu, T., & Lv, B. (2019). Modulation of resting-state brain functional connectivity by exposure to acute fourth-generation long-term evolution electromagnetic field: An fMRI study. Bioelectromagnetics, 40(1), 42–51. https://doi.org/10.1002/bem.22165

Wolf, R., & Wolf, D. (2004). Increased incidence of cancer near a cell-phone transmitter station. International Journal of Cancer, 1(2), 123–128. [Google Scholar].

Yakymenko, I., Sidorik, E., Kyrylenko, S., & Chekhun, V. (2011). Long-term exposure to microwave radiation provokes cancer growth: Evidences from radars and mobile communication systems. Experimental Oncology, 33(2), 62–70.https://pubmed.ncbi.nlm.nih.gov/21716201/.

Yang, L., Chen, Q., Lv, B., & Wu, T. (2017). Long-Term Evolution Electromagnetic Fields Exposure Modulates the Resting State EEG on Alpha and Beta Bands. Clinical EEG and Neuroscience, 48(3), 168–175. https://doi.org/10.1177/1550059416644887.

Yu, G., Tang, Z., Chen, H., Chen, Z., Wang, L., Cao, H., Wang, G., Xing, J., Shen, H., Cheng, Q., Li, D., Wang, G., Xiang, Y., Guan, Y., Zhu, Y., Liu, Z., & Bai, Z. (2020). Long-term exposure to 4G smartphone radiofrequency electromagnetic radiation diminished male reproductive potential by directly disrupting Spock3–MMP2-BTB axis in the testes of adult rats. Science of The Total Environment, 698, 133860. https://doi.org/10.1016/j.scitotenv.2019.133860.

Zothansiama, Zosangzuali, M., Lalramdinpuii, M., & Jagetia, G. C. (2017). Impact of radiofrequency radiation on DNA damage and antioxidants in peripheral blood lymphocytes of humans residing in the vicinity of mobile phone base stations. Electromagnetic Biology and Medicine, 36(3), 295–305. https://doi.org/10.1080/15368378.2017.1350584.