

Complaint against regarding the Article: Are there any real links between wireless technology and health?¹

This complaint by Professor Tom Butler concerns the alleged breach by The Irish Times and journalist William J. Broad of the Principle 1 and Principle 2 of the Press Council of Ireland's Code of Practice.

Principle 1 – Truth and Accuracy

1.1 In reporting news and information, the press shall strive at all times for truth and accuracy.

Principle 2 – Distinguishing Fact and Comment

2.1 The press is entitled to advocate strongly its own views on topics.

2.2 Comment, conjecture, rumour and unconfirmed reports shall not be reported as if they are fact.

2.3 Readers are entitled to expect that the content of the press reflects the best judgment of editors and writers and has not been inappropriately influenced by undisclosed interests. Wherever relevant, any significant financial interest of an organization should be disclosed. Writers should disclose significant potential conflicts of interest to their editors.

Status of my Complaint to The Irish Times

Following publication of the article 'Are there any real links between wireless technology and health' I submitted a formal complaint I submitted to Mr Paul Cullen Health Editor on 23rd September and a follow-up email on 8th October. Having obtained no reply, I emailed the paper's editor, Mr. Paul O' Neill on the 25th October. I received a formal reply from Mr Paul McVey on the 5th November, to which I replied on the 7th November, indicating my dissatisfaction. In my last email I emphasised that, given the objective scientific evidence, "Mr Broad's article is therefore extremely troubling to me. It concerns me as a scientist and upsets me greatly as an Irish citizen to find the Irish Times misinforming the public on what is a serious matter of public concern. The article has also troubled the many members of a national social movement, spread across the 32 counties, to which I am scientific advisor (see <https://www.irelandforsafetechnology.com/>), and who are aware of and support this complaint." Please find all correspondence at the end of this complaint in Appendix A. The Irish Times has failed to correct the falsehoods, distortions and errors in the article it published. This causes me serious upset due to the gravity of the matter and the serious consequences of misinforming the public. I have no alternative but to submit this formal complaint.

Complaint against The Irish Times

William J. Broad is a Pulitzer-Prize winning science writer for the New York Times. One would, therefore, expect that any article penned by Mr Broad would be truthful and accurate and would clearly distinguish fact from comment. However, in his article "Are there any real links between wireless technology and health?" published in the Irish Times Thu, Sep 5, 2019, Mr Broad is neither truthful nor accurate. Furthermore, he distorts the facts to shape his commentary. This is noted by Dr Debra Davis² in respect of the original article in the New York Times.³

¹ <https://www.irishtimes.com/life-and-style/health-family/are-there-any-real-links-between-wireless-technology-and-health-1.3973254>

² Dr Debra Davis, The Miseducation of America on 5G: The New York Times Gets It Spectacularly Wrong, <https://medium.com/swlh/ten-corrections-to-william-j-78094d3c1aee>

³ The 5G Health Hazard That Isn't New York Times July 16, 2019. <https://www.nytimes.com/2019/07/16/science/5g-cellphones-wireless-cancer.html>

Thus, in publishing this article without first checking for accuracy, I contend that The Irish Times has breached Principles 1 & 2 of the Press Council Code of Practice. The gravity of this breach is attested to by the fact that the matters are of concern to public health. I am aware that there are members of the public who are quite upset about his dismissal of their concerns and the body of independent science. Personal upset aside, there are very real health concerns underpinning the entire paradigm of wireless technology—hence, the Fourth Estate has an especial duty of care and a moral and ethical responsibility to ensure that what they publish and present to their readers is true and factually correct. I shall undertake a forensic examination of the major points in Mr Broad’s article to demonstrate the facts of my case.

In attempting to undermine public confidence in over 80 years of scientific research, Mr Broad sub-text is the conjecture ***there any NO real links between wireless technology and health***. In providing evidence for his thesis his sub-title states: ***“The blossoming anxiety over professed health risks of 5G can be traced to a single scientist and a single chart.”*** This is grossly inaccurate and untruthful.

Please see attached a letter to the California State Legislature by Professor of Medicine, Dr Beatrice Golomb, University of California, San Diego School of Medicine on the medical and health risks to the general population from wireless technology. Note her letter has been widely available since August 2017. The text of the letter itself is 6 pages long, with over 350 references to scientific research papers in the remaining 20 pages supporting her medical opinion. The work of the *“single scientist and a single chart”* appears nowhere. If Mr Broad wished to corroborate the truth of his assertion, Professor Golomb’s letter, would have been an ideal starting point. However, as we shall see there are a multitude of scientific papers and reports that would have fitted the bill. Hence, the source which Mr Broad attacks in his article is first examined and Broad’s conjecture convincingly refuted.

Refutation 1. Broad’s Misrepresentation of the Source

The scientist whose reputation Broad questions is Bill P. Curry, Ph.D. , Consulting Physicist. The “chart” which forms the central plank in Mr Broad’s argument is found in an obscure report by Dr. Curry to Dr. Gary Brown, ETS Distance Learning / Sr. Technical Specialist, on Wireless LAN’s in the school room⁴.

Following 4 years of conducting a balanced, penetrating scientific review of extant research, and reading hundreds of papers on experimental and epidemiological research, including over 40 scientific review papers, I never came across a reference to Dr. Curry’s work, nor the report in question. That Mr Broad did, is not a reflection of his investigative skills as a journalist, rather, it begs questions as to why other more visible and arguably controversial sources were not chosen, dating back to the 1960s?

What Broad untruthfully refers to as ***“blossoming anxiety”*** is, rather, the social manifestation of significant scientific concern that dates back to the 1950s, at the very least. This apprehension is best expressed in the US, where the significant clinical and biological effects of RFR were identified by naval researchers in their review of Soviet and Eastern-Bloc studies at a symposium in 1969.⁵ By 1976, the US Naval Medical Research Institute (NMRI) published a bibliography of 3,700 scientific papers on the thermal and non-thermal biological effects of RFR, when the last of a series of supplements to the original report in 1972 were integrated (see Glaser, Brown and Brown, 1976⁶). In summary, the NMRI identified the following findings:

⁴<http://www.stayonthetruth.com/resources/Curry%20letter%20re%20Wireless%20in%20school%20room.pdf>

⁵ Dodge, C. H. (1969). Clinical and hygienic aspects of exposure to electromagnetic fields: A review of Soviet and East European literature. In Biological Effects and health Implications of Microwave Radiation Symposium Proceedings, SF Cleary, ed., BRH, DBE Report (pp. 70-2).

- Thermal effects identified include heating of the whole body, brain, eyes, testicles and sinuses, among others.
- Non-thermal effects identified include oxidative process change (a precursor for DNA strand breaks and ultimately cancer), decreased fertility, altered foetal development, muscle contraction, cardio-vascular changes, altered menstrual activity, liver enlargement, changes in conditioned reflexes, and so on.

The body of scientific evidence has grown exponentially since. If any one person influenced the general “anxiety” referred to by Mr Broad, it was Dr Zory Glaser of the US NMRI⁶. Another seminal influence is found in industry research published by the Ford Motor Company in 1965 that documented significant effects.⁷

Furthermore, from 1975 on to 1995, the US EPA conducted research program on electromagnetic fields (EMF), including microwave radiation, and were about to develop EMF safety standards, before it was de-funded in 1995. Its first report in 1985 would have set alarm bells ringing at the time and since.⁸ However, more relevant from a public perspective, was the testimony of former Motorola Engineer R.C. Kane, who published a whistleblower’s account as a book titled, *Cellular Telephone Russian Roulette* in 2001.⁹ The same year, another industry whistleblower, Dr George Carlo published an explosive account of industry dishonesty and manipulation, titled “*Cell Phones: Invisible Hazards in the Wireless Age: an Insider’s Alarming Discoveries about Cancer and Genetic Damage*”¹⁰. Significantly, from 1995, Dr Carlo directed the industry-financed Wireless Technology Research (WTR) project using \$28.5m funding. Its findings were rejected by the industry, as an inconvenient truth.

Mr Broad is silent on all of this.

Refutation 2: The Graph

Dr Curry’s detailed, but concise report, in which the Graph appears, addresses questions that have also puzzled me viz. what is the exposure of children in a Wifi-enabled classroom when using Wifi devices? On evaluating the report, it’s rigour is clear and unambiguous. Before becoming a scientist, I worked on satellite and terrestrial microwave radio communication systems (1983-1997). As a highly experienced physicist, Dr Curry is both conservative and meticulous in applying accepted formulae in his calculations.

Having calculated a child’s exposure, Dr Curry then wished to estimate how much microwave radiation from a 2.4 GHz Wifi source is absorbed by the human brain. To do this, Dr Curry drew on extant research conducted for the US Air Force.¹¹ Here Curry states that “*The absorption of microwave radiation by human tissues is dominated by the absorption of water, since the tissues are about 40% water. Dr. Camelia Gabriel of London University has measured the dielectric constant (also called permittivity) and electrical conductivity through a large frequency range for 30 different types of*

⁶ Glaser, Z., Brown, P.F., and Brown M.S. (1976). Bibliography of reported biological phenomena (“effects”) and clinical manifestations attributed to microwave and radio-frequency radiation: Compilation and Integration of Report and Seven Supplements. Naval Medical Research Institute – National Naval Medical Center, Bethesda, USA. (see <https://ehtrust.org/wp-content/uploads/Naval-MRI-Glaser-Report-1976.pdf>)

⁷ Bergman, W. 1965. The effect of Microwaves on the Central Nervous System. Translation from the German for Research and Scientific Laboratory, Ford Motor Company by the Technical Library Research Service. 1-82.

⁸ EPA (1984). Biological Effects of Microwave Radiation, Environmental Protection Agency, Final Report, September 1984.

⁹ Kane, R. C. (2001). Cellular telephone Russian roulette: a historical and scientific perspective. Vantage Press.

¹⁰ Carlo, G. L., & Schram, M. (2001). Cell Phones: Invisible Hazards in the Wireless Age: an Insider’s Alarming Discoveries about Cancer and Genetic Damage. Carroll & Graf.

¹¹ <https://apps.dtic.mil/dtic/tr/fulltext/u2/a309764.pdf>

tissues taken from animals and from human cadavers for Brooks Air Force Base. I have a large Air Force report (AL/OE-TR-1996-0037) that documents her results. From these data, I have computed the absorption coefficient for grey matter (a type of human brain tissue)."

Thus what Dr Curry calculated and presented in his graph is the "absorption coefficient" for human brain tissue, the most available of which in this risk scenario is the grey matter in the temporal and frontal lobes. It is here, in reporting on the purpose of the graph, that Mr Broad either makes another significant error or chooses to misrepresent scientific fact. However, as Broad clearly has communicated with a range of scientists, who would have corrected his many errors, one can only conclude that the operation of bias may explain his position.

From a close reading of his article, it is evidence that Mr Broad operates under the influence of common biases—confirmation, representative and availability biases.¹² The scientific fact that is the source of confusion for Mr. Broad is that as microwaves increase in frequency, they suffer greater attenuation, and in human terms penetrate less deeply into the body. A naïve interpretation would be that they are therefore less harmful. Not so. The reason why, for example, a 2.4 Ghz Wifi signal penetrates less deeply than an 800 Mhz 5G signal, is that *ceterus paribus*, the higher the frequency, the greater is the absorption into exposed tissue.

Mr Broad misrepresents the facts when he states that Dr Curry presents an "un undated handout image of a 2000 graph...which purported to show that tissue damage increases with the rising frequency of radio waves." First, Dr Curry's report is dated "February 24 2000". Second, Dr. Curry's chart expressly states that absorption of microwaves into brain tissue "increases with the rising frequency of radio waves." Of course, while tissue may receive a direct thermal injury, if the microwave power density is high enough, otherwise the risk of non-thermal effects increases with exposure. How high is the risk for children that Dr. Curry identified and which Mr Broad dismisses?

There is a significant body of scientific evidence on hazardous non-thermal levels of microwave radiation. The European Academy for Environmental Medicine (EUROPAEM) – EMF working group—found that the safe exposure for an adult is 10 $\mu\text{W}/\text{m}^2$ when exposed to Wi-Fi 2.4 Ghz¹³. Beyond this level there is a risk of non-thermally generated biochemical molecular interactions that lead to oxidative stress, among other bio-hazards. Dr Curry conservatively estimates from his data that "that any one child will receive a radiation dose commensurate with a radiation density of at least 6 - 8 $\mu\text{W}/\text{cm}^2$, perhaps even more." How does this compare to the safe exposure for an adult?

Note that EUROPEAM's safe level of 10 $\mu\text{W}/\text{m}^2 = 0.001 \mu\text{W}/\text{cm}^2$. Hence, 10,000 $\mu\text{W}/\text{m}^2 = 1 \mu\text{W}/\text{cm}^2$. Thus, Curry's 6-8 $\mu\text{W}/\text{cm}^2$ translates into 60,000-80,000 $\mu\text{W}/\text{m}^2$. That is approximately 6,000-8,000 times higher than the recommended safe exposures for adults.

Note when Dr. Curry conducted his study, there was no recommended maximum non-thermal level of exposure for adults, let alone children. It is strange that Mr Broad neglects to include in his analysis, what the scientific consensus is in Europe on safe non-thermal levels.

Refutation 3: 5G Technology and Risk to Biological Systems

¹² Bornstein, B. H., & Emler, A. C. (2001). Rationality in medical decision making: a review of the literature on doctors' decision-making biases. *Journal of evaluation in clinical practice*, 7(2), 97-107.

¹³ Belyaev, I., Dean, A., Eger, H., Hubmann, G., Jandrisovits, R., Kern, M., ... & Oberfeld, G. (2016). EUROPAEM EMF Guideline 2016 for the prevention, diagnosis and treatment of EMF-related health problems and illnesses. *Reviews on environmental health*, 31(3), 363-397.

Mr Broad should not be writing about 5G, as he fails to understand the technology. 5G frequencies span 3 ranges: 700 Mhz (low frequency centimetre (cm) waves), 3.4-3.8 GHz (high frequency centimetre waves) and 26-28 GHz (millimetre (mm) waves). These frequencies are indicative, and dependant on national agencies and frequency allocations. It is significant that while low frequency and high frequency centimetre waves penetrate to varying levels into the human body, millimetre waves penetrate and are absorbed into the skin, i.e. epidermis, dermis, and subcutaneous fat, and also into the eyes. Research on the biological effects of mm waves is mature¹⁴ –there are, therefore, significant concerns on the biological effects of mm waves in relation to their use in 5G.¹⁵

Mr Broad alleges that Dr Curry’s graph was “wrong” because he argues that higher and faster 5G millimetre waves do not penetrate the skin. Broad states that “At higher radio frequencies, the skin acts as a barrier, shielding the internal organs, including the brain, from exposure. Human skin blocks the even higher frequencies of sunlight.” This is patently false in both in medical and scientific terms.¹⁶ The skin does not form a barrier, it is permeable. It is a biological organ, that protects the body, but is itself prone to infections and environmental influence. It contains capillaries and nerve endings, it is chiefly composed of approx. 65% water, 10% proteins, and 10% of lipids.¹⁷ Broad is egregious in his misunderstanding, or deliberate in his misquote of Christopher Collins, a professor of radiology at New York University. Broad quotes Professor Collins as saying “It doesn’t penetrate,”... Curry’s graph, he added, failed to take into account “the shielding effect”. New York-based Dr. Louis Slesin of Microwave News followed up on this with Professor Collins, who in an email reply states ““When I read the article my first concern was that my saying ‘It doesn’t penetrate’ might be misunderstood without more context on the frequency.” Dr Slesin goes on to state that “Collins explained that he was talking about mm waves —not the lower 5G frequencies. Those, he agreed, do penetrate into the brain.”¹⁸

Also, in relation to the “shielding effect”, Broad states that “Dr Marvin C Ziskin, an emeritus professor of medical physics at Temple University School of Medicine in Philadelphia, agreed. For decades, Ziskin explored whether such high frequencies could sow illness. Many experiments, he said, support the safety of high-frequency waves.” In response to the New Your Times publication of this article, Dr Devra Davis, followed up on this with Dr Ziskin, she states that this applies “solely to the higher frequencies to be used in 5G as they did not penetrate into the body as deeply. Apparently, his statement did not apply to the slower and lower frequencies that are well known to be absorbed past the skin.”¹⁹ These are centimetre wave frequencies, as previously outlined. However, researchers point out that “More than 90% of the transmitted power [of millimetre waves] is absorbed by the skin.”²⁰ This is significant, as this energy is harmlessly dissipated, with regular exposure skin cells go into oxidative stress with significant health implications and risks.²⁰ Furthermore, it is important to note in addition that “the cumulative body of research and scientific evidence demonstrates beyond a

¹⁴ Zalyubovskaya K.P. (1977). Biological Effects of Millimeter Wavelengths. Kharkov Research Institute of Microbiology. (CIA Declassified).

¹⁵ Di Ciaula, A. (2018). Towards 5G communication systems: Are there health implications? *International journal of hygiene and environmental health*, 221(3), 367-375.

¹⁶ Feldman, Y., Puzenko, A., Ben Ishai, P., Caduff, A., Davidovich, I., Sakran, F., and Agranat, A.J., (2009). The electromagnetic response of human skin in the millimetre and submillimetre wave range. *Phys. Med. Biol.* 54 (11), 3341–3363. <http://dx.doi.org/10.1088/0031-9155/54/11/005>. (<https://www.ncbi.nlm.nih.gov/pubmed/19430110>).

¹⁷ Duck, F.A. (1990). *Physical Properties of Tissue*, Academic, Bath, UK..

¹⁸ <https://microwavenews.com/news-center/fact-free-hit-5g-critic>

¹⁹ Zhadobov, M., Chahat, N., Sauleau, R., Le Quement, C., & Le Drean, Y. (2011). Millimeter-wave interactions with the human body: state of knowledge and recent advances. *International Journal of Microwave and Wireless Technologies*, 3(2), 237-247.

²⁰ Neufeld, E., & Kuster, N. (2018). Systematic derivation of safety limits for time-varying 5G radiofrequency exposure based on analytical models and thermal dose. *Health physics*, 115(6), 705-711.

reasonable doubt that millimetre waves not only penetrate the skin of humans, but present a heightened risk of ill-effects on all biological systems including cells, bacteria, yeast, animals and humans.”²¹

This evidence refutes Broad’s assertion that 5G radio waves become “safer” at higher frequencies because human skin purportedly “acts as a barrier.” As indicated the skin absorbs 90% of the power from mm waves. It does not deflect 5G mm wave radiation.

A report from European Parliament in 2019 highlights the uncertainty and, therefore, the risk of 5G viz. “The 5G radio emission fields are quite different to those of previous generations because of their complex beamformed transmissions in both directions — from base station to handset and for the return. Although fields are highly focused by beams, they vary rapidly with time and movement and so are unpredictable.” The report concludes, “It is not possible to accurately simulate or measure 5G emissions in the real world.”²² Hence, the precautionary principle should be applied as extant research indicates significant risk, which is magnified by this uncertainty.

Refutation 4: Broad’s statement, “mainstream scientists continue to see no evidence of harm from cellphone radio waves” is demonstrably false.

In arguing for his position, Broad fails to report that in 2011 the World Health Organization’s International Agency for Research on Cancer (WHO/IARC) that cellphone and other wireless RF radiation should be classified as a “possible human carcinogen,” based on evidence from studies carried out up to that date. In March 2019, based on recent laboratory and epidemiological evidence, an Advisory Group of 29 scientists from 18 countries recommended that non-ionizing radiation be prioritized by the WHO’s International Agency for Research on Cancer (IARC) Monographs programme during 2020–24. They are concerned about the health risks identified by research over the past 8 years. The majority of independent researchers have called for non-ionizing microwave radiation to be reclassified as a Class 1 carcinogen, along with cigarette smoke.²³ Furthermore, over 250 scientists and professionals in biophysics, medicine, health, and related fields have requested the United Nations to introduce a moratorium on 5G.²⁴

Refutation 5: Broad is not neutral, he has an industry bias, as have several of his sources.

In her analysis of Broad’s related New York Times article, Dr Devra Davis points out that “Several of the experts quoted in this article have in fact published research directly funded by the wireless industry or by NYU Wireless, “an R&D arm” of NYU’s industry affiliates, which include AT&T, Sprint and Crown Castle — the very companies spearheading the rollout of 5G.”² A close reading of the relevant links is illustrative of the fundamental bias in Broad’s article. The truth and accuracy of Broad’s representation, or rather, misrepresentation of the facts, is apparent. The mainstream scientists Mr Broad cites have strong links to the telecommunications industry and have a tendency to be biased in their reporting and research. The tendency for scientists to be biased, to cling to dominant paradigms, resist change

²¹ Pakhomov, A.G.; Akyel, Y.; Pakhomova, O.N.; Stuck, B.E.; Murphy, M.R. (1998). Current state and implications of research on biological effects of millimeter waves: a review of the literature. *Bioelectromagnetics*, 19 (1998), 393–413.

²² [https://www.europarl.europa.eu/RegData/etudes/IDAN/2019/631060/IPOL_IDA\(2019\)631060_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/IDAN/2019/631060/IPOL_IDA(2019)631060_EN.pdf)

²³ 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.: [//www.sciencedirect.com/science/article/pii/S0013935118303475](http://www.sciencedirect.com/science/article/pii/S0013935118303475)

²⁴ <http://www.5gappeal.eu/signatories-to-scientists-5g-appeal/>

in the face of scientific evidence is well acknowledged,²⁵ and this is particularly true in relation to the wireless paradigm.^{26, 27, 28}

Refutation 6: Mr Broad is not writing about health, or the risks posed by 5G, rather he is venting a personal bias against Professor David Carpenter

In addition to targeting Dr Curry, Broad focuses on Professor David Carpenter Director of the Institute for Health and the Environment at the School of Public Health in Albany, NY. Professor Carpenter is one of the foremost advocates in the US for a precautionary approach to address the health risks associated with microwave radiation. In a blatant effort to discredit Professor Carpenter, Broad links him with Russian disinformation and propaganda campaigns. See Broad's recent article in the New York Times "Your 5G Phone Won't Hurt You. But Russia Wants You To Think Otherwise." There Professor Carpenter was portrayed as "a prominent 5G critic."

However, Broad's real issue with Carpenter, as indicated in the Irish Times article, stems from events in 2011, when he states that "*Carpenter introduced Curry's graph in a lawsuit that sought to force the Portland, Oregon, public schools to abandon their wireless computer networks. The suit had been filed by a worried parent.*" However, Broad fails to mention in his Irish Times article that the state of Oregon passed SB 283 in June 2019. This is a "bill relating to exposure to radiation in schools in this state; and declaring an emergency." The radiation here is Wifi microwave radiofrequency radiation, which, as indicated, along with 5G, was declared a Class 2B carcinogen by the World Health Organisation's IARC in 2011. The weight of scientific evidence prompted Oregon's politicians to vote 50-8 for the measure. *Inter alia*, the Bill obliges "the Oregon Department of Education to develop recommendations to schools in this state for practices and alternative technologies that reduce students' exposure to microwave radiation that Oregon Health Authority report identifies as harmful." If Broad was interested in voicing public concerns and introducing change in public policy, he would have mentioned all this. Instead, he attempts an ill-disguised attempt to discredit Professor Carpenter, whose greatest offence, in Mr Broad's eyes, is to have public policy changed to protect the health and well-being of children.

Refutation 6: Broad cites the lack of a marked increase in brain cancer rates as proof of 5G safety. This is untrue.

Broad confidently cites an Irish Times science writer opining in The Guardian that "'If phones are linked to cancer, we'd expect to see a marked uptick," David Robert Grimes, a cancer researcher at the University of Oxford, wrote recently. "Yet we do not.""²⁹ I have communicated with Dr Grimes personally via email on his views. While Dr Grimes is genuine in his belief, he is subject to the same cognitive biases, that he himself accuses others of possessing. If Broad was genuine in uncovering truth and scientific fact, he should have turned to the extant body of epidemiological research. The

²⁵ Kuhn, T. S. (2012). The structure of scientific revolutions. University of Chicago press.

²⁶ Cherry, N. J. (2002). Criticism of the health assessment in the ICNIRP guidelines for radiofrequency and microwave radiation (100 kHz-300 GHz). Invited submission to the Ministry of Health/ Ministry for the Environment of New Zealand on the adoption of the ICNIRP guidelines.

²⁷ Alster, N. (2015). Captured agency: How the Federal Communications Commission is dominated by the industries it presumably regulates. Harvard University: Cambridge, MA, USA.

²⁸ Pockett, S. (2019). Conflicts of Interest and Misleading Statements in Official Reports about the Health Consequences of Radiofrequency Radiation and Some New Measurements of Exposure Levels. *Magnetochemistry*, 5(2), 31.

²⁹ <https://www.theguardian.com/technology/2018/jul/21/mobile-phones-are-not-a-health-hazar>

objective scientific evidence refutes both Mr. Broad's and Dr. Grimes perspectives, as I will now adduce.

While experimental and non-experimental case control and other epidemiological studies generally emanate from natural scientists and medical researchers, in 2018, two social scientists reported *“that mobile phone subscription rates are positively and statistically significantly associated with death rates from brain cancer 15-20 years later. As a falsification test, we find few positive associations between mobile phone subscription rates and deaths from rectal, pancreatic, stomach, breast or lung cancer or ischemic heart disease.”*³⁰ This 25-year cross country analysis provides solid but indirect evidence. However, we need to dig deeper into the available evidence from the natural and life sciences to understand probability and causality.

First, the French CERENAT study reported that *“Consistent with previous studies, we found an increased risk [of brain tumours] in the heaviest users [of mobile phones], especially for gliomas.”*³¹ The study found the risks were higher for temporal lobe tumours, as well as gliomas, with occupational and urban mobile phone users at highest risk.

A research review of the incidence of glioblastoma multiforme tumours in England in the period 1995–2015 reported a *“a sustained and highly statistically significant ASR [(incidence rate)] rise in glioblastoma multiforme (GBM) across all ages. The ASR for GBM more than doubled from 2.4 to 5.0, with annual case numbers rising from 983 to 2531. Overall, this rise is mostly hidden in the overall data by a reduced incidence of lower-grade tumours.”*³² The study did not focus on microwave radiation as the cause, so the findings must be considered ‘open to interpretation’ in this regard, as other environmental mechanisms cannot be ruled out. However, the following figures are clear and unambiguous. In the UK in 1995, 553 frontal lobe tumours were diagnosed in patients, while 1231 were found in 2015. Likewise, 334 temporal lobe tumours were reported in 1995, while 994 were diagnosed in 2015. The increase in these cancers of the central nervous system are clear and unambiguous. The authors of this study argue that:

“The rise cannot be fully accounted for by promotion of lower-grade tumours, random chance or improvement in diagnostic techniques as it affects specific areas of the brain and only one type of brain tumour. Despite the large variation in case numbers by age, the percentage rise is similar across the age groups, which suggests widespread environmental or lifestyle factors may be responsible. This article reports incidence data trends and does not provide additional evidence for the role of any particular risk factor.”

It is significant that the frontal and temporal lobes receive the greatest exposure to RFR from smartphones and tablets.

A comprehensive review of the incidence of primary brain and other central nervous system tumors diagnosed in the United States during the period 2009–2013, found quite small, but statistically

³⁰ Mialon, H. M., & Nesson, E. T. (2018). Mobile Phones and the Risk of Brain Cancer Mortality: A Twenty-Five Year Cross-Country Analysis. (February 26, 2017). Available at SSRN: <https://ssrn.com/abstract=2674296> or <http://dx.doi.org/10.2139/ssrn.2674296>.

³¹ Coureau, G., Bouvier, G., Lebailly, P., Fabbro-Peray, P., Gruber, A., Leffondre, K., ... & Baldi, I. (2014). Mobile phone use and brain tumours in the CERENAT case-control study. *Occup Environ Med*, oemed-2013.

³² Philips, A., Henshaw, D., Lamburn, G. & M. O'Carroll, (2018). Brain tumours: rise in Glioblastoma Multiforme incidence in England 1995–2015 suggests an adverse environmental or lifestyle factor, *Journal of Environmental and Public Health*, vol. 2018, Article ID 7910754.

significant increases in some categories of CNS tumours and none in others.³³ A related study echoed the US findings, but found an “an increasing medulloblastoma incidence in children aged 10–14 years.”³⁴ Another recent study on children found statistically-significant changes in several sub-types of CNS cancers, notably gliomas, in the period 1998-2013.³⁵ The latter study concluded that “Continued surveillance of pediatric CNS tumors should remain a priority given their significant contribution to pediatric cancer deaths.”

In keeping with studies that provide some evidence for concern, a recent review study of epidemiological studies on brain and salivary gland tumours in relation to mobile phone use found the cumulative evidence to be inconclusive, but indicated that such cancers may have a long latency (i.e. greater than 15 years) and clear evidence may emerge in the future. Nevertheless, scientists argue that childhood use of RFR devices is of significant concern.³⁶ There is also evidence that RFR from cell phones may be triggering breast cancer in young women who carry their devices on or near their breasts.³⁷ In addition, extensive studies by the Hardell Group demonstrate increases in cancers of the CNS in Sweden.³⁸ These findings have been recently replicated in Denmark³⁹.

A new study in The Lancet Neurology reports that “CNS cancer is responsible for substantial morbidity and mortality worldwide, and incidence increased between 1990 and 2016. Significant geographical and regional variation in the incidence of CNS cancer might be reflective of differences in diagnoses and reporting practices or unknown environmental and genetic risk factors. Future efforts are needed to analyse CNS cancer burden by subtype.”⁴⁰ In a general context, the U.S. Center for Disease Control and related research finds that non-Hodgkin lymphomas, central nervous system tumors (including brain cancers), renal, hepatic and thyroid tumours have increased recently among adolescent Americans.^{41, 42}

However, Dr De-Kun Li, a senior epidemiologist at US healthcare provider Kaiser Permanente, argues that while the increase in brain tumors is worrisome, the reported increase in colorectal cancer is even

³³ Ostrom, Q. T., Gittleman, H., Xu, J., Kromer, C., Wolinsky, Y., Kruchko, C., & Barnholtz-Sloan, J. S. (2016). CBTRUS statistical report: primary brain and other central nervous system tumors diagnosed in the United States in 2009–2013. *Neuro-oncology*, 18(suppl_5), v1-v75.

³⁴ Khanna, V., Achey, R. L., Ostrom, Q. T., Block-Beach, H., Kruchko, C., Barnholtz-Sloan, J. S., & de Blank, P. M. (2017). Incidence and survival trends for medulloblastomas in the United States from 2001 to 2013. *Journal of neuro-oncology*, 135(3), 433-441.

³⁵ Withrow, D. R., de Gonzalez, A. B., Lam, C. J., Warren, K. E., & Shiels, M. S. (2018). Trends in pediatric central nervous system tumor incidence in the United States, 1998-2013. *Cancer Epidemiology and Prevention Biomarkers*, cebp-0784.

³⁶ Rössli, M., Lagorio, S., Schoemaker, M. J., Schüz, J., & Feychting, M. (2019). Brain and Salivary Gland Tumors and Mobile Phone Use: Evaluating the Evidence from Various Epidemiological Study Designs. *Annual review of public health*, 40.

³⁷ West, J. G., Kapoor, N. S., Liao, S. Y., Chen, J. W., Bailey, L., & Nagourney, R. A. (2013). Multifocal breast cancer in young women with prolonged contact between their breasts and their cellular phones. *Case reports in medicine*, 2013.

³⁸ Hardell, L., & Carlberg, M. (2015a). Increasing rates of brain tumours in the Swedish national inpatient register and the causes of death register. *International journal of environmental research and public health*, 12(4), 3793-3813.

Hardell, L., & Carlberg, M. (2015b). Mobile phone and cordless phone use and the risk for glioma—Analysis of pooled case-control studies in Sweden, 1997–2003 and 2007–2009. *Pathophysiology*, 22(1), 1-13.

Hardell, L., & Carlberg, M. (2017). Mobile phones, cordless phones and rates of brain tumors in different age groups in the Swedish National Inpatient Register and the Swedish Cancer Register during 1998-2015. *PloS one*, 12(10), e0185461

³⁹ Swedish Radiation Protection Foundation (2017). Brain tumors are increasing in Denmark

https://www.stralskyddsstiftelsen.se/wp-content/uploads/2017/01/denmark_cnstumorsrising_2017-01-20.pdf

⁴⁰ Patel, A. P., Fisher, J. L., Nichols, E., Abd-Allah, F., Abdela, J., Abdelalim, A., ... & Allen, C. A. (2019). Global, regional, and national burden of brain and other CNS cancer, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. *The Lancet Neurology*, 18(4), 376-393.

⁴¹ http://aspho.org/uploads/meetings/2018annualmeeting/Abstracts_for_Website.pdf

⁴² Ostrom, Q. T., Gittleman, H., Truitt, G., Boscia, A., Kruchko, C., & Barnholtz-Sloan, J. S. (2018). CBTRUS statistical report: primary brain and other central nervous system tumors diagnosed in the United States in 2011–2015. *Neuro-oncology*, 20(suppl_4), iv1-iv86.

more troubling. In 2019, the journal *Cancer* described a rising incidence of colorectal cancer among young Americans, with rectal cancers being slightly higher than colon cancers.⁴³ Another study found significant increases in colorectal cancer among people under 50 in Denmark, New Zealand, and the UK since 2009.⁴⁴ Yet another study of colorectal cancer in young adults in 20 European countries over the last 25 years found that the incidence of colorectal cancer increased 8% per year among people in their 20s, by 5% for people in their 30s, and by 1.6% for those in their 40s.⁴⁵ Dr. De-Kun Li maintains that “When placed in trouser pockets, the phones are in the vicinity of the rectum and the distal colon and these are the sites of the largest increases in cancer.” While phones go into standby more for telephone calls, most young people have Wifi, Bluetooth and 4G data enabled. This increases the level and incidence of exposure and their apps keep their smartphones active on a continuous bases. Thus, other environmental, diet and lifestyle factors aside, wireless microwave radiation may be implicated as a direct or indirect (e.g. co-carcinogen) in this latest ‘uptick’ in cancers.

Again the weight of the scientific evidence is considerable. Both Broad and the Irish Times need to reflect on what the science is saying and in a balanced objective manner inform the public.

Conclusion

“To be a scientist is to be naive. We are so focused on our search for truth we fail to consider how few actually want us to find it. But it is always there whether we see it or not, whether we choose to or not. The truth doesn’t care about our needs or wants—it doesn’t care about our governments, our ideologies, our religions—it will lie in wait for all time...Where I once would fear the cost of truth, now I only ask what is the cost of lies.”

Attrib. to Dr. Valery Legasov

Unlike Mr Broad, I am a scientist. Mr Broad is a journalist. I take my ethical, social and community obligations seriously. The evidence adduced above is clear and unambiguous as to the very real and present risks to human health and well-being from microwave radio frequency radiation. The likes of Mr Broad are responsible for the underestimation and misunderstanding of the risks that this environmental threat poses.

The Irish Times, as represented by Mr Broad, is neither truthful nor accurate in this article. In addition, it failed in this instance to clearly distinguish between fact and comment. Mr Broad’s often wild, unfounded conjectures, asserted rumours and related claims were reported as facts. The readers of The Irish Times are entitled to expect that the content of the newspaper reflects the best judgment of its editors and writers in presenting the truth in a balanced and accurate manner. This has not been the case here, as the evidence above demonstrates. Undisclosed conflicting interests and bias, by William Broad, influenced the reporting of the facts, which were, in the final analysis, no more than commentary. Again the evidence is clear here. The human cost of bias, scientific ignorance, hubris and lies are significant. A retraction of this article is required or its errors corrected in depth.

⁴³ Virostko, J., Capasso, A., Yankeelov, T. E., & Goodgame, B. (2019). Recent trends in the age at diagnosis of colorectal cancer in the US National Cancer Data Base, 2004-2015. *Cancer*.

⁴⁴ Araghi, M., Soerjomataram, I., Bardot, A., Ferlay, J., Cabasag, C. J., Morrison, D. S., ... & Engholm, G. (2019). Changes in colorectal cancer incidence in seven high-income countries: a population-based study. *The Lancet Gastroenterology & Hepatology*, 4(7), 511-518.

⁴⁵ Vuik, F. E., Nieuwenburg, S. A., Bardou, M., Lansdorp-Vogelaar, I., Dinis-Ribeiro, M., Bento, M. J., ... & Suchanek, S. (2019). Increasing incidence of colorectal cancer in young adults in Europe over the last 25 years. *Gut*, gutjnl-2018.

Appendix

From: Butler, Tom

Sent: 07 November 2019 11:10

To: Eoin McVey <emcvey@irishtimes.com>

Subject: RE: Formal complaint regarding the article by William Broad.

Dear Eoin

I'm afraid I cannot accept the Irish Times' excuse of good faith in publishing the article in question, based on its benign perception of Mr William Broad and his latest opinion pieces, given that he was awarded Pulitzer Prizes over 30 years ago. Or indeed, the respect given to his position in the New York Times. If the events of the past 25 years have taught us anything in Ireland, it is that respected individuals are fallible, and often incredibly and unethically so, and our trust in them and their behaviours has to be tempered by critical rationalism.

As someone who has previously worked on microwave radio frequency technologies in the telecoms sector, I applied my critical scientific faculties to examine rationally the considerable body of scientific literature on the substantive issue. This has taken several years, as I began from a position of skepticism. I concluded that wireless technologies present significant health risks to the population. Such risks are systemic and can have serious consequences for an unsuspecting public. I also concluded that these risks can be mitigated, and society can leverage information technology to its continued benefit.

Looking elsewhere, for example, we are witnessing an upsurge in the incidence of preventable diseases and related deaths simply because parents believe pseudoscientific claims about the risks of vaccines. We have also seen in the past that medical science initially siding with industry, in relation to tobacco and asbestos, with claims and counter-claims. As someone who was conscious of climate change back in the 1970s, I remember only too well how established, entrenched scientists and industry pundits pushed back against those arguing for the greenhouse gas effect and the need for reductions for many years. I have studied closely the history of paradigm change in science and in respect of wireless technologies, the fact that the WHO's IARC classified RFR as a Class 2B carcinogen is indicative of the beginning of a paradigm change, with indications this year that it will be reclassified along with cigarette smoke as a Class 1 carcinogen. However, cancer risk is just one of several, and not, perhaps, the most serious from a systemic risk perspective.

It is clear from even a cursory reading of Mr Broad's article that it discounts the many thousands of scientific studies conducted since the 1930s. So what Mr Broad and his associate Dr David Robert Grimes (who writes for the Irish Times) are objecting to in their opinion pieces (note not scientific research) is not what they claim to be pseudoscience, but the corroborated theories and empirical evidence coming from a different scientific paradigm. It is a moot point that without industry interference and political lobbying, paradigmatic differences would have been resolved back in the 1990s, and the health risks accepted and mitigated.

Mr Broad's article is therefore extremely troubling to me. It concerns me as a scientist and upsets me greatly as an Irish citizen to find the Irish Times misinforming the public on what is a serious matter of public concern. The article has also troubled the many members of a national social movement, spread across the 32 counties, to which I am scientific advisor (see <https://www.irelandforsafetechnology.com/>), and who are aware of and support this complaint.

I do not accept that the Irish Times is impartial on the matter of wireless technologies and 5G. I have made previous attempts to have a letter published on this topic. In any event, the subject matter is not conducive to expression in a mere 500 words. That is under the word count for this email.

Therefore, I have no other option but to proceed with my formal complaint to the Press Ombudsman.

Yours sincerely,

Tom Butler

Tom Butler PhD MSc | **Professor** | Principal Investigator @ GR3C | University College Cork | 13 South Mall | Cork | Ireland | Tel: +353 87 9865629 | email: tbutler@ucc.ie | **Skype**: tom_butler_ucc

From: Eoin McVey [mailto:emcvey@irishtimes.com]
Sent: 05 November 2019 16:20
To: Butler, Tom <tbutler@ucc.ie>
Subject: FW: Formal complaint regarding the article by William Broad.

Dear Professor Butler,

I refer to your email to the Editor, Paul O'Neill. I Hope all is going well in UCC.

I note that you communicated with the Health & Family section and elsewhere but did not receive an acknowledgement. Please accept our apology in that regard.

Thank you for enclosing so much information in support of your position. You might appreciate however that The Irish Times published the opinion article by Mr Broad in good faith. Mr Broad, as you know, has twice won the Pulitzer prize and is a long-established writer with the New York Times.

The issue of wireless technology and health has been long-running and contentious. The Irish Times has not taken a position on the matter but is prepared to give space to persons of repute who have formed a view. This is what we did in the case of Mr Broad's opinion piece.

You are of course at liberty to submit a letter for publication in which you can challenge the opinions expressed by Mr Broad. The letter would need to be not longer than 500 – 600 words and should be sent to letters@irishtimes.com.

Yours sincerely,

Eoin McVey.



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<https://www.irishtimes.com/life-and-style/health-family/are-there-any-real-links-between-wireless-technology-and-health-1.3973254>

From: Butler, Tom [<mailto:tbutler@ucc.ie>]

Sent: 25 October 2019 15:20

To: editor

Subject: FW: Formal complaint regarding the article by William Broad, Are there any real links between wireless technology and health?

Dear Mr. O'Neill,

Please find attached a formal complaint I submitted to Mr Paul Cullen Health Editor on 23rd September and a follow-up email on 8th October. I have yet to receive either an acknowledgment or a reply. The Press Ombudsman directed me to you to obtain a response.

Also attached are related documents, including a report I drafted for Ireland for Safe Technologies and the parents of Ratoath College, as well as one from Professor of Medicine, Dr Golomb. As a scientist, I am directly affected by the untruths, misinformation and misleading statements in the article by William Broad.

I am requesting that the Irish Times publish either a retraction or a balanced article that reflects the science by independent not industry researchers. Adrian Weckler and the Irish Independent managed to do this, after a fashion recently.

Sincere

From: Butler, Tom

Sent: 23 September 2019 08:53

To: health@irishtimes.com

Cc: plogue@irishtimes.com

Subject: Formal complaint regarding the article by William Broad, Are there any real links between wireless technology and health?

Importance: High

Dear Paul,

I would like to lodge a formal complaint regarding the article by William Broad, *Are there any real links between wireless technology and health?* <https://www.irishtimes.com/life-and-style/health-family/are-there-any-real-links-between-wireless-technology-and-health-1.3973254>. Please find attached my formal detailed complaint. Also two documents referenced in the body of the complaint.

If I do not receive an adequate response to my complaint, I intend to raise the matter with the Press Ombudsman.

Sincere best wishes,

Tom Butler

Tom Butler PhD MSc | **Professor** | Principal Investigator @ GR3C | University College Cork | 13 South Mall | Cork | Ireland | Tel: +353 87 9865629 | email: tbutler@ucc.ie | **Skype:** tom_butler_ucc