

## How ICNIRP, AGNIR, PHE and a 30-year-old political decision created and then covered up a global public health scandal



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### Who are ICNIRP?

The International Committee on Non-Ionizing Radiation Protection (ICNIRP) are a private self-appointed body or NGO who together with the Advisory Group on Non-ionizing Radiation (AGNIR) and Public Health England (PHE), have somehow ended up effectively setting microwave radiation exposure 'safety' standards for the populations of large parts of the world since the 1990s.

In May 2011, Mr. Jean Huss from the EU Committee on the Environment, Agriculture and Local and Regional Affairs in a report entitled "The potential dangers of electromagnetic fields and their effect on the environment" made the following statement on the credibility of ICNIRP.

*The rapporteur underlines in this context that it is most curious, to say the least, that the applicable official threshold values for limiting the health impact of extremely low frequency electromagnetic fields and high frequency waves were drawn up and proposed to international political institutions (WHO, European Commission, governments) by the ICNIRP, an NGO whose origin and structure are none too clear and which is furthermore suspected of having rather close links with the industries whose expansion is shaped by recommendations for maximum threshold values for the different frequencies of electromagnetic fields.*

<http://assembly.coe.int/nw/xml/XRef/Xref-XML2HTML-en.asp?fileid=13137>

An organization whose origin and structure is none too clear and which is suspected of having rather too close links with the interests of the industries it notionally 'regulates'. Indeed, how do such bodies mysteriously come about in the first place? NGOs may technically be non-governmental organizations but that doesn't mean that they are necessarily non-political organizations, so called scientific 'objectivity' is always shaped and influenced to some degree by political and economic considerations and NGOs are subject to corporate capture and corruption just as much as a sporting ruling body such as FIFA. How is it that a group of people manage to self-appoint themselves as the reliable regulatory body which takes upon itself to decide what is supposedly safe for the rest of us or not?

Was ICNIRP funded, established or captured by the very industries it was designed to 'regulate'? Given the endemic corruption which is the hallmark of Neoliberal deregulation in general one would have to say that in all probability: yes.

Anthony J. Swerdlow, who was the ICNIRP Chair of the standing committee on epidemiology contributed to a [paper of 2011](#) which concluded that "the trend in the **accumulating evidence is increasingly against the hypothesis that mobile phone use can cause brain tumors in adults**". Swerdlow on this occasion, declared in a mere footnote and not any statement of interests or conflict of interests that "A.J.S. holds shares in the telecom companies Cable and Wireless Worldwide and Cable and Wireless Communications. A.J.S.'s wife holds shares in the BT group, a global telecommunications services company." Should the chair of the supposedly 'independent' body setting the guidelines of microwave radiation protection and also his wife – really be holding shares in the very same companies he is supposed to be regulating? How is this not an extreme conflict of interests?

Why is the origin and structure of ICNIRP so opaque when the decisions it has made have had direct impacts on the health of billions of people? This is something which is far more than 'curious to say the least' and should be a matter of thorough public investigation considering what is at stake in all of this in terms of global public health. Billions of people may well have been adversely affected by the extremist decisions of this self-appointed scientific oracle of health and safety to which the whole world seems to have meekly deferred to without asking any real questions.

In terms of its philosophy, it turns out that ICNIRP is something of a closed ideological shop, in that in order to be accepted or invited to become a member of ICNIRP, one is preliminarily required to strictly adhere to the thermal paradigm in terms of radiation health and safety. This paradigm in terms of its followers and their beliefs, asserts that only short term, extremely high exposure to non-ionizing microwave radiation that produces a large thermal effect is deemed to be hazardous to human health. Once one adopts that position, then all non-ionizing radiation that falls below these levels is automatically and universally assumed to be benign. Once this paradigm is also accepted by government and other bodies such as Public Health England, then the burden falls on those subjected to such now completely unregulated sources of radiation to prove that far lower levels of exposure are indeed harmful, whereas conversely, there is no burden on the industry to irrefutably demonstrate that such exposures are completely and utterly safe. Because in the real world there are no control groups on account of the universal exposure of all the population to such radiation sources then proving irrefutable links between illness and exposure is intensely problematic.

In taking this highly selective approach ICNIRP have effectively inverted the conventions of environmental risk assessments. Don Maisch describes this reversal of principles in the 'Procrustean Approach'.

***Risk assessment for chemicals reversed for non-ionizing electromagnetic radiation***

***It is important to note that when it comes to risk assessment that serves as the basis for Western radiofrequency and microwave (RF/MW) standards there is a fundamental departure from conventional risk assessment as used for chemicals. In their 1995 review of risk assessment of environmental chemicals, Fan, Howd and Davis point out that when assessing human exposure to chemicals, environmental levels are the focus. In other words, protecting the public from toxic effects of chemicals in the environment involves consideration of possible mechanisms of low-level toxicity and likely biological effects at low levels of exposure. In addition, the potential for cumulative (long-term), irreversible effects, such as cancer induction and neurotoxicity, are important considerations. There may be debate over what is the lowest level at which a hazard from a chemical may exist, but calculations are aimed at determining the lowest-dose toxic effects to provide human health protection. The obvious adverse effects from high level exposures are not usually a focus of risk assessment as there is no uncertainty on hazards at high-level exposure. Just the reverse applies to the risk assessment of possible hazards from human exposure to non-ionizing radiation from extremely low frequency (ELF) electromagnetic fields (EMF) to RF/MW electromagnetic radiation (EMR), as examined in this thesis. This thesis explores reasons why a risk***

***assessment paradigm developed in the so-called 'Western world' that only provides protection from obvious adverse effects at high-intensity (acute) exposures unlikely to be encountered in the environment. The possibility of cumulative effects, cancer induction and neurological effects arising from low-intensity exposures that could be encountered in the environment are not a consideration in assessing human health risks [Under ICNIRP's terms]. This has been pointed out in a Swiss government agency publication 'Electrosmog in the Environment' where it is stated "Exposure limit values [in Western standards/guidelines] ensure protection against recognized, acute effects, but they do not protect against suspected effects at lower radiation intensities, especially with long-term exposure". This thesis proposes that such a radical departure from accepted risk assessment practice is based on reasons that primarily are to ensure the continuing development of both corporate and military technology at the expense of public health considerations. This assessment is in agreement with Michaels & Monforton in their observations that both corporate and a revisionist political influence in the risk assessment process has affected the outcome of supposedly scientific risk assessments to marginalize the interests of the public, while at the same time maximizing the influence of the vested interest corporate sector.***

### *The Procrustean Approach – Setting Exposure Standards for Telecommunications Frequency Electromagnetic Radiation*

This short-term exposure paradigm is ridiculous. It can take decades of smoking to develop lung cancer not just the 6 minutes it might take to smoke a cigarette. It can take many years to develop simple allergies from environmental exposure to certain substances or foods. In the case of all the various symptoms and illnesses that can result from exposure to low level microwave radiation, there is an incubation period from 8 to 30 years before we start to see epidemiological evidence of such effects. We are only now starting to see these effects emerging at greater scale as over 2000 peer reviewed small scale health studies have shown, unfortunately there is no global epidemiological system in place that would enable us to gather and collate all the relevant information already being provided by patients around the world in order to get a full picture of the scale of public health effects from extremely long term, low level microwave radiation exposures of all types. It is a mistake to be making small or selective 'studies' as such, as with an appropriate system we could collect the data about symptoms and detailed information about patient's environments being presented on a daily basis and map them globally. **It is extremely likely that a global public health crisis is silently building in the background and there is no system or alert mechanism in place to give us clear warnings as to the scale of what is actually taking place. This is deeply concerning. The proliferation of microwave wireless technology is the largest unregulated, blind technological experiment to have ever taken place on the human race: which has and is, effecting billions of people.**

In response to this growing public health crisis, in direct contrast to ICNIRP's thermally based denial paradigm, in 2007 the BioInitiative Report was put forward with a completely different biologically based paradigm presented as a "Rationale for Biologically-based Exposure Standards for Low-Intensity Electromagnetic Radiation". This paradigm asserts that in terms of very long-term exposure, non-ionizing microwave radiation of low power density can have strong effects on the human body and the general environment. The two different paradigms lead to remarkably different views as to what constitutes radiation safety levels. The BioInitiative Report of 2012 recommends a maximum exposure of just 5 microwatts per meter squared ( $5\mu\text{W}/\text{m}^2$ ) whereas ICNIRP suggest a base line maximum of ten million microwatts per meter squared ( $10,000,000\mu\text{W}/\text{m}^2$ ).

One of the biggest problems in researching this subject is trying to get some coherent point of reference in order to understand what kind of exposure levels could properly considered to be safe? The range of guidance is quite simply extraordinary and ranges from the Salzburg 2002 recommendation of a maximum indoor home exposure of 1 micro-watt per meter squared to ICNIRP's 10,000,000 micro-watts per meter squared. How is it possible for different countries or bodies to have 'standards' that vary by a magnitude of 10 million?

The ICNIRP guide for safety standards in wireless communications state that a maximum power density of  $10\text{W}/\text{m}^2$  or  $10,000\text{mW}/\text{m}^2$  is presented as being a very 'conservative' limit. The FCC in the US has the same limits of  $1\text{mW}/\text{cm}^2$ . Confusingly, the US power density is expressed in  $\text{mW}/\text{cm}^2$  as opposed to ICNIRP's and European

use of mW/m<sup>2</sup>. 1mW/cm<sup>2</sup> is equal to 10,000mW/m<sup>2</sup> which is precisely the same as ICNIRP's levels and the same is true for US occupational levels: 5mW/cm<sup>2</sup> = 50 Watts per meter squared.

To most of us, these figures are not in any way comprehensible. How do we even begin to imagine or understand their meaning in terms of what we should consider to be a public health threat? Are they too low, too high or just about right? ICNIRP would like us all to believe that they are incredibly conservative. If one reads all of ICNIRP's guidelines issued and even their latest draft guidelines issued in 2018 one is struck by the rhetorical devices of 'conservatism' that are consistently deployed throughout the texts. In the latest draft we find the word 'conservative', strongly conservative etc. is applied no less than 25 times. Below are 6 examples of this device in action in the first 3 pages of the 25-page draft 2018 guidelines. Note that the term 'precautionary' is also thrown in twice in a supporting role for good rhetorical measure.

*These thresholds were derived to be **strongly conservative** for typical exposure situations and populations...Reduction factors account for biological variability in the population, variance in baseline conditions (e.g. tissue temperature), variance in environmental factors (e.g. air temperature, clothing), dosimetric uncertainty associated with deriving exposure values, uncertainty associated with the health science, and as **a conservative measure more generally.... As a conservative step**, reference levels have been derived...**ICNIRP adopts a conservative approach to each of these steps in order to ensure that its limits would remain protective even if exceeded by a substantial margin.....** The degree of **precaution** in the exposure levels is thus greater than may be suggested by considering only the reduction factors, which represent only one **conservative** element of the guidelines. ICNIRP considers that the derivation of limits is sufficiently **conservative** to make additional **precautionary** measures unnecessary.*

[https://www.icnirp.org/cms/upload/consultation\\_upload/ICNIRP RF Guidelines PCD 2018 07 11.pdf](https://www.icnirp.org/cms/upload/consultation_upload/ICNIRP_RF_Guidelines_PCD_2018_07_11.pdf)

In the absence of any general agreement as to what either 'precautionary' or 'conservative' might actually mean within the laboratorial confines and politics of ICNIRP's text and also in real terms in the real world, I suggest that we entirely bracket this rather overly extensively applied language and suspend its influence on our comprehension. For the moment we should just dwell of the extreme nature of its over use in the text. I will be over using it myself as an ironic and sarcastic counter-point to illustrate the pervasiveness and effectiveness of such rhetorical devices in any given text and also consistently place them in inverted commas as a constant reminder of the misleading nature of such devices and the misleading perceptions they are designed to engender in any given reader not familiar with such techniques.

### **A real world referential framework to understand safety limits**

In this article I propose to try and understand these frequently so called 'conservative' safety limits from a different perspective. In order to do this I am going to take the results of a survey carried out in Sweden on an apartment within very close proximity to a GSM/3G/4G LTE base station and then extrapolate from that survey's results what kind of cell tower or base station infrastructure would actually be required to breach ICNIRP's 'conservative' limit. I should stress here that I am predominantly concentrating on power density radiation exposure related to base stations and cell towers and not 'Specific Absorption Rates' (SARs) related to specific personal mobile phone use. One can keep a mobile phone in airplane mode most of the time or use a shielded case and always use it on speaker phone keeping a safe distance. The user is potentially sovereign over their potential radiation exposure risks in such cases whereas with respect to base stations and cell towers they are not. In the UK if someone wants to erect such infrastructure 10 meters from your windows or balcony there is nothing whatsoever that you can effectively do about it other than move house. In the UK you would have to hope that such infrastructure breached planning regulations in that it would have to breach ICNIRP's limits. In this case study, we are about to see what the chances of such a breach occurring actually are. It should also be noted that in the case below: legally, under current laws, no planning permission would be required to install such infrastructure in the UK anyway, just the permission or co-operation of the owner of the building next door. Only masts that exceed 15 meters in height require planning permission.

The survey took place in 2017 at Östermalm in Stockholm at a 6th floor apartment that had a GSM/3G/4G LTE base station just 12 meters away. The photograph below was taken on the balcony outside the living room.



<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5920374/>

Looking at that apartment and infrastructure, I would certainly not want to live there and one might be surprised that considering ICNIRP's such 'conservative' limits that the network operator was given planning permission to site a base station at such close range and within direct line of sight of such a living space. From a layperson's perspective one might guess that apartment to be getting close to at least 98% of what ICNIRP deems to be a very 'conservative' safe public exposure limit or even suppose that it might be exceeding the limit? One would hope in these circumstances that the occupants might be able to complain about the siting of such infrastructure.

We have all seen such equipment and seeing that physical infrastructure in that location gives us a reasonable grasp of the power densities produced by such equipment at very, very close range. Over the 83 hour survey of the apartment, the average power density recorded at the property was just 3.8mW/m<sup>2</sup> or 3.8 milliwatts per square meter. Italy has a maximum exposure level of 1mW/m<sup>2</sup> so if that apartment were in Italy, that particular apartment would be just 3.8 times the limit. As the Italian limit is one ten thousandth of the ICNIRP limit, then the Italian limit which one may have assumed to be very conservative in relation to ICNIRP's levels, is not particularly conservative as the apartment surveyed is only exceeding the Italian limit by a factor of just under

four. It seems to me that as a starting point in terms of public health and safety, a strict legal limit of  $1\text{mW/m}^2$  is far more appropriate and one would hope that such a base station would not have been allowed to be installed at that location.  $1\text{mW/m}^2$  is still far too high in terms of safety limits in comparison with the  $0.005\text{mW/m}^2$  suggested by the BioInitiative 2012 report.

In contrast to Italy's  $1\text{mW/m}^2$ , the ICNIRP 'conservative' safety limit is a massive  $10,000\text{ mW/m}^2$  or 10 Watts per square metre as is the US FCC limit and these have to be an average taken over 6 or 30 minutes respectively and are not based upon any peak reading. So this apartment which is within just 12 meters line of sight communication with a medium sized base station is only a minuscule 0.038% of the way to breaching ICNIRP's self proclaimed 'conservative' safety standards.

One wonders what kind of infrastructure would it actually take to reach ICNIRP's standards? If we take  $10,000\text{ mW/m}^2$  and divide by the recorded average of  $3.8\text{mW/m}^2$  we get a result that in principle you could surround the apartment surveyed with 2,632 such base stations before you would get to ICNIRP's supposed 'precautionary' and 'conservative' safety limit.

In terms of cell tower and base station infrastructure, we can say that even using the higher 0.038% Stockholm figure, it would be impossible to actually get to ICNIRP's limits even if it were physically possible to install 2,632 base stations around the apartment because the power density of the radiation emitted is not a constant source but is dependent on the network usage by all the devices in the surrounding area. To replicate the same flow of data and traffic and hence power density, one would also need 2,632 times the amount of people and devices on the network which is similarly impossible. In which case we would have to take the minimum reading of all frequencies measured in the apartment of  $15\mu\text{W/m}^2$  as a base line ( $15\mu\text{W}$  or micro-watts,  $1\text{ milliwatt} = 1000\text{ micro-watts}$ ). In terms of base stations alone: one would require something in the order of 666,000 base stations before one approached the ludicrous target of ICNIRP's 'safety' limits. If a base station even cost as little as £20,000 such an experiment would cost no less than £13.3 billion to conduct so we can safely assume that no-one is ever going to carry it out even if it were physically and practically possible. **Bear in mind that these are just ICNIRP's base limits and they see room for them to be exceeded by a substantial margin** and maintain that even in that instance they would still not constitute any threat to public health!

### **Microwave Radiation Safety Levels in the UK do not exist as such**

In terms of a 'safety' level ICNIRP's are impossible to breach practically in the real world.

In practice, in much of Europe and the US, there are no real restrictions at all on the levels of radiation that we can be exposed to and the telecommunications industry has carte blanche as to the kind of infrastructure it could install in principle anywhere. In many senses one can see ICNIRP's mock limits as yet another example of effective Neoliberal deregulation which directly compromises human and environmental health & safety.

No-one has erected 666,000 cell towers or base stations within the grounds of a school, but in terms of ICNIRP's risible safety limits there would be absolutely nothing to stop someone doing it in principle as they would never breach the limit in practice. Does anyone really see the precautionary placement of 666,000 base stations within a school's grounds as being consistent with a 'conservative' base safety level with room for substantial levels above that?

Under ICNIRP's guidelines, in practice there are no limits whatsoever as to the kind of infrastructure that could be put in place. The only reason that masts and base stations are limited in the power density they output at all is purely a question of economics as the mobile network operators want them to function at the lowest cost to efficiency in terms of power consumption and it has nothing to do with ICNIRP's ridiculous 'standards'. In reality there are effectively no safety standards when it comes to wireless radiation safety and the only reasons we are 'protected' at all is due to economic cost controls, physical, aesthetic and practical restrictions and likely some self imposed safety restraint from the Mobile Network Operators (MNOs) who are obviously wary of being sued some time in the future. As any kind of 'useful' point of reference: ICNIRP's 'conservative' standards are many thousands of times beyond any even vaguely reasonable limit.

For some additional perspective, in order to average 10 Watts per square meter in real world field conditions would require frequent massive spikes and peaks of power density from 40 – 200 W/m<sup>2</sup> and higher. ICNIRP state that “For frequencies exceeding 10 MHz (which covers all forms of microwave radiation) it is suggested that the peak equivalent plane wave power density, as averaged over the pulse width does not exceed 1,000 times the Seq restrictions”. In this respect peak power density could go as high as 9.9 KW/m<sup>2</sup> and still remain within the safety ‘guidance’. As far as the biological effects of microwave radiation exposure are concerned it is the pulsed and extreme variations in strength of power density that are of most concern.

To give an additional perspective on the strength of such power density, 100W/m<sup>2</sup> is the lower end of the health & safety power density guidance for a wireless phone charging pad where the energy is only travelling a few millimeters. These levels of power density are simply obscene and would never ever be seen in real world operating conditions.

In 2012, The BioInitiative Report reduced their suggested limit of 2007 from 1mW/m<sup>2</sup> to just 5µW/m<sup>2</sup> or 5 microwatts per square meter. A mobile phone can function at power density levels as low as 0.00003 µW/m<sup>2</sup>, so even the seemingly conservative BioInitiative 5µW/m<sup>2</sup> recommendation of 2012 is still 166,000 times greater than the basic power density required to make or receive a mobile phone call whilst the ICNIRP limit is a completely staggering 333 billion times greater than these basic functional requirements.

### **What does this mean in terms of legal objections?**

In the UK, Masts up to 15 meters high (49.2 feet or twice the height of an average two story house), are within permitted developments and do not require planning permission. Only masts over 15 meters require planning permission. Small antennas and ‘de minimis’ developments, base stations etc. do not need full planning permission just a notification to the local authority. Planning permission in the few cases it is required is granted with the proviso that ICNIRP’s guidelines are not exceeded. As we have seen this is practically impossible so there could never be any objection on those grounds.

Given that the Stockholm apartment was on only 3.8 times the Italian limit, then unless we demand the right for local authorities to set their own safety standards and local authorities at least apply the Italian guideline of 1mW/m<sup>2</sup>, then no resident, association or the council itself can object to any infrastructure put in place. The local authority can deny access to its own street furniture and land but cannot stop developments on private land where a MNO is paying rent to have the infrastructure hosted. If anyone puts the Stockholm base station or one even a thousand times more powerful, within 5 meters of your house and windows then there is nothing you can do about it as although it would breach the Italian levels it will never breach ICNIRP’s limits which are 10,000 times higher.

This is Neoliberal deregulation at its very worst. It is undemocratic, unfair and places those unlucky enough to have such infrastructure foisted upon them in immediate danger with no recourse to any legal objections.

### **Have ICNIRP’s limits ever been tested?**

A rather fundamental question here is has ICNIRP or anyone else for that matter actually tested any of these exposures in anything even remotely approaching real world conditions? I simply do not see how any such thing could be done in laboratory conditions. Have ICNIRP really done testing with the highly erratic pulsed radiation that one sees in the real world from 20-50 multiple sources all acting at the same time and viciously peaking and falling between 1mW/M<sup>2</sup> and up to 10KW/m<sup>2</sup> thousands of times a second in order to confirm their safety declarations? I doubt even the software to control 20 to 50 signal generators packed into any given area could cope with simulating the erratic behavior of thousands and thousands of different devices which determine the power density in real world networking conditions. The Stockholm survey listed no less than 20 different RF sources and that is only limited because the EME-Spy 200 exposimeter they used can only log up to twenty different portions of the spectrum (measurements are given in microwatts m<sup>2</sup>).



Variable	Mean	Median	Min	Max
FM	38.3	3.4	0.0	3,441.2
TV3	4.7	0.0	0.0	308.4
TETRA I	1.2	0.0	0.0	229.3
TETRA II	0.2	0.0	0.0	33.9
TETRA III	0.1	0.0	0.0	26.5
TV4&5	3.0	0.0	0.0	2,206.2
LTE 800 (DL)	977.5	299.5	1.1	52,526.5
LTE 800 (UL)	0.0	0.0	0.0	2.5
GSM + UMTS 900 (UL)	0.0	0.0	0.0	4.5
GSM + UMTS 900 (DL)	1,236.2	459.0	2.5	44,241.5
GSM 1800 (UL)	0.0	0.0	0.0	7.5
GSM 1800 (DL)	78.9	17.8	0.3	8,442.1
DECT	27.3	5.1	0.0	4,614.8
UMTS 2100 (UL)	0.0	0.0	0.0	5.6
UMTS 2100 (DL)	301.8	92.8	0.2	18,445.0
WIFI 2G	0.0	0.0	0.0	203.5
LTE 2600 (UL)	3.9	0.0	0.0	904.7
LTE 2600 (DL)	1,137.5	70.5	0.5	95,522.5
WiMax	0.0	0.0	0.0	2.7
WIFI 5G	0.1	0.0	0.0	105.0
Total	3,810.8	1,312.9	15.2	112,317.7
Total excluding down link	78.8	27.0	0.0	4,616.2

This aggregation of multiple signals of a dynamic nature with complex interference effects was something that the EU's Policy Department for Economic, Scientific and Quality of Life Policies commented on in April 2019. Bear in mind that this report was prepared by the people responsible for overseeing the roll-out of 5G and was not intended as a critique of 5G technology

***Significant concern is emerging over the possible impact on health and safety arising from potentially much higher exposure to radiofrequency electromagnetic radiation arising from 5G. Increased exposure may result not only from the use of much higher frequencies in 5G but also from the potential for the aggregation of different signals, their dynamic nature, and the complex interference effects that may result, especially in dense urban areas.***

*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, as the signal levels and patterns interact as a closed loop system. This has yet to be mapped reliably for real situations, outside the laboratory. One aspect, for example, that is not well understood today is the unpredictable propagation patterns that could result in unacceptable levels of human exposure to*



**electromagnetic radiation.** While the International Commission on Non-Ionizing Radiation Protection (ICNIRP) issues guidelines for limiting exposure to electric, magnetic and electromagnetic fields (EMF), and EU member states are subject to Council Recommendation 1999/519/EC which follows ICNIRP guidelines, **the problem is that currently it is not possible to accurately simulate or measure 5G emissions in the real world.**

[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)

One can guarantee that none of these things have been taken into account in laboratory conditions and certainly not to the peak power levels that ICNIRP 'conservatively' deems to be safe. ICNIRP's 'safety' standards are simply not fit for any practical purpose. Even the demand for highly accurate and strictly calibrated measuring instruments which need to be re-calibrated every two years is completely meaningless given the insane spread between real world levels and ICNIRP's mockery of a 'conservative' standard.

One of the largest issues in all of this is the question as to why Italy only allow a maximum power density of 1mW/m<sup>2</sup> but in most of the rest of Europe and the US the threshold level is 10,000 times higher? Italy's mobile telecommunications do not seem to have suffered and are fully functional at that far lower power density: so why do we not all similarly apply such a precautionary standard?

### **The plot thickens: The Links Between ICNIRP, AGNIR & HPA/PHE**

In the UK at least, the answer lies within the history of three suspiciously interconnected organizations – ICNIRP, AGNIR (the Advisory Group on Non-Ionizing Radiation) and the HPA (Health Protection Agency) or PHE (Public Health England).

In 2012 AGNIR published a highly influential and now controversial report on the safety of non-ionizing radiation which is still being used today around the world as a point of reference to set standards and deflect criticism of wireless radiation in general.

The timing of the release of this report is highly suspicious. If we return to the 2011 report from the EU Committee on the Environment, Agriculture and Local and Regional Affairs, then we can see that the BioInitiative report of 2007 and a great many scientific studies at that time had many in the EU questioning the wisdom of such experimental public radiation exposure and there was strong momentum earned by concerned health professionals to persuade the EU into taking a far more precautionary approach to RF/EMF regulations within the EU.

This report as an EU document, is quite extraordinary in terms of the criticisms that it makes of ICNIRP, making conflicts of interest a central concern in its analysis of ICNIRP's role in setting the referential framework for EU safety standards and much of the rest of the world. This report was so important that I am going to quote from it extensively and whilst I urge people to read it in full (its actually not that long) then I am not so naive as to rely on everyone clicking the relevant link so apologies for quoting this at length. Please also bear in mind that this document was written as 3G was being rolled out 8 years ago and that RF and wireless infrastructure in general, and consequently the power densities of microwave radiation exposure has grown exponentially since.

*2. The potential health effects of the very low frequency of electromagnetic fields surrounding power lines and electrical devices are the subject of ongoing research and a significant amount of public debate. According to the World Health Organization, electromagnetic fields of all frequencies represent one of the most common and fastest growing environmental influences, about which anxiety and speculation are spreading. All populations are now exposed to varying degrees of electromagnetic fields, the levels of which will continue to increase as technology advances.*

*3. Mobile telephony has become commonplace around the world. This wireless technology relies upon an extensive network of fixed antennas, or base stations, relaying information with radio frequency signals. Over 1.4 million base stations exist worldwide, and the number is increasing significantly with the introduction of third generation*

technology. Other wireless networks that allow high-speed internet access and services, such as wireless local area networks, are also increasingly common in homes, offices and many public areas (airports, schools, residential and urban areas). **As the number of base stations and local wireless networks increases, so does the radio frequency exposure of the population.**

4. While electrical and electromagnetic fields in certain frequency bands have wholly beneficial effects which are applied in medicine, **other non-ionizing frequencies, be they sourced from extremely low frequencies, power lines or certain high frequency waves used in the fields of radar, telecommunications and mobile telephony, appear to have more or less potentially harmful, non-thermal, biological effects on plants, insects and animals as well as the human body even when exposed to levels that are below the official threshold values.**

5. As regards standards or threshold values for emissions of electromagnetic fields of all types and frequencies, **the Assembly recommends that the ALARA or “as low as reasonably achievable” principle is applied, covering both the so-called thermal effects and the thermic or biological effects of electromagnetic emissions or radiation. Moreover, the precautionary principle should be applicable when scientific evaluation does not allow the risk to be determined with sufficient certainty, especially given the context of growing exposure of the population, including particularly vulnerable groups such as young people and children, which could lead to extremely high human and economic costs of inaction if early warnings are neglected.**

6. The Assembly regrets that, despite calls for the respect of the precautionary principle and despite all the recommendations, declarations and a number of statutory and legislative advances, there is still a lack of reaction to known or emerging environmental and health risks and virtually systematic delays in adopting and implementing effective preventive measures. **Waiting for high levels of scientific and clinical proof before taking action to prevent well-known risks can lead to very high health and economic costs, as was the case with asbestos, leaded petrol and tobacco.**

7. Moreover, the Assembly notes that the problem of electromagnetic fields or waves and the potential consequences for the environment and health has clear parallels with other current issues, such as the licensing of medication, chemicals, pesticides, heavy metals or genetically modified organisms. **It therefore highlights that the issue of independence and credibility of scientific expertise is crucial to accomplish a transparent and balanced assessment of potential negative impacts on the environment and human health.....**

.....

27. It is certain that one cause of public anxiety and mistrust of the communication efforts of official safety agencies and governments lies in the fact that **a number of past health crises or scandals, such those involving asbestos, contaminated blood, PCBs or dioxins, lead, tobacco smoking and more recently H1N1 flu, were able to happen despite the work or even with the complicity of national or international agencies nominally responsible for environmental or health safety.**

28. Indeed, it is in this connection that **the Committee on the Environment, Agriculture and Local and Regional Affairs is currently working on the question of conflicts of interest and the urgent need for real independence of scientists involved in the official agencies tasked with evaluating the risks of products prior to licensing.**

29. The rapporteur underlines in this context that it is most curious, to say the least, that the **applicable official threshold values for limiting the health impact of extremely low frequency electromagnetic fields and high frequency waves were drawn up and proposed to international political institutions (WHO, European Commission, governments) by the ICNIRP, an NGO whose origin and structure are none too clear and which is furthermore suspected of having rather close links with the industries**

*whose expansion is shaped by recommendations for maximum threshold values for the different frequencies of electromagnetic fields.*

*30. If most governments and safety agencies have merely contented themselves with replicating and adopting the safety recommendations advocated by the ICNIRP, this has essentially been for two reasons: in order not to impede the expansion of these new technologies with their promise of economic growth, technological progress and job creation; and also because the political decision-makers unfortunately still have little involvement in matters of assessing technological risks for the environment and health.*

*31. With regard to the frequently inconclusive if not contradictory findings of scientific research and studies on the possible risks of products, medicines or, in this case, electromagnetic fields, a number of comparative studies do seem to suggest a fairly strong correlation between the origin of their funding – private or public – and the findings of risk assessments, a manifestly unacceptable situation pointing to conflicts of interest which undermine the integrity, the genuine independence and the objectivity of scientific research.*

*32. Concerning the assessment of health risks resulting from mobile telephone radio frequencies, for example, in 2006 Swiss researchers from Bern University presented the findings of a systematic analysis of all research results and concluded that there was a strong correlation between how the research was funded and the results obtained: 33% of studies funded by industrial concerns conclude that exposure to mobile telephone radio frequencies has an effect on our organism. That figure rises to over 80% in studies carried out with public funding.*

*33. Accordingly, in this field and in others, one should call for genuine independence on the part of the expert appraisal agencies and for independent, multidisciplinary and properly balanced expert input. There must no longer be situations where whistleblowers are discriminated against and renowned scientists with critical opinions are excluded when experts are selected to sit on expert committees or no longer receive funding for their research.*

That is an extremely strong and damning indictment from an EU Body which acknowledges the health risks posed by microwave radiation, suggests conflicts of interests and the unreliability of industry funded studies in comparison with publicly funded studies and all of this indicates the extent to which the EU was moving at that time to a properly conservative and precautionary ALARA or “As Low As Reasonably Achievable” safety principle.

This realistic precautionary move appeared to have been largely halted by the publication of AGNIR's 2012 report. This report merely dismissed all scientific health studies that did not suit its purposes whilst cherry picking those that did. It claimed a cut-off date for studies it would consider in order to exclude unwanted conclusions, but then admitted studies after that date if they provided the ‘right’ conclusions. It refused to acknowledge or even mention that in May 2011 the International Agency for Research on Cancer (IARC) reclassified RF-EMFs as a 2B possible human carcinogen.

The report was loudly trumpeted and promoted in the main stream media. George Monbiot wrote the following at the Guardian in April 2012 in order to attempt to directly discredit all and any environmental RF/EMF protesters under the claim that it was damaging the greater environmental movement.

### **Protesting against mobiles is damaging the environmental movement**

*As a new study shows that mobile phone usage is not a health risk, campaigners should concentrate on other targets.*

*....The new study by the Health Protection Agency confirms the overwhelming trend in evidence on this issue (in particular the outputs of the massive Interphone project). It finds that:*

- *Laboratory studies have detected “no convincing evidence that RF [radiofrequency] fields cause genetic damage or increase the likelihood of cells becoming malignant.”*

- *Animal studies find no evidence that the levels of microwave radiation produced by mobile phones “affect the initiation and development of cancer” and no consistent evidence that they harm the brain, the nervous system, hearing or fertility.*
- *Studies on humans suggest no cognitive effects and no acute symptoms of any kind.*
- *Evidence from epidemiological studies “does not suggest that use of mobile phones causes brain tumors or any other type of cancer.”*
- *Overall, the evidence “has not demonstrated any adverse health effects” in either adults or children.*

<https://www.theguardian.com/environment/georgemonbiot/2012/apr/27/protesting-mobile-phones-environmental-movement>

Public Health England are still using AGNIR's report as their basis for claiming that low level microwave radiation exposure is safe and deflecting any claims to the contrary.

It was not until December 2016 that a peer review of the AGNIR 2012 report was carried out by Dr Sarah J. Starkey, a UK neuroscientist. Dr Starkey reaches some truly shocking conclusions about the nature of AGNIR's report which are highly significant given the political context in which it was launched when the EU was heading toward adopting the ALARA or “As Low As Reasonably Achievable” safety principle. Dr Starkey gives the abstract of her review below.

*Abstract: The Advisory Group on Non-ionizing Radiation (AGNIR) 2012 report forms the basis of official advice on the safety of radiofrequency (RF) electromagnetic fields in the United Kingdom and has been relied upon by health protection agencies around the world.*

*This review describes incorrect and misleading statements from within the report, omissions and conflict of interest, which make it unsuitable for health risk assessment. The executive summary and overall conclusions did not accurately reflect the scientific evidence available.*

*Independence is needed from the International Commission on Non-Ionizing Radiation Protection (ICNIRP), the group that set the exposure guidelines being assessed. This conflict of interest critically needs to be addressed for the forthcoming World Health Organization (WHO) Environmental Health Criteria Monograph on Radiofrequency Fields.*

*Decision makers, organizations and individuals require accurate information about the safety of RF electromagnetic signals if they are to be able to fulfil their safeguarding responsibilities and protect those for whom they have legal responsibility*

<https://www.degruyter.com/downloadpdf/j/reveh.2016.31.issue-4/reveh-2016-0060/reveh-2016-0060.pdf>

Basically we can understand Dr Starkey's report in two ways. Firstly as an examination as to why AGNIR and the HPA(PHE) were prompted to cover up evidence of RF/EMF health hazards and secondly the methodologies of exclusion they employed as to how this cover up was executed.

As to why a cover up was required, then this directly arose from the conflict of interests that the rapporteur on the EU 2011 report highlighted and suggested to be an area of important focus. If we look at the table below we can see that there were very close connections between ICNIRP, AGNIR and the Department of Health and the Health Protection Agency which later became Public Health England.

REPORT THIS AD

REPORT THIS AD

Table 1: AGNIR in 2012 and 2016 and membership of ICNIRP, PHE or DH.

AGNIR 2012		AGNIR 2016	
Swerdlow A.J. (Chair)	ICNIRP Chair of standing committee on epidemiology	Swerdlow A.J. (Chair)	formerly ICNIRP
Conney S.W.	DH	Conney S.W.	DH
Coulton L.A.		Coulton L.A.	
Duck F.A.		Duck F.A.	ICNIRP
Feychting M.	ICNIRP	Feychting M.	Vice-Chair ICNIRP
Haggard P.		Haggard P.	
Lomas D.J.		Lomas D.	
Noble D.			
Mann S.M.	HPA	Mann S.M.	ICNIRP, PHE
Maslanyj M.P.	HPA	Maslanyj M.P.	PHE
Meara J.R.	HPA	Meara J.R.	PHE
		O'Hagan J.O.	ICNIRP, PHE
Peyman A.	HPA	Peyman A.	PHE
		Powers H.	
		Rhodes L.	
Rubin G.J.		Rubin G.J.	
Sienkiewicz Z.J.	ICNIRP, HPA	Sienkiewicz Z.J.	ICNIRP, PHE
		Tedstone A.	PHE
		Young A.	

PHE was formerly known as the Health Protection Agency, HPA. PHE is part of the Department of Health, DH.

In the AGNIR committee of 2012 three members were also members of ICNIRP and 6 members were also members of the UK Health Protection Agency and the Department of Health. One of the HPA members was also a member of ICNIRP. By 2016 we see there were no less than 6 members of ICNIRP and 8 members of PHE and the department of health. Of those 8 PHE members, three of them were also members of ICNIRP. One should note that A.J. Swerdlow was chair of both AGNIR and ICNIRP. The same A.J.Swerdlow and his wife who owned shares in Cable and Wireless Worldwide, Cable and Wireless Communications and BT.

This obvious conflict of interests between these 3 inter-related organizations is completely unacceptable. Neither the HPA (the former incarnation of PHE) nor AGNIR could ever take an objective view of peer reviewed scientific evidence presented to them because they all strictly adhere to ICNIRP's thermal only paradigm in the first place. It would be impossible for the PHE members to acknowledge any evidence presented to them that contradicted this fundamental assumption as that would necessarily involve them having to resign from their prestigious positions as committee members of both AGNIR and/or ICNIRP and admit that they have been wrong all along. Those members of PHE who members of ICNIRP were also and AGNIR would have a huge influence on the rest of PHE who would completely defer to the ICNIRP and AGNIR members on these issues as they would be deemed to be the 'experts' who sat on such prestigious committees. It would be virtually impossible to even try and disagree with them even in the unlikely event that any members of PHE managed to find either the morals or courage to do so in the first place.

Dr Starkey comments on the nature of this conflict of interests in her analysis.

*When the group charged with assessing whether there is evidence of health effects occurring at exposures below current ICNIRP values have members who are responsible for setting the guidelines, it introduces a conflict of interest. How can AGNIR report that the scientific literature contains evidence of harmful effects below the current guidelines when several of them are responsible for those guidelines? PHE provide the official advice on the safety of wireless signals within the UK, but having members in ICNIRP introduces a conflict of interest which could prevent them from acknowledging adverse effects below ICNIRP guidelines.*

In this respect PHE's role as a public health agency: is very much a case of the wolves guarding the sheep. They cannot acknowledge the dangers of low-level radiation exposure without trashing their reputations. In such a case, any such admission would make their membership of all 3 bodies completely untenable. There was no way that such radical radiation extremists were ever going to allow their decisions to be called into question. It was always guaranteed that such ideologically entrenched career scientists are compelled to dismiss all scientific

evidence that contradicted their views by whatever means necessary. To add insult to injury the HPA even went as far as theatrically staging a warm reception and welcome of their own report and falsely represented it as a study that was 'independent' of them, thereby concealing their conflicts of interest in order to suggest that they were taking an objective view of the report.

## 1. HPA response to the 2012 AGNIR report on the health effects from radiofrequency electromagnetic fields

*The Health Protection Agency welcomes this comprehensive and critical review of scientific studies prepared by the independent Advisory Group on Non-ionising Radiation (AGNIR) ...*

*AGNIR's main conclusion is that, although a substantial amount of research has been conducted in this area, there is no convincing evidence that RF field exposures below guideline levels cause health effects in adults or children. These "guideline levels" are those of the International Commission on Non-Ionizing Radiation Protection, which already form the basis of public health protection in the UK and in many other countries.*

*Therefore, a recommendation to follow the ICNIRP guidelines will remain central to HPA's advice on exposures to RF fields. HPA considers the reasons set out in 2004 for recommending adoption of these guidelines in the UK remain valid.*

<https://www.gov.uk/government/publications/radiofrequency-electromagnetic-fields-health-effects/health-protection-agency-response-to-the-2012-agnir-report-on-the-health-effects-from-radiofrequency-electromagnetic-fields>

How convenient for ICNIRP, AGNIR, the HPA and DH to jointly declare business as usual whilst pretending to be separate entities. No less than 6 members of the HPA and DH were responsible for drawing up the report in the first place so this staging of a warm welcome as if they were not involved and implicated in its production is entirely disingenuous. It is no more credible than a novelist writing a welcoming critical review of their own latest book moments after it hit the shelves.

In terms of a public health scandal, the HPA (PHE) clearly became implicated in a cover-up. As Dr. Starkey concludes.

*PHE and AGNIR had a responsibility to provide accurate information about the safety of RF fields. Unfortunately, the report suffered from an incorrect and misleading executive summary and overall conclusions, inaccurate statements, omissions and conflicts of interest. **Public health and the well-being of other species in the natural world cannot be protected when evidence of harm, no matter how inconvenient, is covered up.***

<https://www.degruyter.com/downloadpdf/j/reveh.2016.31.issue-4/reveh-2016-0060/reveh-2016-0060.pdf>

So we now see why with the EU heading toward ALARA principles that evidence of harm had to be suppressed and that those ICNIRP and AGNIR members who set the completely inappropriate standards in the first place would be those whose reputations had to be most closely guarded. AGNIR's 2012 report effectively set back our chance of greatly reducing the mounting risks of microwave radiation to public health by at least 7 years.

In many respects, since Dr Starkey's review was published the government and PHE have become implicated in a cover up of the cover up. AGNIR was disbanded in May 2017, just 5 months after Dr Starkey published her review. The government made the risible claim that the reason for this was that AGNIR had 'completed' its work. Since then responsibility for supposedly monitoring this public health issue has supposedly been shifted to COMARE. Suspiciously no members of COMARE appear to be members of ICNIRP suggesting that the government has quietly removed the impediment of conflict of interest in the current group but cannot erase it from its history. PHE still remains firmly committed to ICNIRP's and AGNIR's principles because they remain historically tied to them and cannot admit otherwise without bringing about one of the greatest public health scandals of all time. Needless to say that Dr Starkey's inconvenient conclusions have never been published or

acknowledged by establishment and industry stooges such as George Monbiot and the same main stream media who were so willing to give maximum coverage and publicity to AGNIR's original 2012 report.

Having covered **why** this cover up was necessary we now come to the demonstration of **how** the cover up was executed as a general misrepresentation of the scientific studies AGNIR wished to dismiss. One particularly interesting aspect of this is that AGNIR and ICNIRP are not prepared to accept any real-world studies based on exposures to real base stations and real phones as they deem that they do not match their laboratory condition 'standards' in dosimetry. I stated earlier that I thought it highly unlikely that ICNIRP and AGNIR were capable of reproducing any even close approximation in laboratory conditions to the radiation effects that we are subjected to in the real world and Dr Starkey backs this point of view when she states:

*Some studies, mostly those which had tested signals from real mobile devices, were dismissed as uninterpretable because they had not described the dosimetry, the process of determining internal electromagnetic quantities relating to exposure in tissues, in enough detail. Limited descriptions restrict possible interpretations, but do not make them uninterpretable.*

*If the question is 'do mobile phone signals damage male fertility?', real phone signals are highly relevant because they allow possible effects of the complex patterns of fields to which humans are exposed to be investigated.*

*ICNIRP only accept thermal effects of RF fields and focus on average energy absorbed. Highly controlled, simulated signals with descriptions of overall specific absorption rates (SARs) are suited to the assessment of temperature rises in cells or tissues. Real signals make it more difficult to measure average energy, but have characteristics which controlled, simulated signals lack.*

*The complex field patterns, with variable peak field strengths and intervals between transmissions, may influence biology in ways that controlled, simulated patterns cannot, but they are not represented by time-averaged, duty factor reductions of described energy absorption.*

*Responses to RF fields can be greater for intermittent exposures than continuous and depend upon the pulse characteristics for the same average power. Effects can be dependent on frequency, modulation, signal strength (intensity windows), durations of exposure and polarization.*

*For the nervous system, complex signals from real devices may modulate neuronal activity, similar to endogenous electric field ephaptic (non-synaptic) coupling in the brain. There is evidence that endogenous electric fields feedback to modulate neuronal activity. Fields with amplitudes similar to those found in vivo, applied to neocortical brain slices, modulated and entrained neuronal spiking activity. Irregular patterns of fields with complex dynamics, which mimicked in vivo fluctuations, entrained neuronal activity more strongly than sine waves.*

*There are valid reasons for testing the effects of signals from real mobile devices and dismissing these limited and misrepresented the evidence.*

There are many other examples of such exclusions in Dr Starkey's review, but I have included this particular one here because as a Neuroscientist, such topics are directly within her immediate field of study. All exclusions are deployed to try and ensure that only the right kind of data is given the publicity they wish to air.

I would say that there are far more than valid reasons for testing effects of signals in the real world with real infrastructure. In my view they are far more informative than any laboratory model that completely fails to account for all the massive pulsing and spiking of dozens of different interacting RF/EMF sources all at the same time. The laboratory simulations tell us nothing about what we are being exposed to in the real world and nothing about the health effects produced in the real world. ICNIRP have never proved that such complex forms of exposure would not lead to a thermal increase or not cause cell damage in laboratory conditions because they have never even carried out such experiments. In effect what this means is that ICNIRP are setting safety levels in the



real world by reference to an ideologically restrictive thermal laboratory model that is completely disconnected from reality. One wonders then how in the 2018 guidelines cited earlier, that they possibly saw fit to make the outlandish claim that “These thresholds were derived to be **strongly conservative** for **typical exposure situations and populations**,” when they have never even studied or don’t know what ‘typical’ real world ‘exposure situations’ and ‘populations’ actually consist of as they rule out the relevance of any real world data, measurement or analysis on the basis of demands for a laboratory standard quality of dosimetry?

ICNIRP, AGNIR, the HPA, Public Health England and Government were and are not in the business of protecting people, due to economic considerations, they are purely in the business of protecting and advancing the interests of the telecommunications industry and others. Throughout history, GDP and economics have always trumped public health considerations and any negative evidence will continue to be smeared and covered up until such a time as the health crisis will be so advanced that it will become impossible to deny. PHE will continue to be compromised by its history unless a full public enquiry takes place that exposes the extent and machinations of this cover up and that is unlikely to ever take place until it’s too late. As usual in such circumstances, no-one will ever be held accountable and responsible. The AGNIR 2012 report has been exposed to be deeply flawed and at the very least should be withdrawn. It is a travesty that PHE carry on referring to it in order to defend their historically compromised position. Indeed given this historical compromise, monitoring and review of human and environmental effects of long term low level microwave exposure should be completely removed from PHE’s remit and responsibility and be passed to DEFRA as part of their air quality and pollution responsibilities.

One might naively hope that the World Health Organization might offer some prospect of an objective view of this potential public health crisis, but unfortunately ICNIRP and AGNIR members have fully infiltrated that organization also.

**Table 2:** Named contributors to the WHO Environmental Health Criteria Monograph on Radiofrequency Fields [(99), in preparation] and membership of ICNIRP or AGNIR.

**Core group**

Feychting M.	Vice-Chair ICNIRP, AGNIR
Mann S.M.	ICNIRP, AGNIR
Oftedal G.	ICNIRP
van Rongen E.	Chair ICNIRP
Scarfi M.R.	
Zmirou D.	

**Additional experts**

Aicardi G.	
Challis L.	Formerly AGNIR
Curcio G.	
Hug K.	
Juutilainen J.	ICNIRP
Lagorio S.	
Loughran S.	ICNIRP
Marino C.	ICNIRP
McNamee J.	
Naarala J.	
Peyman A.	AGNIR
Röösli M.	ICNIRP
Rubin G.J.	AGNIR
Schoemaker M.	
Selmaoui B.	
de Sèze R.	ICNIRP
Sienkiewicz Z.J.	ICNIRP, AGNIR
Simko M.	
Vijaylaxmi	
Zeni O.	

<https://www.degruyter.com/downloadpdf/j/reveh.2016.31.issue-4/reveh-2016-0060/reveh-2016-0060.pdf>

The WHO is currently embarking on a mission to 'harmonize' safety standards. Basically, this means getting everyone to accept ICNIRP's standards.

*With 54 participating countries and 8 international organizations involved in the International EMF Project, it provides a unique opportunity to bring countries together to develop a framework for harmonization of EMF standards and to encourage the development of exposure limits and other control measures that provide the same level of health protection to all people.*

<https://www.who.int/peh-emf/standards/en/>

This can be seen as an attempt to make public high radiation exposure more democratic in the sense that everyone will be routinely exposed to high levels without any reasonable form of restriction.

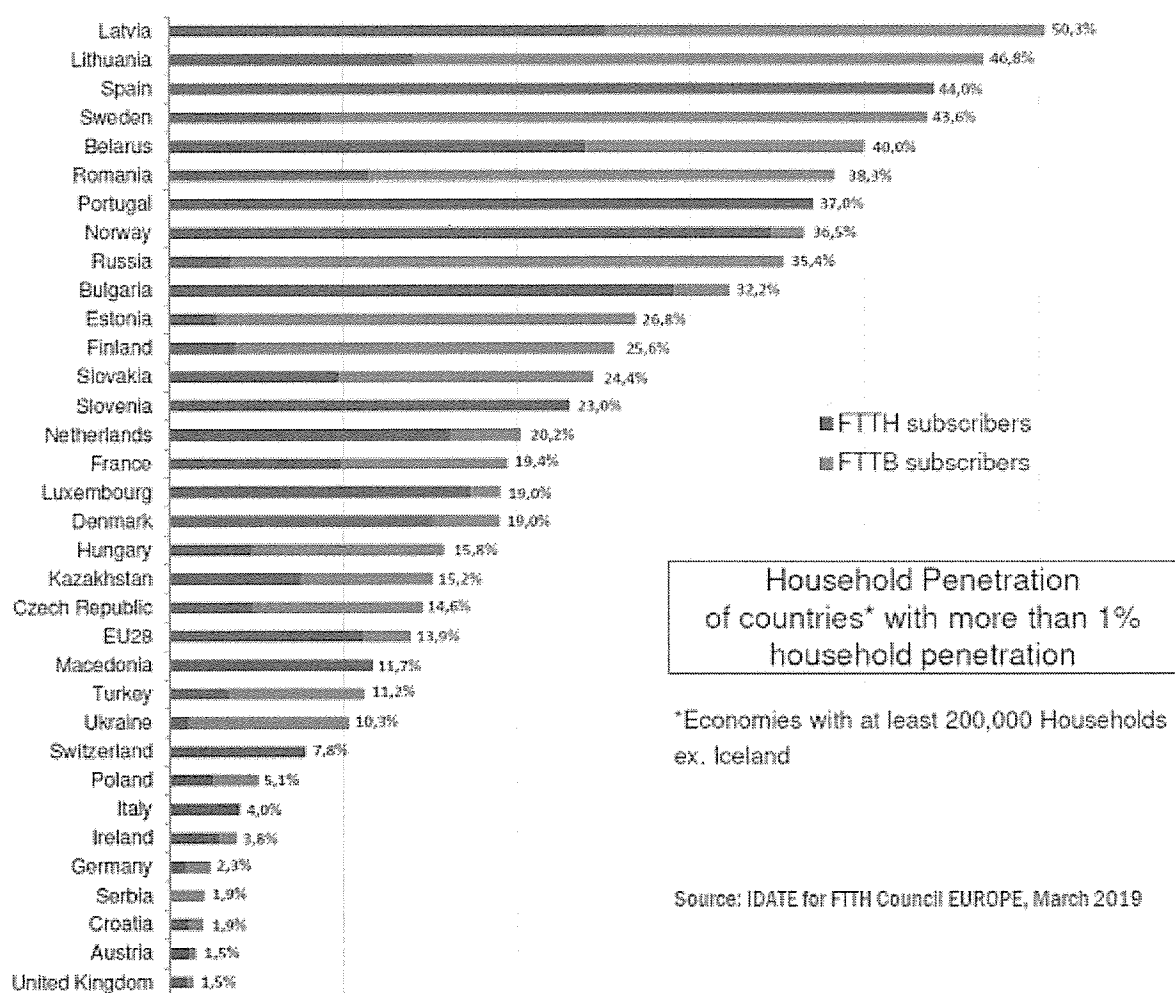
**What role did a 30 year old political decision play in all of this?**

Whilst all of these things are deeply suspicious and disturbing, then there is also a very sensitive political element to this story which must also be taken into consideration with regard to PHE and the government's completely cavalier attitudes to wireless microwave radiation safety and public health.

As much of the high intensity of the profile of current interest in this topic is being driven by the threat to public health presented by the roll-out of all the additional frequency ranges of exposure of 5G wireless technology then a common criticism of any critique is that it is written off as Russian trolls trying to sabotage the UK and US race to roll-out 5G because Russia is behind in the technology.

This is misleading to say the least. For decades now Russian scientists have been well aware of the health risks associated with wireless microwave radiation and Russia's limits are 100 times lower than in the UK or US. Russia has no particular political or economic need to roll-out aggressive wireless technology because it has massively invested in optical Fiber to the Home/Building infrastructure. (FTTH/B). The chart below shows the success levels of different European countries in terms of FTTH/B roll-out to their populations.

### FTTH/B Ranking – European ranking



<https://www.ispreview.co.uk/index.php/2019/03/uk-finally-joins-2019-ftth-ultrafast-broadband-country-ranking.html>

Spain and Sweden have rolled out superfast FTTH/B Broadband to 44% of their populations and Russia has rolled out FTTH/B connections to 35.4% which is considerable when one considers the sheer size of the country and its population of 144.5 million people. In contrast the UK as of March 2019 had managed just 1.5% and languishes at the bottom of the list only just making it past the 1% inclusion proviso.

Most of the so called 'Fiber' broadband connections in the UK are actually Fiber to the Cabinet or FTTC connections and not true fiber optic FTTH/B connections. FTTC means that the Fiber part of the connection terminates at the cabinet and the rest of the connection is made over copper wire. This means that UK fiber

broadband connections are restricted to around 80 Mbps whereas in Russia, Sweden and Spain etc, then their true FTTH/B connections could be upgraded with multimode fiber optic cable to reach up to 10 Gbps and importantly FTTH/B connections are synchronous in that they have the same downlink and uplink capabilities.

It is the failure to roll out FTTH/B fiber that is driving countries such as the UK into pushing for the roll out of 5G. How is it that the UK and also the US find themselves so far behind in the roll-out of the alternative, completely safe, radiation free FTTH/B connections?

The answer we find is that it is a direct result of an extreme political blunder made by Margaret Thatcher's government toward the end of her tenure as Prime Minister.

This story was reported by [techradar.pro](http://techradar.pro) back in 2014.

*The story actually begins in the 70s when Dr Cochrane was working as BT's Chief Technology Officer, a position he'd climbed up to from engineer some years earlier.*

*Dr Cochrane knew that Britain's tired copper network was insufficient: "In 1974 it was patently obvious that copper wire was unsuitable for digital communication in any form, and it could not afford the capacity we needed for the future."*

*He was asked to do a report on the UK's future of digital communication and what was needed to move forward.*

*"In 1979 I presented my results," he tells us, "and the conclusion was to forget about copper and get into fiber. So, BT started a massive effort – that spanned six years – involving thousands of people to both digitize the network and to put fiber everywhere. The country had more fiber per capita than any other nation.*

*"In 1986, I managed to get fiber to the home cheaper than copper and we started a program where we built factories for manufacturing the system. By 1990, we had two factories, one in Ipswich and one in Birmingham, where we were manufacturing components for systems to roll out to the local loop".*

*At that time, the UK, Japan and the United States were leading the way in fiber optic technology and roll-out. Indeed, the first wide area fiber optic network was set up in Hastings, UK. But, in 1990, then Prime Minister, Margaret Thatcher, decided that BT's rapid and extensive roll out of fiber optic broadband was anti-competitive and held a monopoly on a technology and service that no other telecom company could do.*

*"Unfortunately, the Thatcher government decided that it wanted the American cable companies providing the same service to increase competition. So, the decision was made to close down the local loop roll out and in 1991 that roll out was stopped. The two factories that BT had built to build fiber related components were sold to Fujitsu and HP, the assets were stripped, and the expertise was shipped out to South East Asia.*

*"Our colleagues in Korea and Japan, who we were working with quite closely at the time, stood back and looked at what happened to us in amazement. What was pivotal was that they carried on with their respective fiber roll-outs. And, well, the rest is history as they say.*

*"What is quite astonishing is that a very similar thing happened in the United States. The US, UK and Japan were leading the world. In the US, a judge was appointed by Congress to break up AT&T. And so AT&T became things like BellSouth and at that point, political decisions were made that crippled the roll out of optical fiber across the rest of the western world, because the rest of the countries just followed like sheep.*

*"This created a very stop-start roll-out which doesn't work with fiber optic – it needs to be done en masse. You needed economy of scale. You could not roll out fiber to the home for 1% of Europe and make it economic, you had to go whole hog.*

*"It's like everything else in the electronics world, if you make one laptop, it costs billions; if you make billions of laptops it costs a few quid".*

By the late 1980's the UK had more fiber per capita than anyone in the world. BT had rolled out the very first wide area fiber optic network in the world in Hastings. They had purpose-built factories and used economies of scale to make the roll-out of fiber optic networks cheaper than copper. At that time BT and the UK were leading the world in FTTH/B technology.

Despite the tremendous advantages the UK had at that time, Margaret Thatcher made the decision to scrap BT's project out of blind adherence to the principles of Neoliberal economics whose philosophy is informed by the false assumption that efficiencies can only be made via competitive markets and consequently deemed all of BT's achievements as threatening this principle so BT's achievements were consequently deemed to be anti-competitive. This was likely a result of pressure from competing corporations whose only option was to drag BT down to their level.

In cases of massive public infrastructure projects such as these, the Neoliberal economic model is not appropriate. BT had done all the hard work and were ready to revolutionize the UK's communications networks, as such BT were in the best position to roll-out super-fast fiber optic networks more efficiently than any idealized system of free market competition could produce. This incredible opportunity was simply thrown away.

To see the UK fall from leading the world in FTTH/B networks to languish at the bottom of the European rankings is dismal given what could have been put in place nationally over a decade ago at reasonable costs. Given how central such networks have become to business and commerce, to industry and the general public: then this has to rank as one of the worst and most incompetent political decisions in history and it was sadly replicated in the US who are now already being exposed to mmWave extremely high frequency radiation as a result.

Who ultimately must pay the price for this incompetence? Sadly, the people. We have been denied access to completely safe, wired super-fast broadband and this political error is also simultaneously driving the roll-out of 5G technology in order to try and rectify the original policy mistake. Decisions taken 30 years ago are now putting the health and safety of the public into jeopardy as we are being forced to endure more and more extreme levels of wireless radiation exposure to compensate for such bad policy.

### **This is about Public Health and is not a party-political issue**

Although the conservative government of Margaret Thatcher was responsible for this poor decision, I should stress that this is not a politically motivated criticism. Unfortunately, all political parties, including the Greens are currently being completely cavalier about such public health issues. 5G and the IoT have been falsely identified as a form of technological savior to issues such as climate change and when one also considers all the supposed economic benefits that are being trumpeted about such technology then it is easy to understand why every political party is on board with the industry. This is very much part of the problem.

### **Conclusion**

Given this debacle, and PHE's own compromised conflicts of interest and pressure from the industry not to adopt anything approaching an ALARA radiation standard as it looked to be likely to happen in 2012, then taken collectively it is no surprise that Public Health England and the government have been motivated into suppressing evidence as to the serious health effects that are currently being caused by existing and legacy wireless radiation exposure and remain resolutely in denial that 5G technology will prove any kind of additional threat to public health.

All of this is completely unacceptable just as is our acceptance of ICNIRP's safety standards as being in any way meaningful or appropriate. We must urge local governments to immediately adopt the Italian 1mW/m<sup>2</sup> standard as in most cases this will only require a small reduction in power supplied to a few base stations to bring them into line. From there we must timetable and plan a move toward reducing exposure to an open air maximum

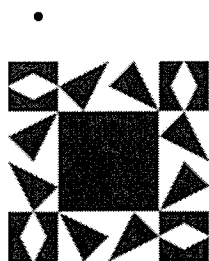
of  $5\mu\text{W}/\text{m}^2$  proposed by the BioInitiative 2012 report with a limit of  $1\mu\text{W}/\text{m}^2$  in the home, workplace, schools and other public buildings with the ultimate goal of As Low As Reasonably Achievable standards.

Concurrently with this we should prioritize the roll out of super-fast FTTH/B Fiber to the home and building connections. In terms of mobile phone data usage most people would vastly prefer unlimited 1-10Gbps synchronous Fibre connections at home which they can also use via their phones using the safest form of wired, Bluetooth or WiFi connections conforming to ALARA standards, rather than sign up to expensive individual mobile phone contracts for asynchronous, more limited connectivity and for everyone to be exposed to increasingly saturated radiation as a result.

In technological terms such a safe wireless environment has always been a technically reachable target, but without anything even approaching any kind of realistic safety limit on power density and infrastructure there has never been any impetus for the industry to ever seriously take such things into consideration.

Central governments and bodies such as ICNIRP, AGNIR and PHE cannot be trusted with ensuring our health and safety and as our exposures are such a localized phenomenon then we and our local governments should decide what limits we should be exposed to in direct democratic consultation with the people, with extra weight being given to those most effected by such infrastructure. Ideally, we would strive for the ALARA (As Low As Reasonably Achievable) standards and push to absolutely minimize our exposures to microwave RF/EMF. The lack of general public knowledge on these subjects is distressing but not surprising given that the majority of the main stream media have been captured by corporations and interests in just about every field.

Lastly, the epidemiological evidence is globally being presented daily in medical practices around the world and there is no system in place for recording and organizing this real-world data. There is no reason such a full data gathering system could not be put in place to capture this data and reveal the true extent of the problem.



**Published by Simon Hodges**

