

OBJECTIONS to the OFCOM PROPOSAL

“Proposed measures to require compliance with international guidelines for limiting exposure to electromagnetic fields (EMF)”

Issued February 21 2020 Closing Date May 20 2020

The proposal raises many questions which need to be answered before implementing the compliance with ICNIRP guidelines in the Wire Telegraphy Act. After full consideration of the proposal it is clear a different strategy other than self certification against ICNIRP guidelines set in Law is needed. More clearly defined measurement and auditing procedures at the time of installation and post installation is required for regulation which ensures public safety.

It is suggested that a body other than Ofcom is created for overseeing pulsed microwave pollution regulation due to Ofcoms conflict of interests.

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1 GENERAL OBJECTIONS

1.1 Moving Targets

We object to the proposal on the grounds that licensees are being asked to comply to exposure levels in the ICNIRP guidelines. The ICNIRP 2020 guidelines are not the only guidelines which PHE refer to. PHE clearly state that they also rely on other bodies.

By putting into law adherence to ICNIRP guidelines, the practical procedural relationship between PHE and Ofcom is immediately brought into question.

The roll out of 5G implies an exponential increase in exposure to radiation which has not been presented in a risk assessment report. PHE says that it is “unlikely” that radiation levels will exceed ICNIRP guidelines as a result of 5G deployment but say they are continually monitor this. They also say should any changes in the overall trend in research occur about health effects they will adjust their guidelines to reflect that. There is currently a body of scientists calling for

pulsed microwave radiation to upgraded from a class 2B carcinogen to a Class 2A or even Class 1 Carcinogen contrary to ICNIRPS guidelines for example.

Thus there is a moving benchmark for safety on PHE side whilst Ofcom are proposing regulating licensees solely against ICNIRP guidelines. Should it become apparent that new research emerges which is presented through a body other than ICNIRP there are no procedures in the proposal to apply and enforce changes for this circumstance.

Also there are no procedures defined regarding the reissuing of certificates and audits should ICNIRP lower or change their guidelines.

1.2 Liability

The proposal implies that Ofcom are addressing the public's concerns by upgrading the current level of regulation which is compliance with ICNIRP as a "Code of best Practice" to a condition in the "Wireless Telegraphy Act".

Overview Section 1.1

"Demand for radio spectrum continues to increase, driven by the development of new technologies opening up new services and applications and allowing the use of spectrum in higher frequency bands. Against this background, **some people have raised concerns around the safety of EMF emissions, particularly from new technologies such as 5G.**"

The 2020 ICNIRP guidelines are being revealed as completely inadequate by many scientists doctors and official bodies who know that there are non thermal harmful biological effects which happen at exposure levels much lower than ICNIRP's. Also, many countries have set guideline levels 100 times lower than here in the UK, including Italy, Poland and Russia, why is that?

Also ICNIRP have a liability disclaimer against their guidelines and so this means the proposal to put compliance to ICNIRP in the Wireless and Telecoms Act gives no real assurance whatsoever.

ICNIRP's disclaimer ...

*ICNIRP DISCLAIMER "The ICNIRP undertakes all reasonable measures to ensure the reliability of information presented on the website, but does not guarantee the correctness, reliability, or completeness of the information and views published. The content of our website is provided to you for information only. **We do not assume any responsibility for any damage, including direct or indirect loss suffered by users or third parties in connection with the use of our website and/or the information it contains, including for the use or the interpretation of any technical data, recommendations, or specifications available on our website**"*

Also it needs to be noted that PHE also have a disclaimer as stated in a letter from their solicitors,

"The guidance is not maintained and revised by PHE for the explicit purpose for any other body undertaking any other statutory function"

1.3 Monitoring Exposure and Overall Responsibility

Even if Ofcom require licensees to comply with ICNIRP guidelines , ICNIRP defer responsibility back to the public to "limit exposure" to HF (High Frequency) emissions when they state...

"To avoid hazards to health and prevent adverse interaction with high frequency fields (i.e. to prevent whole-body heat stress and excessive localized heating), ICNIRP recommends limiting

the exposure to HF so that the threshold at which these interactions become detrimental is never reached”

Even if instruments to measure HF (High frequency radiation) were commercially available for bandwidths over 10GHZ 5G which currently, they are not, is this the public’s responsibility? Is it even possible when we are daily exposed to so many different sources of pulsed non ionising radiation from a myriad of masts, our own devices, neighbours devices? How do we identify where the hotspots of interference patterns are? Is it practical to be on continual guard with acoustimeters to gain an accurate measure of what we are exposed to?

The delineation of responsibility for safety from exposure to NIR is not made clear in this proposal. It is inferred that by Ofcom regulating licensees to comply to ICNIRP that safety is assured when this is far from the case.

1.4 Vulnerable Groups

Questions about vulnerable groups in the latest ICNIRP 2020 guidelines need to be answered before setting compliance to these in Law.

From the 2002 ICNIRP philosophy document.

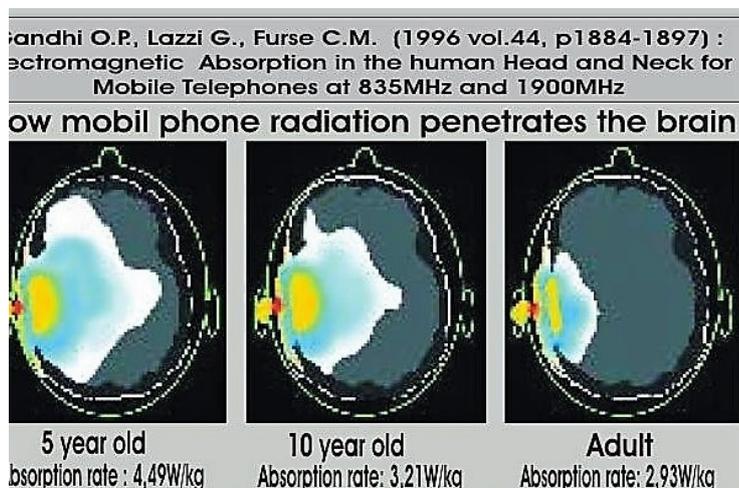
<https://www.icnirp.org/cms/upload/publications/ICNIRPphilosophy.pdf>

“Different groups in a population may have differences in their ability to tolerate a particular NIR exposure.

For example, children, the elderly, and some chronically ill people might have a lower tolerance for one or more forms of NIR exposure than the rest of the population. Under such circumstances, it may be useful or necessary to develop separate guideline levels for different groups within the general population, but it may be more effective to adjust the guidelines for the general population to include such groups.

Some guidelines may still not provide adequate protection for certain sensitive individuals nor for normal individuals exposed concomitantly to other agents, which may exacerbate the effect of the NIR exposure, an example being individuals with photosensitivity. Where such situations have been identified, appropriate specific advice should be developed within the context of scientific knowledge.”

The ICNIRP 2020 guidelines do not explain why they are now including vulnerable groups in the “Public” category having clearly stated previously that these groups may have a lower tolerance for one or more forms of Non ionising radiation compared to the rest of the population. Research clearly demonstrating that children’s brains absorb more radiation still stands.



(Ghandi, Lazzi, Furse 1996 “Electromagnetic Absorption in the Human Head and Neck for Mobile Telephones at 835 and 1900 MHz” IEEE Transactions on Microwave Theory and Techniques 44(10):1884 - 1897 ·November 1996)

1.5 Metal Implants

Safety is not assured by any law requiring compliance with ICNIRP guidelines for all people with any kind of medical implants including metallic fillings in our teeth.

In 2020 ICNIRP 2020 Guidelines page 3

“Metallic implants may alter or perturb EMF’s in the body, which in turn can affect the body both directly (via direct interaction between field and tissue)and indirectly (via an intermediate conducting object). “

1.6 Conflict of Interest

Ofcom receive huge income from Telecoms form selling off the bandwidth for 5G. Is this a glaring conflict of interest? How is it correct that Ofcom are responsible for regulation of licensees emission levels?

DETAILED QUESTIONS

2.1 Overview

PAGE 3

OVERVIEW para. “We are proposing in brief” First bullet point.

“This condition would apply to all equipment which can transmit at powers above 10 Watts (including, for example, the licences of mobile phone companies, TV and radio broadcasters and **most** point-to-point microwave links 2).

“Poin t-to-point microwave links (also called Fixed Terrestrial Links or Fixed Wireless Systems) refer to terrestrial based wireless systems, operating between two or more fixed points. They are used to provide network infrastructure and customer access applications across a wide range of frequency bands, currently ranging from 450MHz to 86GHz.”

Specifically what microwave links are not being included in the proposal?

OVERVIEW – para. “*We are proposing in brief.*” Bullet point 2

How are emissions from satellites going to be regulated?

Records

OVERVIEW para. “*We are proposing in brief.*” Bullet point 2

*“we are proposing that spectrum licensees **keep records** (including the results of **any measurements, tests and calculations**) that demonstrate how they have complied with the ICNIRP Guidelines.”*

a)Are these records to be made publicly available? How will these records be checked?

They need to be available to the public as individuals are expected to monitor their own health in regard to HF(High Frequency) pulsed microwave radiation exposure as ICNIRP says “we advise you to limit your exposure to HF”. **How can the public do that if they don't know what they are exposed to?**

b)“Any measurements” This is loose and does not specify that measurements must be taken and how often these measurements must be checked. Stringent rules are needed about how, when and how often, measurements should be taken. Peak readings in a football stadium with a crowd of 5000 plus all streaming virtual reality applications will yield different measurements to same masts at 3 am.

Spot checks by Ofcom on licensees records without specifying schedules of testing isn't satisfactory.

When readings are taken around around masts they vary at different times of day and even within 5 minutes spikes are seen.

What commitment by Ofcom is there to enforce regular reliable measurement of emissions?

c) Self policing (see later sections about compliance to IEE and CELENEC codes)

Licensees have an interest in showing they comply so the question is can they be relied upon to self certify?

Its not going to be in their interest to take measurements at peak times.

OFCOM receive money from Telecoms for sales of bandwidth which can be seen as conflict of interest if they have the responsibility to regulate the very same companies.

Is a separate regulatory body is needed?

d) “calculations” What calculations?

The calculations need to be specified to include exclusion zones and these need to be made publicly available for all equipment without exceptions. Including small cells and lamp post equipment.

Will Ofcom commit licensees to publish exclusion zones and make them available on a public forum?

OVERVIEW continued..

PAGE 3

1.1 “Demand continues to increase.”

Many many people are saying ENOUGH is ENOUGH . Many are saying adding more and more wireless radiation is a pollutant and its having increasing harmful effects to all life.

1.1 Telcoms are selling it and driving it as much as the public are demanding it, many are not. 100,000 signatures across 30 petitions were received in one week alone from 30th March until 6th April 2020 just on one petition platform.

Its not demand that should be dictating this process, it is safety.

1.2 “Public Health England takes the lead on public health matters” and “has a statutory duty to provide advice”

PHE are providing non legally binding “guidelines”, this is implying regulation of safety but “taking the lead” and “providing advice” is not providing safety regulation of EMF’s.

PAGE 4

1.3 “On 5G, PHE’s view is that “the overall exposure is *expected* to remain low relative to guidelines and, as such, there *should* be no consequences for public health”.

What “overall” exposure is expected to stay low?

Are PHE really in a position to do such estimations? A vague **estimation and expectation** is not good enough.

Has the estimation taken into account accumulated personal exposure over a day, a month, a year and a lifetime for a life in the Internet of Things with fully operational 5G as intended in National Policy??

How did PHE conduct the assessment that leads them to state with regard to 5G “The overall exposure is expected to remain low relative to the guidelines” ?

- **Are the “estimation” calculations and/or a science based Risk Analysis report of the estimation available?**
- **Which department within Government or independent advisers did PHE consult with before making this estimation?**
- **What projected use of 5G was used in calculations of PHE’s estimation, for what particular time period?**
- **In view of the exponential increase predicted with data usage with the Internet of things, going forward what structure of review process of usage and emissions do PHE have in place?**
- **Which other departments within Government do PHE consult to gain information about 5G deployment?**
- **How often will PHE review their estimations during 2020 and beyond?**
- **Do PHE request emission reports from Ofcom?**
- **How often are these reports requested?**

PAGE 4

1.5

The fact is 1.5% is too high. This equates to 1/100th ICNIRP level and this is over what is deemed safe by other countries i.e. Italy, Russia, China who already have set 1/100th of the UK levels for their guidelines. Thousands of scientists who acknowledge “non thermal” harmful biological effects are calling for many times lower levels again.

See Michael Bevington Chart in Appendix 1.

1.6

HASAWA.. Health and safety at work does not just apply to workers, there are clauses about landowners to be considered.

When exclusion zones are expanded with 5G upgrades or new installations then there are liability issues for use of land and buildings which fall in these zones.

1.7

How do Ofcom plan to oversee the reissuing of ICNIRP certificates when masts are upgraded?

PAGE 4

1.8 Conflict of Interests

“As the organisation that authorises spectrum use, and that has expertise in measuring EMF emissions, we consider that we are well placed to help mitigate risks related to EMF”

As stated above, we question whether Ofcom are well placed to regulate the licensees. The fact they authorise spectrum use for which they receive very large sums of money means they have a serious conflict of interest if they are regulating those same companies.

1.10 Fines and Guidance

“This would ensure Ofcom is in a position to take appropriate enforcement action in the event of non-compliance with the ICNIRP Guidelines (which can include revoking licences, issuing financial penalties and instigating criminal or civil proceedings, some of which may require equipment to be closed down). We are also proposing to provide guidance to licensees on the processes they should have in place to ensure compliance. We have included a proposed draft licence condition and guidance in this document.”

If there is non compliance, why is immediate shutting down of equipment not mandated?

2.2 Introduction

Regulatory framework for managing EMF emissions

2.14

PHE explains that “control of exposures occurs through product safety legislation and planning policy. These regulatory areas all consider the international guidelines”.

Please supply details of just how planning law and product safety legislation insures adherence to international safety guidelines?

2.15

“All manufacturers, installers and operators of radio equipment **should** therefore already consider the safety of the radio equipment that they are manufacturing, installing or operating. They **should** be aware of the ICNIRP Guidelines and, where necessary, have processes in place to ensure their radio equipment is compliant with the ICNIRP Guidelines.”
“**should**” is not the same as must.

PAGE 9

2.19 –“The RER set out requirements for health and safety, electromagnetic compatibility, and the

efficient use of the radio spectrum. Manufacturers, importers and distributors of radio equipment all have responsibilities under the RER.”

Does this include mobile phones?

2.24 Do the standards accommodate 5g technology ? How are the standards audited?

PAGE 10

2.27 These BSI cost £111 each how.. this is prohibitive of all members of the public being able to evaluate this consultation.

2.28 “The standards for base stations currently only apply up to 100 GHz. We expect that work will commence soon to extend these standards (or create new standards) to cover higher frequencies, e.g. between 100 and 300 GHz. In the meantime, we propose that these standards can be viewed as an acceptable basis for demonstrating compliance for frequencies above 100 GHz.”

“expect” When will these standards be confirmed?”

2.29 “Ofcom has expertise in measuring EMF emissions, and we carry out measurements of emissions from mobile phone base stations on request. This service was originally introduced around the time of the Stewart Report into mobile phones and health in 2000”

Are Ofcom well placed to take measurements? Do their conflict of interests disqualify them? Should this service be free to all and not just to some?

“In 2012, this activity switched from a proactive to a reactive programme”

Is the decision to stop taking measurements still valid given the increase in installations of equipment since 2012 and especially with the roll out of 5G? Some estimations of the increase in emissions is as much 1000 times with 5G.

Given the scale of increase in technology and consequent emissions, would it not be reasonable for measurements to be proactive and ongoing?

Could a new regulatory body bill licensees for the service of taking measurements?

PAGE 11

2.30 “In addition to measuring EMF emissions on request, we feed our expertise in relation to measuring EMF emissions into appropriate channels (including PHE and BSI).”

What is meant by feeding the information into PHE and BSI?

2.3 Concerns about radiowaves and health

PAGE 12

3.3 “Our aim is to make sure that all radio equipment complies with the relevant levels from the ICNIRP Guidelines for the protection of the general public. However, since the recent public discussion has focused on the impact of 5G, we discuss this specific issue below and the work Ofcom is doing to address these concerns”

Concerns are raised because the ICNIRP guidelines are inadequate and the integrity of the ICNIRP organisation is unacceptable due to conflict of interests. In particular other peer reviewed scientists are warning that the non thermal harmful biological effects of pulsed microwave radiation are set aside by ICNIRP.

**3.4 “Current 5G deployments are re-using frequencies that have been in use for many years.”
Which of the 5G frequencies are being referred to here? 60GHZ? 26GHZ?**

3.5 “Whilst 5G will, in the future, start to use higher frequencies than those currently used by wireless networks (e.g. mmWave frequencies), the use of these frequencies is also not

new. 5G is re-using spectrum that has previously been used to deliver services such as TV broadcasting, wireless broadband and satellite connections as well as for point-to-point microwave links and other types of transmitters that have been present in the environment for many years.”

This is a generalised statement. Specifics are needed here. Whilst some of the 5G frequencies may have been used before, it is not true that the scale of emissions being planned for a fully rolled out 5G Internet of Things with Future AI and Robotics for Industrial use has ever been experienced before. Adequate and rigorous safety testing procedures and measurement protocols of this exponential increase in exposure is absolutely essential. Measurement protocols and procedures need to take into account the beamforming transmission of 5G.

3.6 “It is **possible** that there may be an incremental increase in **overall** exposure to radio waves when 5G is added to an existing mobile network or in a new area. This is true whenever extra frequencies are added to a network and is not specific to 5G.”

Possible ??

Where is there a risk analysis report? To say possible is ridiculous, inadequate and preposterous with a NPPF plan to increase data to 1000 x what we have with 4G.

Overall ? Averaged over what? A country? A town? a house? Please provide an impact analysis report detailing projected use of 5G.

3.7 “PHE’s view in relation to 5G is that “the overall exposure is expected to remain low relative to guidelines and, as such, there should be no consequences for public health”.

Is this illogical and irrational given the scale of the plans for 5G?

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3.11

“Figure 3.1 on the following page presents a summary of the measurement results from the sites we have visited.”

The Icnirp levels are 100 times than other countries and 1000s times higher than guidelines detailed by the Michael Bevington chart. See Appendix 1. The chart does not set a scale such that assessments can be made against health protective exposure levels.

Why is it other countries have safety levels so vastly different to the UK?

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3.14

“The deployment of 5G networks and the take-up of 5G services in the UK is still at an early stage. We will therefore continue to undertake EMF measurements to monitor the overall trends in the long term.”

Is a specified schedule and policy and full commitment to taking measurements throughout the deployment of 5G and 4G and ongoing after deployment needed?

Is a specific task force with sole purpose of identifying and measuring “hot spots” and all interference patterns needed?

2.4 Legal Framework

PAGE 29

6.23 Regarding the Ofcom Proposal as constituting in itself an impact assessment.

Is the impact of accepting this proposal in terms of ensuring public safety acceptable? I think not for all the reasons and individual points made in this response.

6.24 Please consider all the evidence supplied with this objection detailing peer reviewed research on non thermal effects and consider the full and detrimental impact of aligning with ICNIRP 2020 Guidelines.

Appendix 2.

6.25 “Ofcom is required by statute to assess the potential impact of all our functions, policies, projects and practices on the following equality groups: age, disability, gender, gender reassignment, pregnancy and maternity, race, religion or belief and sexual orientation. We refer to groups of people with these protected characteristics as “equality groups”.

Where is equality impact assessment of this proposal on children, chronically sick, people with electro-sensitivity, the elderly, people with metal implants?”

See the 2002 ICNIRP Philosophy document for their reference to how these vulnerable groups differ when exposed to pulsed microwave radiation.

6.27 “We do not consider that the proposals in this consultation would have any negative impacts on any equality group”

Please provide evidence which support this consideration/decision.

2.4 A2. Draft Guidance on EMF Compliance and Enforcement

PAGE 31

A 2.12 “Ofcom may, from time to time, conduct EMF compliance checks and audits.”

Time to time.” isnt a tight enough regulation to ensure public safety.

“Licensees, installers and users should therefore be in a position to explain the steps they took to ensure compliance with the basic restrictions for general public exposure and provide records demonstrating their compliance. To this end, they should have appropriate processes in place that will enable them to:

a) Identify the measurements, tests, calculations or other procedures they have carried out.

b) Explain why they considered those procedures were appropriate.”

“Explain” is a loose term.

It seems reasonable that the regulation needs to be a definite set of procedural rules about measurements and keeping records. Is asking licensees to “explain” themselves adequate to ensure safety?

A2.13 “When radio equipment is established, installed, modified or used on a shared site, licensees, installers and users **should have** processes in place to enable them to coordinate amongst themselves for the sole purpose of ensuring the site remains compliant with the basic restrictions and which enables them to:”

“Should have..”

What are these processes that competing Telecoms providers have to co ordinate their emissions from a single tower and to do combined emission calculations? Who is taking charge of auditing these processes?

PAGE 32

A.2.9 “An EMF assessment **may** include one or more of the following:

- physical measurements;
- tests;
- calculations;
- following manufacturers’ guidance/instructions.”

How about **“must”** instead of **may**?

A 2.12

“Ofcom may, from time to time, conduct EMF compliance checks and audits.”

“may” and “time to time.” isnt a tight enough regulation to ensure public safety.

How about defining structures and procedures for the auditing process.

“Licensees, installers and users should therefore be in a position to **explain** the steps they took to ensure compliance with the basic restrictions for general public exposure and provide

Meo, S. A., Almahmoud, M., Alsultan, Q., Alotaibi, N., Alnajashi, I., & Hajjar, W. M. (2018). [Mobile Phone Base Station Tower Settings Adjacent to School Buildings: Impact on Students' Cognitive Health](#). *American Journal of Men's Health*.

- High exposure to RF-EMF produced by mobile phone base station towers was associated with delayed fine and gross motor skills, spatial working memory, and attention in school adolescents compared to students who were exposed to low RF-EMF.

[Neurobehavioral effects among inhabitants around mobile phone base stations](#) Abdel-Rassoul et al, *Neurotoxicology*, 2007

- This study found that living nearby mobile phone base stations (cell antennas) increased the risk for neuropsychiatric problems such as headaches, memory problems, dizziness, tremors, depression, sleep problems and some changes in the performance of neurobehavioral functions.

[Health effects of living near mobile phone base transceiver station \(BTS\) antennae: a report from Isfahan, Iran](#). Shahbazi-Gahruei et al, *Electromagnetic Biology Medicine*, 2013.

- This cross-sectional study found the symptoms of nausea, headache, dizziness, irritability, discomfort, nervousness, depression, sleep disturbance, memory loss and lowering of libido were statistically increased in people living closer than 300 m from cell antennas as compared to those living farther away. The study concludes that “antennas should not be sited closer than 300 m to people to minimize exposure.”

[Bortkiewicz et al, 2004 \(Poland\), Subjective symptoms reported by people living in the vicinity of cellular phone base stations: review](#), *Med Pr.*2004;55(4):345-51.

- Residents close to mobile phone masts reported: more incidences of circulatory problems, sleep disturbances, irritability, depression, blurred vision and concentration difficulties the nearer they lived to the mast.
- The performed studies showed the relationship between the incidence of individual symptoms, the level of exposure, and the distance between a residential area and a base station.

Wolf R and Wolf D, [Increased Incidence of Cancer Near a Cell-phone Transmitter Station](#), *International Journal of Cancer Prevention*, (Israel) VOLUME 1, NUMBER 2, APRIL 2004

- A significant higher rate of cancer (300% increase) among all residents living within 300m radius of a mobile phone mast for between three and seven years was detected.
- 900% cancer increase among women alone
- In the area of exposure (area A) eight cases of different kinds of cancer were diagnosed in a period of only one year. This rate of cancers was compared both with the rate of 31 cases per 10,000 per year in the general population and the 2/1222 rate recorded in the nearby clinic (area B). The study indicates an association between increased incidence of cancer and living in proximity to a cell-phone transmitter station.

[Investigation on the health of people living near mobile telephone relay stations: Incidence according to distance and sex](#) Santini et al, 2002, *Pathol Bio*

People living near mobile phone masts reported more symptoms of headache, sleep disturbance, discomfort, irritability, depression, memory loss and concentration problems the closer they lived to the installation. Study authors recommend that the minimal distance of people from cellular phone base stations should not be < 300 m.

Navarro EA, Segura J, Portoles M, Gomez-Perretta C, [The Microwave Syndrome: A preliminary Study](#). 2003 (Spain) *Electromagnetic Biology and Medicine*, Volume 22, Issue 2, (2003): 161 – 169

1. Statistically significant positive exposure-response associations between RFR intensity and fatigue, irritability, headaches, nausea, loss of appetite, sleeping disorder, depressive tendency, feeling of discomfort, difficulty in concentration, loss of memory, visual disorder, dizziness and cardiovascular problems.

Oberfeld, A.E. Navarro, M. Portoles, C. Maestu, C. Gomez-Perretta, [The microwave syndrome: further](#)

aspects of a Spanish study,

- A health survey was carried out in La Ñora, Murcia, Spain, in the vicinity of two GSM 900/1800 MHz cellular phone base stations. The adjusted (sex, age, distance) logistic regression model showed statistically significant positive exposure-response associations between the E-field and the following variables: fatigue, irritability, headaches, nausea, loss of appetite, sleeping disorder, depressive tendency, feeling of discomfort, difficulty in concentration, loss of memory, visual disorder, dizziness and cardiovascular problems.

Signifikanter Rückgang klinischer Symptome nach Senderabbau – eine Interventionsstudie. (English-Significant Decrease of Clinical Symptoms after Mobile Phone Base Station Removal – An Intervention Study) Tetsuharu Shinjyo and Akemi Shinjyo, 2014 Umwelt-Medizin-Gesellschaft, 27(4), S. 294-301.

- Japanese study Showed Statistically Significant Adverse Health Effects from electromagnetic radiation from mobile phone base stations. Residents of a condominium building that had cell tower antennas on the rooftop were examined before and after cell tower antennas were removed. In 1998, 800MHz cell antennas were installed, then later in 2008 a second set of antennas (2GHz) were installed. Medical exams and interviews were conducted before and after the antennas were removed in 2009 on 107 residents of the building who had no prior knowledge about possible effects. These results lead researchers to question the construction of mobile phone base stations on top of buildings such as condominiums or houses.

Subjective symptoms, sleeping problems, and cognitive performance in subjects living near mobile phone base stations, Hutter HP et al, (May 2006), Occup Environ Med. 2006 May;63(5):307-13

- Found a significant relationship between some cognitive symptoms and measured power density in 365 subjects; highest for headaches. Perceptual speed increased, while accuracy decreased insignificantly with increasing exposure levels.

HORMONAL EFFECTS:

Changes of Neurochemically Important Transmitters under the influence of modulated RF fields – A Long Term Study under Real Life Conditions(Germany), Bucher and Eger, 2011

- German study showing elevated levels of stress hormones (adrenaline, noradrenaline), and lowered dopamine and PEA levels in urine in area residents during 1st 6 months of cell tower installation. Even after 1.5 years, the levels did not return to normal.

How does long term exposure to base stations and mobile phones affect human hormone profiles? Eskander EF et al, (2011), Clin Biochem

1. RFR exposures significantly impacted ACTH, cortisol, thyroid hormones, prolactin for females, and testosterone levels for males.

GENETIC EFFECTS:

A cross-sectional case control study on genetic damage in individuals residing in the vicinity of a mobile phone base station. Ghandi et al, 2014 (India):

This cross-sectional case control study on genetic damage in individuals living near cell towers found genetic damage parameters of DNA were significantly elevated. The authors state, "The genetic damage evident in the participants of this study needs to be addressed against future disease-risk, which in addition to neurodegenerative disorders, may lead to cancer."

Effect of GSTM1 and GSTT1 Polymorphisms on Genetic Damage in Humans Populations Exposed to Radiation from Mobile Towers. Gulati S, Yadav A, Kumar N, Kanupriya, Aggarwal NK, Kumar R, Gupta R., Arch Environ Contam Toxicol. 2015 Aug 5. [Epub ahead of print]

- In our study, 116 persons exposed to radiation from mobile towers and 106 control subjects were genotyped for polymorphisms in the GSTM1 and GSTT1 genes by multiplex polymerase chain reaction method. DNA damage in peripheral blood lymphocytes was determined using alkaline comet assay in terms of tail moment (TM) value and micronucleus assay in buccal cells (BMN). Our

results indicated that TM value and BMN frequency were higher in an exposed population compared with a control group and the difference is significant. In our study, we found that different health symptoms, such as depression, memory status, insomnia, and hair loss, were significantly associated with exposure to EMR. Damaging effects of nonionizing radiation result from the generation of reactive oxygen species (ROS) and subsequent radical formation and from direct damage to cellular macromolecules including DNA.

Research References

“Serious flaws in the WHO and ICNIRP claims on 5G and RF Wireless Radiation.” Michael Bevington (2019). <http://www.es-uk.info/wp-content/uploads/2019/10/03.6-Serious-flaws-in-the-WHO-ICNIRP-claims-on-5G-and-RF-wireless-radiation.pdf>

NTP Study

1.US National Toxicology Program study
https://ntp.niehs.nih.gov/results/areas/cellphones/index.html?utm_source=direct&utm_medium=product&utm_campaign=ntp_olinks&utm_term=cellphone

Ramazzini Study

Belpoggi F. et al., (2018). “Report of final results regarding brain and heart tumours in Sprague-Dawley rats exposed from prenatal life until natural death to mobile phone radiofrequency field representative of a 1.8 GHz GSM base station environmental emission. Environmental Research 165:496-503.
<https://www.ncbi.nlm.nih.gov/pubmed/29530389>

Bioinitiative Report

<https://bioinitiative.org/>

Danish Legal opinion on the 5G roll out.

Jensen, F.C. (2019) 'LEGAL OPINION on whether it would be in contravention of human rights and environmental law to establish the 5G-system in Denmark'
<https://cdn.website-editor.net/2479f24c54de4c7598d60987e3d81157/files/uploaded/Legal%2520opinion%2520on%25205G%2520Denmark.pdf>.

Ericsson report regarding Exclusion Zones

“Impact of EMF limits on 5G network roll-out.” Christer Törnevik Senior Expert, EMF and Health, Ericsson Research, Stockholm. ITU Workshop on 5G, EMF & Health Warsaw, December 5 2017”

TREES

University of Surrey white paper <https://www.surrey.ac.uk/sites/default/files/2018-03/white-paper-rural-5G-vision.pdf>
<https://phys.org/news/2010-11-dutch-wi-fi-possibly-trees.html>

Waldmann-Selsam, de la Puente, Balmori,

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