

Judicial Review Claim Form

Notes for guidance are available which explain how to complete the judicial review claim form. Please read them carefully before you complete the form.

For Court use only	
Administrative Court Reference No.	
Date filed	

Is your claim in respect of refusal of an application for fee remission? Yes No

SECTION 1 Details of the claimant(s) and defendant(s)

Claimant(s) name and address(es)

name
Victoria Angell, Karen Churchill, Rosalyn Rock

address
C/O Hackett & Dabbs LLP
7 Stratfield Park
Waterlooville, Hampshire
PO7 7XN

Telephone no. 02393 878797 **Fax no.**

E-mail address
lorna.hackett@hackettdabbs.co.uk

Claimant's or claimant's legal representatives' address to which documents should be sent.

name
Lorna Hackett

address
Hackett & Dabbs LLP
7 Stratfield Park
Waterlooville, Hampshire
PO7 7XN

Telephone no. 02393 878797 **Fax no.**

E-mail address
lorna.hackett@hackettdabbs.co.uk

Claimant's Counsel's details

name
i) Michael Mansfield QC ii) Philip Rule

address
i) Nexus Chambers DX 391 LTE
T: 020 7404 1147 F: 020 7242 9744
ii) No 5 Chambers DX 449 London Chancery Lane
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i) info@nexuschambers.com ii) london@no5.com

In the High Court of Justice
Administrative Court

Help with Fees -
Ref no. (if applicable)

H W F - [] - []



1st Defendant

name
Secretary of State for Health and Social Care

Defendant's or (where known) Defendant's legal representatives' address to which documents should be sent.

name
C/O Government Legal Department

address
Constitutional and Social Care Public Law Team
Government Legal Department
DX 123243 Westminster 12

Telephone no. 020 7210 3000 **Fax no.**

E-mail address
raz.khosrovi@governmentlegal.gov.uk

2nd Defendant

name
Sec of State for the Environment Food and Rural Affairs

Defendant's or (where known) Defendant's legal representatives' address to which documents should be sent.

name
Government Legal Department

address
Constitutional and Social Care Public Law Team
Government Legal Department
DX 123243 Westminster 12

Telephone no. 020 7210 3000 **Fax no.**

E-mail address
raz.khosrovi@governmentlegal.gov.uk

SECTION 2 Details of other interested parties

Include name and address and, if appropriate, details of DX, telephone or fax numbers and e-mail

name Sec of State for Digital Culture Media and Sport (third Def)	
address Constitutional and Social Care Public Law Team Government Legal Department DX 123243 Westminster 12	
Telephone no. 020 7210 3000	Fax no.
E-mail address raz.khosrovi@governmentlegal.gov.uk	

name	
address	
Telephone no.	Fax no.
E-mail address	

SECTION 3 Details of the decision to be judicially reviewed

Decision: Continuing omissions of the Defendants to act lawfully as required so to do Decision of 22nd December 2020 not to remedy unlawful failings as identified by the Claimants
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Date of decision: Communicated by email on 22nd December; ongoing omissions

Name and address of the court, tribunal, person or body who made the decision to be reviewed.

name Government Legal Department	address Constitutional and Social Care Public Law Team Government Legal Department DX 123243 Westminster 12
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SECTION 4 Permission to proceed with a claim for judicial review

I am seeking permission to proceed with my claim for Judicial Review.

Is this application being made under the terms of Section 18 Practice Direction 54 (Challenging removal)?

Yes No

Are you making any other applications? If Yes, complete Section 8.

Yes No

Is the claimant in receipt of a Civil Legal Aid Certificate?

Yes No

Are you claiming exceptional urgency, or do you need this application determined within a certain time scale? If Yes, complete Form N463 and file this with your application.

Yes No

Have you complied with the pre-action protocol? If No, give reasons for non-compliance in the box below.

Yes No

--

Have you issued this claim in the region with which you have the closest connection? (Give any additional reasons for wanting it to be dealt with in this region in the box below). If No, give reasons in the box below.

Yes No

--

Does the claim include any issues arising from the Human Rights Act 1998?

If Yes, state the articles which you contend have been breached in the box below.

Yes No

Articles 2, 3, or 8 and / or Art 14 ECHR

SECTION 5 Detailed statement of grounds

set out below attached

See separate document attached

SECTION 6 Aarhus Convention claim

I contend that this claim is an Aarhus Convention claim

Yes No

If Yes, indicate in the following box if you do not wish the costs limits under CPR 45.43 to apply.

If you have indicated that the claim is an Aarhus claim set out the grounds below, including (if relevant) reasons why you want to vary the limit on costs recoverable from a party.

SECTION 7 Details of remedy (including any interim remedy) being sought

Declaratory relief regarding the identified failings of public law duty, statutory duty and/or violation of the obligations arising pursuant to s.6 of the Human Rights Act and Articles 2, 3 or 8, and/or 14 ECHR; and/or
A mandatory order requiring that the relevant Defendant comply with the applicable duties, potentially to include, as set out at a-e of para 195 (ii) of the Grounds attached

SECTION 8 Other applications

I wish to make an application for:- **protective cost capping order to follow**

SECTION 9 Statement of facts relied on

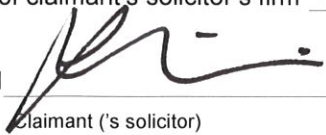
See attached

Statement of Truth

I believe (The claimant believes) that the facts stated in this claim form are true.

Full name Lorna Madeleine Hackett

Name of claimant's solicitor's firm Hackett & Dabbs LLP

Signed 
Claimant ('s solicitor)

Position or office held Barrister
(if signing on behalf of firm or company)

SECTION 10 Supporting documents

If you do not have a document that you intend to use to support your claim, identify it, give the date when you expect it to be available and give reasons why it is not currently available in the box below.

Please tick the papers you are filing with this claim form and any you will be filing later.

- | | | |
|---|-----------------------------------|--|
| <input checked="" type="checkbox"/> Statement of grounds | <input type="checkbox"/> included | <input checked="" type="checkbox"/> attached |
| <input checked="" type="checkbox"/> Statement of the facts relied on | <input type="checkbox"/> included | <input checked="" type="checkbox"/> attached |
| <input type="checkbox"/> Application to extend the time limit for filing the claim form | <input type="checkbox"/> included | <input type="checkbox"/> attached |
| <input type="checkbox"/> Application for directions | <input type="checkbox"/> included | <input type="checkbox"/> attached |
| <input type="checkbox"/> Any written evidence in support of the claim or application to extend time | | |
| <input type="checkbox"/> Where the claim for judicial review relates to a decision of a court or tribunal, an approved copy of the reasons for reaching that decision | | |
| <input checked="" type="checkbox"/> Copies of any documents on which the claimant proposes to rely | | |
| <input type="checkbox"/> A copy of the legal aid or Civil Legal Aid Certificate <i>(if legally represented)</i> | | |
| <input type="checkbox"/> Copies of any relevant statutory material | | |
| <input checked="" type="checkbox"/> A list of essential documents for advance reading by the court <i>(with page references to the passages relied upon)</i> | | |
| <input type="checkbox"/> Where a claim relates to an Aarhus Convention claim, a schedule of the claimant's significant assets, liabilities, income and expenditure. | <input type="checkbox"/> included | <input type="checkbox"/> attached |

If Section 18 Practice Direction 54 applies, please tick the relevant box(es) below to indicate which papers you are filing with this claim form:

- | | | |
|--|-----------------------------------|-----------------------------------|
| <input type="checkbox"/> a copy of the removal directions and the decision to which the application relates | <input type="checkbox"/> included | <input type="checkbox"/> attached |
| <input type="checkbox"/> a copy of the documents served with the removal directions including any documents which contains the Immigration and Nationality Directorate's factual summary of the case | <input type="checkbox"/> included | <input type="checkbox"/> attached |
| <input type="checkbox"/> a detailed statement of the grounds | <input type="checkbox"/> included | <input type="checkbox"/> attached |

Reasons why you have not supplied a document and date when you expect it to be available:-

Signed _____ Claimant ('s Solicitor) _____

IN THE HIGH COURT OF JUSTICE
ADMINISTRATIVE COURT

CO/

BETWEEN

The Queen, on the application of

VICTORIA ANGELL

First Claimant

-and-

KAREN CHURCHILL

Second Claimant

-and-

ROSALYN ROCK

Third Claimant

-v-

THE SECRETARY OF STATE FOR HEALTH AND SOCIAL CARE

First Defendant

-and-

THE SECRETARY OF STATE FOR THE ENVIRONMENT,
 FOOD AND RURAL AFFAIRS

Second Defendant

-and-

THE SECRETARY OF STATE FOR DIGITAL CULTURE MEDIA AND SPORT

Third Defendant

DETAILED STATEMENT OF THE FACTS
 & GROUNDS OF CLAIM

Page references to the bundle [pagination top right corner#] are given as P.x

1. This case concerns an important issue of public safety. It raises the risk to which members of the public, including particular vulnerable individuals, and children, are being exposed without having consented to or agreed to expose themselves to that risk; and without an adequate and proper consideration undertaken by the relevant safeguarding authorities of the creation of those man-made public health risks.

2. The issues in this case include the absence of due investigation and consideration of the nature and extent of the risks to the safety of individuals, and human health by the relevant United Kingdom authorities; the absence of appropriate measures, systems and safeguarding steps to address the identified risks or potential risks; and a failure to adopt and apply a precautionary principle, or informed foresight, to the exposure of non-consenting children and adults to a risk of harm.
3. That all individuals have a right to live in a safe environment that does not by human action cause them harm must be beyond contestation. This case is concerned with the duties upon the state to understand and regulate that safety of the environment in which people live, and the discharge of its obligations to positively protect citizens, and the vulnerable in particular, against the real risk of harm.
4. The Court shall not be required to determine conclusively the ongoing scientific dispute contained within this case, but only to rule upon the discharge or otherwise of legal duties that arise concerning the correct lawful approach to be taken to the issues that fulfils the safeguarding duties owed by the Defendants. It is submitted that the law provides a framework that shall demonstrate the unlawfulness of the inaction and errors of the executive bodies challenged herein. Holding to account the executive or legislative authorities to comply with the law and legal duties is undoubtedly a proper and essential function for the Court. This is all the more so in the context of protection of individuals from harm that includes loss of life or serious injury.
5. The Defendants cannot lawfully continue to ignore or overlook the evidence that indicates the existence of a risk that has not been quantified. To date there has been a failure to engage with this body of evidence and an inappropriate attempt to delegate any assessment of risk to an external body – a body indeed against which membership legitimate criticism of industry finance and conflict of interest is levelled. The Claimants seek, in particular, that the Defendants be required to lawfully discharge the state's duty of care and its fundamental obligations to properly consider, and to act appropriately in response to, the legitimate concerns raised. The available evidence to which the Defendants have been referred is given by a multitude of respected and eminent experts concerning the health effects of the technology used by 5G, and the attendant risks to the public and individuals. The Claimants seek to ensure that an active

consideration is given by the Defendants to the legitimate and detailed concerns over safety and the danger to the public, or sections of the public, presented by the implementation of this technology prior to determination of its risks. Ultimately, whilst safety is placed at real risk, a moratorium upon further expansion of potentially hazardous installations ought to be in place, and/or measures to reduce exposure to children and other, suitably informed, vulnerable groups or individuals.

GROUNDS FOR JUDICIAL REVIEW

6. The following grounds for judicial review arise in light of the matters that shall be set out below. There has been an unlawful:
 - i. breach of section 6 of the Human Rights Act 1998 resulting from omissions and failings in violation of the positive obligations required to be met by Articles 2, 3 and/or 8 of the European Convention on Human Rights, 'ECHR', resulting from -
 - a. Failure to, or abdication of responsibility to, review the scientific and available evidence as the body responsible for the safety of citizens / Failure to take account of evidence of the risk posed to human health by radiofrequency radiation, 'RFR', and/or 5G;
 - b. Failure to undertake an effective independent and sufficiently informed assessment of the risks;
 - c. Failure to implement effective safeguards to protect the public from the risks or potential risks, including those posed to children attending schools and nurseries and/or to those with a disability;
 - d. Failure to provide adequate or effective information to the public about the risks and how, if it be possible, it might be possible for individuals to avoid or minimise the risks;
 - e. Absence of sufficient measures to provide effective protection for children from the real risk of harm;

- f. The failure to provide adequate or effective safety information to the public or to vulnerable sections of the public concerning risks or steps to minimise risks;
 - g. The adoption of RFR exposure guidelines concerned with thermal effects only which do not suffice to discharge the duty to take all practicable steps to the greatest extent possible to protect against a violation;
 - h. Failure to ensure or safeguard a safe environment for human health;
 - i. Or otherwise.
- ii. failure to consider the best interests of the child principle and the Defendants' duties in that regard when considering formulating, updating or reviewing the appropriate approach to 5G policy and risk assessment for exposed children. In the alternative, they have failed to make this a primary consideration;
- iii. failure to discharge the Public Sector Equality Duty ("PSED"), contrary to s149 of the Equality Act 2010, lacking an equality assessment to inform decisions on approval of 5G generally and/or of permissible locations of 5G and/or of the policy to adopt ICNIRP guidelines;
- iv. breach of statutory duty under s2A of the National Health Service Act 2006, either resulting from (a) unlawful delegation or abdication of the statutory function to an external private organisation; and/or (b) irrationally failing to take appropriate steps under this power and/or failing to exercise a discretion in accordance with the statutory purpose;
- v. failure to take into account relevant considerations, giving due and proper consideration to the evidence, information and concerns raised;
- vi. (a) failure to provide adequate and sufficient reasons for not establishing a process to investigate and establish the adverse health effects and risks of adverse health effects from 5G technology and/or for discounting the

risks presented by the evidence available; and/or (b) failure to meet the requirements of transparency and openness required of a public body; and/or

- vii. *Wednesbury* unreasonable or illogical failure to conduct a due and sufficient enquiry into relevant matters and/or unreasonable adherence, in the face of the current evidence, to a policy that 5G technology is only required to adhere to International Commission on Non-Ionizing Radiation Protection, ‘ICNIRP’ guidelines.

MATERIAL FACTS

7. The Claimants are -

- i. Victoria Angell, is a mother of two children, and grand-mother to a young baby girl. Ms Angell has pre-cancerous cells in her breast. She lives, with her granddaughter and her parents, in a house in Fulham, London, in an area where 5G masts have been installed¹;
- ii. Karen Churchill, suffers from myalgic encephalomyelitis (‘ME’). She spent 9 years as a computer programmer. She has also suffered skin cancer. She is seeking to prevent 5G being installed at her home in Somerset; and
- iii. Rosalyn Rock. She has a home in Chiswick, London, where she has sustained burn injury from the exposure to 5G radiation. She had lived in her home since 1989, but suffered these effects from April 2020 and had been forced to stay away from her home as a result.

8. The Defendants are -

- i. The Secretary of State for Health and Social Care, ‘SSHSC’. SSHSC is responsible for Public Health England, ‘PHE’, and for an advisory Committee on Medical Aspects of Radiation in the Environment, ‘COMARE’;

¹ P.232-p.248. Her personal circumstances, and her particular knowledge of relevant perspectives, studies and developments are set out in detail. A short summary is included below. She is the founder of the website and representative of the Action Against 5G movement.

- ii. The Secretary of State for the Environment, Food and Rural Affairs, ‘SSEFRA’; and
 - iii. The Secretary of State for Digital Culture Media and Sport, ‘SSDCMS’.
- This Defendant is responsible for the roll-out of 5G technology, ‘5G’.

9. The Claimants challenge omissions by the Defendants to act as lawfully required so to do – a matter that is continuing. Furthermore, challenge is brought to the decision of the Defendants, dated 22 December 2020², not to remedy, and itself containing, the unlawful failings identified above. The Defendants state that -

- (a) The further material was provided to PHE, and it has been considered by its Centre for Radiation, Chemical and Environmental Hazards. PHE decided that the material does not justify any alteration of its current approach [6];
- (b) SSHSC’s advisory committee COMARE is not going to look into the issue either, but has decided instead that it shall leave the matter to the future consideration of the World Health Organisation, ‘WHO’, which is undertaking a review of the topic [8];
- (c) The UK, relying upon a 2012 report by the UK’s Advisory Group on Non-ionising Radiation, ‘AGNIR’, does not recognise an established causal link between the symptoms experienced by the individuals - for whom evidence has been supplied to the Defendants, including the Third Claimant - and the electromagnetic fields to which they have been exposed [9].

There is no timescale for any WHO review. There is no suggestion that the responsibility for public safety does not rest with the UK authorities, deciding whether to allow a 5G roll-out now in the UK changing the living environment of the population without conducting and without awaiting any review, and deciding where 5G should be sited, for instance in proximity to schools, hospitals, or homes.

10. Subsequently the Defendants have declined to provide any reasons for the decisions identified above that were subject to express request for explanation dated 20 January 2021³.

² P.714-P.716

³ P.721-P.722

5G technology

11. 5G involves a form of wireless digital communication that uses a particular Radio Frequency Radiation. It emits radiation in waves that have a particular frequency, and a particular wavelength. It creates electromagnetic fields, EMF, reflective of those particulars. It requires the installation of or use of particular base stations, or masts, which emit and receive a particular level of radiation.

12. Radiofrequency radiation (RFR) is a type of non-ionizing radiation (NIR), which is also referred to as radiofrequency (RF) electromagnetic fields (EMFs). RFR is distinct from simple EMF, which includes very low frequency radiations from power lines. RF EMFs are in the frequency range 100 KHz to 300 GHz, this includes all 2-5G, 2.4-5G WiFi and Bluetooth technologies. In Europe, 5G technologies will emit RFR (RF EMF) in the frequencies from 700 MHz-28GHz, and beyond. Currently three frequency bands are in operation: low frequency (700MHz), high frequency (3.4-3.8 GHz, centimeter (CM)) or extremely high-frequency EHF millimeter (MM) (26 GHz and above) RFR.⁴ 5G networks will therefore for the first time include the use of millimeter wavelength (MMW) unlike previous forms of RFR present in the community.

13. The expert Stephen Grills explains in his report⁵ that mobile networks install cell sites in various locations across towns and cities in order to provide service. A cell site is typically divided into three sectors (or cells). Each cell consists of an antenna which is typically directional and faces towards the area it is designed to provide coverage [14]. The older networks of 2G and 3G share a common Core network, whilst 4G has a separate Core. 5G currently does not have a Core network but works by using both the 4G core, through the 4G cell as an 'anchor' or 'master' cell and using its control plane, and simultaneously connected to a 5G cell [15]-[18]. Frequencies currently used for 5G in the UK are around 3.5GHz (commonly referred to as the 'n78' band) [22]. High frequency spectrum (referred to as *millimetre wave*) to date has not been used to deliver mobile services, but it is expected to be used to support new 5G applications in the future [24].

⁴ P. 983-1020 fn.1

⁵ P.116-P.140

14. A particular real-world location may have multiple domains of unnatural radiation present. The cumulative consequences for the health of people created by each of these domains, individually and especially in aggregate, raises further issues. The human environment is polluted by increasing levels of intensity of radiofrequency radiation. The established effects of this exposure, and the real risks, require proper consideration.

Overview of the facts and evidence

15. By way of introduction to the detail that follows, it shall be seen from the evidence that the following material exists, and which it shall be submitted must be properly and carefully considered by the state authorities, taking a fresh and lawful approach to the safeguarding duties and fundamental rights of citizens in light of the Court's judgment.
16. The following is, in particular, to be observed –
- i. UK government and its agencies have consistently failed to engage meaningfully with the developed science and medical evidence available at the present-day. The responsible authorities have failed to act as they are required to do in order to fulfil their legal duties;
 - ii. A suitable regulatory structure has not been adopted or implemented so that the installation or operation of additional radiation through 5G cells is conducted in a safe manner averting or minimising any identifiable risks. This includes the absence of a Competent Authority properly qualified, empowered and capable of safeguarding public health; and absence of information sharing or provision to local authorities or to the public; or
 - iii. Unlawful abrogation of responsibility, uncritically or unquestioningly adopting thermal i.e. heat energy Guidelines that are not appropriate to the task, promulgated by ICNIRP. The need for example to consider the vulnerable; children; those with medical implants; non-thermal effects; measurements for long-term exposure rather than 6-minute or 30-minute increments alone for short-term exposure to the radiation. In short, questions of methodology, and of ambit and purpose, of the ICNIRP guidelines;

- iv. Failing, separately, to inquire in an appropriate way into the body ICNIRP itself, to ascertain, aside from the flawed methodology or restricted nature of its publication, the extent of conflict of interest and industry-funding, and absence of genuine independence to the organisation and its membership. This is a question of independence and reliability that must be actually, and properly and rationally, considered;
- v. Failing to properly consider the evidence of individuals being harmed and injured by non-ionising radiation emissions and the electromagnetic fields created by human sources including telecommunications equipment. Failing to consider the causation of and existence of Electromagnetic Hypersensitivity resulting from environmental cause.
- vi. Failing to consider the documented non-thermal effects of non-ionising radiation upon the human body, and the harmful effects capable of being caused to individuals by such effects.

Evidence of harm to individuals

17. Firstly, a summary is provided of the evidence of multiple individuals who have been exposed to the radiation fields at the home address of Ms Rock in Chiswick. Those who have suffered physical harm and injury from presence at that location include –
- i. Ms Rock herself.⁶
 - ii. Ms Rock’s sister, Susan Webb⁷; and her daughter Jessica Rock⁸;
 - iii. Dr Andrew Tressider.⁹ A doctor who attended in order to interview and assess Ms Rock on one occasion.
 - iv. Mrs Lorna Hackett. Mrs Hackett is the legal representative of the Claimants. She attended to obtain a witness statement from Ms Rock on 7 September 2020.¹⁰

⁶ P.299-P.304 witness statement

⁷ This is evidenced by Mrs Hackett’s statement at [4] P.7; and Ms Rock’s statement P.299-P.304.

⁸ Ms Rock’s statement explains this at [6] P.300 and P.301

⁹ P.353-P.354 witness statement

¹⁰ P.99-P.105 witness statement

- v. Mrs Suzanne Openshaw. A colleague of Mrs Hackett, also in attendance on 7 September 2020 at the address.¹¹

18. Ms Rock's home is in Chiswick, London. She has lived in that house for 31 years, since June 1989, when she was aged 25. She has a secure life tenancy. She raised her children in this home. She has a metal tooth implant in her left bottom molar. Ms Rock has some genetic problems with a slipped disc in her lumbar spine; and has had a Morton's Neuroma removed from her right foot. She is (and her siblings are each) a carrier for the condition of hemochromatosis, a disorder where too much iron builds up in the body. Before April 2020 Ms Rock was however a generally healthy, and a happy person. She now lives in fear of spending any time at her own home and is being forced to live an itinerant lifestyle, seeking refuge on sofas at friends and relations' homes.
19. One evening in mid-April 2020, whilst sitting in her sitting room, her skin started to prickle, and her throat felt tight. She did not recognise what was happening to her: "the only way to describe it is like continuous bee and wasp stings all over my body". She felt very confused and detached from people. She felt inexplicably emotional, unhealthy, and couldn't eat. After four days she visited hospital.
20. On 15 May 2020 Ms Rock's daughter Jessica Rock, who is studying at the London School of Economics and Political Science; and Ms Rock's eldest sister Susan Webb, a retired barrister, visited to celebrate Jessica's birthday, socially distancing in the back garden. Two days later, Ms Webb had come up with blisters across her skin, and they were bleeding. There was blood on her bedsheets. She felt confused and not very well. The following day Ms Rock also started blistering, and again these bled. Jessica had returned to her home in Pimlico, and the same day was admitted to hospital experiencing prickling on her skin and all down her spine, chronic headaches and burning under her breasts. She was admitted for 3 days.
21. Investigations revealed that the house, and its local area, is surrounded by telephone masts. On behalf of the residents of numerous local households countersigning the

¹¹ P.356-P.367 witness statement

letter, on 2 June 2020, Ms Rock wrote to the London Borough of Hounslow seeking various forms of information about the installation of 5G masts and radiation from the street-lighting installations¹². On 9 July 2020 the council responded, by way of FOIA response¹³, and stated that there is no 5G upon the council-owned masts; and the streetlights are ‘instead controlled via RF (Radio Frequency)’, and that other information was allegedly commercially sensitive and would not to be disclosed, and it was suggested the company Infinet be asked about its masts and telecommunications system, which indicates those do include 5G. Those masts were ‘installed under permitted development’. Likewise the council stated that the newly erected towers in the road did not require planning permission as they do not exceed 20 metres in height. There is also an Arqiva cell device fitted near 107 Netheravon Road South, again used for telecommunications facilities. A neighbour of Ms Rock’s sent an email to Arqiva concerning that device, pictured in Exhibit RR-3¹⁴, and Arqiva responded to say that it is used to install cells to council-owned street furniture, and currently did not install 5G cells, whilst Mobile Network Operators are responsible for 5G installations. That new cell uses 4G radiation frequencies of around 900Mhz and between 1.8-2.1Ghz. There is a Radio Frequency Hazard label on the device; that was said by the company to be for contractors’ information.

22. Neighbours have also been affected. The father of one family lost the use of his arms; and the little girl from the same family came to Ms Rock with blisters all over her arms and on her face. Exhibits RR-11 is a photograph taken of the burns on the girl’s arm¹⁵. Others are suffering chronic headaches. One lady has moved from her bedroom into her living room to try to lessen or avoid the chronic headaches.

23. Ms Rock’s health has been affected very badly. She has attended hospital numerous times, and repeatedly sought her GP’s help¹⁶. She has experienced conditions and injuries including

¹² P.305. Exhibit RR-01

¹³ P.306-310. Exhibit RR-02

¹⁴ P.315 RR-03

¹⁵ P.327 RR-11

¹⁶ She has sought assistance from Charing Cross Hospital, Chelsea and Westminster hospital, West Middlesex Hospital, and her own doctor. E.g. P.322 Exhibit RR-10, records attendance at Accident and Emergency, at Chelsea and Westminster Hospital on 15 August 2020 for the 5th occasion within a year. She had been referred there by West Middlesex hospital for investigation of potential radiation. The doctor explained that Electromagnetic Hypersensitivity Syndrome, EHS, is not a

- i. radiation ‘zaps’ to her face, causing bleeding (e.g. exhibit RR-4 & RR-5)¹⁷
- ii. blisters on her legs (e.g, exhibit RR-6 & RR-7)¹⁸
- iii. radiation burns and blisters on her arms (e,g, exhibit RR-8)¹⁹
- iv. skin rashes and itching, and a prickly sensation over her body
- v. bleeding from her bottom; for which she has undergone examinations by colonoscopy on 18 November 2020²⁰, and CT scan of her abdomen²¹;
- vi. abdominal pain
- vii. bleeding from her nose
- viii. a strange lump appeared in her mouth (Exhibit RR-9)²²
- ix. white marks on her cheeks. A benign lesion on her right inner cheek was excised at West Middlesex Hospital in October 2020²³.
- x. burning of the lungs and burning of the liver; with visible and painful burning of the skin under the breast around the ribcage (Exhibit RR-12)²⁴
- xi. weakness in her legs
- xii. tightness in her throat²⁵
- xiii. detachment from people
- xiv. a clouded brain and confusion
- xv. headaches

recognised medical diagnosis to they could only rule out other causes and look to manage the symptoms. Diazepam and Paracetamol was prescribed.

The GP letter Exhibit RR-13 at P.329 also mentions the attempts to seek medical assistance and remedy.

It is evident the medical profession at large has not been equipped with the knowledge and tools to address the potential harm from this form of non-ionising radiation poisoning in the community and the means to diagnose it effectively. Very few specialists have this knowledge and skill and most citizens will not meet such a qualified doctor in an ordinary medical setting.

¹⁷ P.316-P.317

¹⁸ P.318-P.319

¹⁹ P.320

²⁰ P.335 Exhibit RR-17.

²¹ P.337-P.338 Exhibit RR-13.

²² P.321

²³ P.336 records this in the Chelsea and Westminster discharge letter from dermatology clinic. There was noted to be a mild rosacea, i.e. reddening of the face, and unexplained skin rashes and prickly sensation over the body.

²⁴ P.328

²⁵ She attended a hospital clinic appointment on 17 December 2020 in this respect P.332-P.334.

- xvi. weight loss
- xvii. low mood
- xviii. exhaustion.

Further details are recorded in the report of Dr Andrew Tressider²⁶. In large part the symptoms are alleviated by absence from her home, and she seeks to be in parks and natural spaces to escape from radiation when possible. She does what she is able to mitigate the symptoms, including restricting use of radiating items such as a modern mobile telephone. When she stays at the house, she now sleeps downstairs in the hallway as she is afraid to sleep upstairs. It was so bad one night that she stayed in the park, too afraid to come into her own home.

24. A dermatologist who saw Ms Rock in December 2020 attempted to research the effects of 5G on health, and found there to be ‘very little research’²⁷.
25. In September 2020 Dr Andrew Tressider visited the property to examine Ms Rock. He has a particular expertise having worked as a doctor, and as a trainer and educator of other doctors, and in 2017 became the first Chair of the advisory Group ‘IGNIR’, International Guidelines on Non-Ionising Radiation, set up to publicise EUROPAEM non-thermal Guidelines²⁸. He has published work on the topic of electrosensitivity. He considered Ms Rock’s medical records for the past half-decade, and took a detailed history from her. He assessed her mental state and found her to be a credible witness²⁹. He noted her medical history showed an increase in medical attention sought and required since March 2020, but no mental health illness or depression, though she showed understandable distress and anxiety about her situation. He noted that a clear history is given of symptoms related to place, with aggravating and relieving factors (better when away, worse on return), which, as her own GP had rightly suspected, point to an environmental cause. In addition, as others – including himself – developed rashes whilst at the property, this supported the environmental cause of the harm. Regarding Ms Rock’s condition he concludes that –

²⁶ P.339-P.350.

²⁷ P.329 Exhibit RR-13.

²⁸ P.339. In addition to having been a GP since 1989, he has worked for NHS England as a GP Appraiser, has worked as a police Force Medical Examiner, and is approved under s12 of the Mental Health Act 1983. [Exhibit RR-19]

²⁹ P.342

The constellation of her symptoms, which are mainly neurological and skin, are consistent with symptoms of exposure to electromagnetic fields, as summarized in the useful recent paper by Stein and Udasin, Electromagnetic Hypersensitivity, Review of Mechanisms, Environmental Research 186 (2020) 109445 [³⁰]

In Conclusion, Ms Rock has developed symptoms since April 2020 that are worse in her house, and better when she is away from her house, (which happens to be in the vicinity of a considerable density of transmitting technology). Such a history is consistent with exposure to an environmental cause. This symptom complex is consistent with environmental exposure to radiofrequency transmissions.

In my opinion, the diagnosis is consistent with Harm Caused by Electromagnetic and/or Radiofrequency Fields. Her symptoms appear to be caused by exposure to radiofrequency exposure, it is not known whether this is a recent or cumulative additional factor in her location. This is a diagnosis related to ICD 10 W90.0 Exposure to radiofrequency, taken from The Tabular List of Diseases and Injuries, a list of ICD-10 codes.³¹

26. Dr Tresidder is not only an expert witness in this case however. He also became a victim of the exposure to electromagnetic fields at the same premises. He has made a witness statement attesting to the fact of his injury sustained on his visit to Ms Rock's home, and exhibits a photograph of lesions that he sustained to his shoulder³². He developed a number of symptoms whilst in Ms Rock's house and especially her garden. These he describes as 'a loss of clarity of thinking, pressure in the head, a slight unsteadiness on my feet, pricking sensations in various places, especially my left shoulder, and the appearance of a rash of four discrete lesions on my left shoulder (the largest where the pricking pain occurred) overnight and the next morning, and which lasted two days in total'. He is not prone to skin complaints but this appeared and lasted a couple of days.
27. On 7 September 2020 Mmes Hackett and Openshaw attended upon Ms. Rock at her home address in order to take a witness statement. Both were at the time fit and healthy. They arrived at approximately 1.30pm. They spent time inside the house, and in the garden, where they sat at a garden table. Inside, in the sitting room, Mrs Openshaw felt pins-and-needles sensation very strongly in her right foot, under and across the ball of the foot. She also felt unusually tight-chested. Moving to the kitchen, with a window facing North over the garden, she almost immediately had a tight headache across the front of her head. The double glazing and the panes were warm to the touch. Mrs

³⁰ P.886-889.

³¹ P.354

³² P.355. Exhibit AT-01.

Openshaw's throat felt very constricted, as if the muscles were contracting. She then stood with her back to the window. After a few minutes that headache/tightness had shifted location to being across the top of her head. She felt pins and needles in her left wrist which possibly improved when she removed a gold ring from her finger. She then had a sudden unexplained overwhelming feeling of emotion and 'brain fog' i.e. lack of concentration/confusion.

28. At approximately 2pm they went into the garden. Mrs Openshaw felt very dizzy passing through the passageway to the side of the house. Mrs Openshaw's headache and dizziness worsened, and her balance was affected. Ms Rock also showed them outside the various equipment installed at the top of poles near to her house. Nearing the masts at the corner of Netheravon Road South, Ms Hackett experienced a sharp pain in her head, which subsided almost immediately she moved away from the masts.
29. They sat in the garden facing North-East. After a period, a redness appeared on Mrs Openshaw's forehead, neck and then to her chest, despite the latter being underneath a round necked top, and to the other side of her neck. Its appearance was becoming very red, like sunburn. Photographs are exhibited³³. Mrs Hackett herself experienced pins-and-needles sensation, and a goosebump-type sensation similar to an involuntary frisson that individuals, who experience such³⁴, might experience when listening to certain music but without apparent trigger to this. Even after they had moved away from the property Mrs Openshaw's headache and the tight band feeling around her head remained, as did the 'brain fog', i.e. loss of concentration. She had no appetite, which was very unusual. Mrs Hackett felt unable to think clearly and spaced-out as if tranquilised or intoxicated. She did not feel capable of driving.
30. That evening the redness to Mrs Openshaw's skin had subsided by 7pm/8pm. She noticed however a blister under her tongue which was 2mm wide and domed, which looked like a water blister. She photographed it³⁵. She felt quite tetchy and unable to

³³ Exhibit SO-01 P.368

³⁴ Not all individuals experience involuntary frisson. There appears to be a genetic disposition variable within the population.

³⁵ P369. See photograph Exhibit SO-02

cope with anything apart from quiet. At about 9pm the blister under her tongue burst. She felt very tired.

31. Mrs Hackett's symptoms continued after the visit. On 11 September 2020 she realised that when driving she felt the coming and going of a sensation of a tight band around her head. This eased as she passed away from, and aggravated as she approached, mobile telephone masts. She recuperated in rural surroundings that weekend. On Monday 14 September 2020 she drove to Bristol in company with Mrs Openshaw, and they both experienced a similar sensation of a tight band feeling across the forehead. Mrs Hackett consulted her doctor, Dr. Tom Willsher of Winchester GP³⁶. She thereafter took steps to turn off all WiFi and Bluetooth devices at her home, and remove WiFi from the firm's office in order to minimise exposure generally to RFR. Gradually over a period of approximately 3 months Mrs Hackett's condition improved, although there were times in October 2020 she felt exhaustion and generally unwell. Throughout September to December however she had no other illness or symptoms akin to any other illness.
32. Mrs Openshaw was still more seriously harmed by this exposure on 7 September 2020. She explains in detail how she has been required to seek medical advice on numerous occasions and to make fundamental changes to her daily life and living conditions, including those of her family. The details include that -
- a. on 9 September she noticed a spot/blister on the side of her head, above her left ear, which burst mid-morning and then she had persistent pins and needles on that side of her head for most of the day. Her skin felt very raw. A tight feeling across her head persisted off and on. She spoke to Dr Tom Willsher the same day, who suggested a possible diagnosis of radiation/EMF injury³⁷.
 - b. The week commencing 11 September 2020 when in the office she felt nauseous, with indigestion, headaches (tightness and pressure across the front and top of her skull), extreme fatigue and tinnitus. However, the symptoms alleviated to almost nothing within 25 minutes of leaving the office. She spent the evening outdoors in the garden until late, which was where she felt at her best. Over the course of the working week the symptoms became worse. (The office was

³⁶ P.159-P.161 LH-03

³⁷ P.370-P.373. Exhibit SO-03

- changed to a wired rather than wireless environment, although in the office signals from 12 other Wi-Fi boxes in the near vicinity are present). She had a painful watery lesion on the left-hand side of her scalp which, when burst, made her scalp feel very raw and left her with pins & needles. She realised that she felt pressure and pain in her brain when near someone who had their mobile phone Wi-Fi/4G switched on, particularly if they received a notification or message. At home Wi-Fi was turned off when she was present. Her appetite changed towards bland, easily digestible carbohydrates. Her fingers and hand fizzed when touching her mobile telephone worsening to a point where she had to stop using it. When collecting her children from dance lessons on her way home she realised that LED streetlights were giving her head-pain and nausea.
- c. On 22 September 2020 she awoke up with an unexplained bruise on her inner left eye. The symptoms of headaches and nausea, pins-and-needles, and tinnitus persisted, becoming worse towards the end of each working day and week but improving each evening and weekend with time spent outside walking across the fields.
 - d. By Thursday 15 October 2020 she had suffered indigestion for three days, with a very strong headache. That evening she had to ask her husband to walk her into the woods in the hope that might relieve some of the head pain but had huge difficulty in even walking past a house with some lights on. She was sick 4 times and after 30 minutes under the tree canopies felt well enough to go home and go to bed. However she could not enter the house until the lights were off and then just lay in bed in the dark and quiet. She was utterly exhausted.
 - e. On Sunday 18 October 2020 driving past a very new mobile phone masts located along the motorway caused her to suffer extreme headaches and nausea as well as rawness to the left side of her head. On a cliff walk the symptoms subsided. Later that evening she experienced temporary paralysis in both arms whilst using an induction hob to cook.
 - f. She became so unwell she could not work for 10 days. She is self-employed. She again consulted Dr Tom Willsher on 27 October 2020³⁸. Blood pathology

³⁸ P.374-P.376. Exhibit SO-04

was taken and this notably attracted comment that it showed a mitochondria of the liver malfunction that occurs when there is a stress on the liver³⁹.

- g. Six months on from the exposure, she continues to be unable to tolerate non-ionising radiation and many measures are in place to render her home and daily contact as free as possible from all sources of radiation and electromagnetic fields. Even with all precautions possible, no matter how inconvenient, she still experiences tinnitus, occasional blisters, and the symptoms of fatigue, nausea, headaches, and sensitivity to electrical fields. She is required to have days away from work to allow her to function; and is only able to exert control over her immediate environment. A company has located staff to the adjoining office and the increased electrical, Wi-Fi, and mobile phone signals are making her ill and once more she is having to have more time alone in her bedroom in the evenings so that she can recover enough to continue to attend work.

33. On 18 September 2020 the experienced expert in cell site analysis and Radio Frequency surveying Stephen Grills of First Forensic Solutions Ltd reported the results of a technical survey, and confirmed the presence of multiple 5G signals in locations in the vicinity of Ms. Rock's home⁴⁰. Separate areas of 5G signal (emitted by mobile telephone network providers) were recorded and the masts emitting 5G are depicted, along with the location of Ms Rock's home on Netheravon Road South marked, on the map exhibit LH-02A⁴¹. The 5G signals were recorded on the 3.5GHz band. The report notes that three of the four mobile telephone networks provide their 5G service in the Chiswick location.

34. A further EMF survey of the electromagnetic fields in the location of Netheravon Road South was conducted on 17 February 2021 by Link Microtek Ltd, a company that supplies high specification radio frequency (RF), microwave and infra red systems, components and instrumentation for aerospace, defence and commercial wireless applications⁴². It also was able to take measurements of RFR in the area, and reports the findings in a report of 3 March 2021⁴³. The author is not given. The survey confirms

³⁹ P.378. Exhibit SO-05.

⁴⁰ P.116-P.140. Report [exhibit LH-1]; and, at P.141-P.158, accompanying maps [exhibit LH-02]

⁴¹ P.148 Exhibit LH-02.

⁴² As its website describes at <https://www.linkmicrotek.com/>

⁴³ P.163-P.182. Exhibit LH-04.

the presence of 5G radiation; and some Infinet wireless equipment. It also mentions that the guidelines for safety from ICNIRP are for 6 or 30 minute exposure periods only⁴⁴. Notably there was a considerable difference between the power density of the electrical field strength as between the location at the junction of the A4 and Netheravon Road South – which is where Ms Rock’s home is – and all the other places a reading was taken⁴⁵. Most readings were at less than 0.05% of the ICNIRP general public reference level; but at that specific location the maximum singular readings were at 2.32% of the level. That reading was 100 times higher than the maximum signal recorded at one of the other locations. If all of the maximum values were present simultaneously at the location closest to the house in fact the reading would be 4.47%⁴⁶. Given what is known of the effects at this location this lends support to the problems in using a thermal-heating approach as ICNIRP does as the sole consideration, and using such short time-exposures for the general guidelines.

35. Professor Paul Heroux is both Professor of Toxicology and Health Effects of Electromagnetism, at McGill University, Canada, and a Medical Scientist of the Department of Surgery at McGill University Health Center. He is a doctor holding BSc, MSc and PhD in Physics, and with extensive training and expertise in engineering, biology and medicine⁴⁷, and occupational health. He has been working in the relevant field since 1976. He provides an expert report considering the presence of an electromagnetic exposure event, and resulting Electromagnetic Hypersensitivity, arising from the 7 September 2020 attendance of Mmes Hackett and Openshaw⁴⁸. He received a history of the erythema, i.e. the skin reddening, and sensations and symptoms of the occasion and subsequent to that attendance. Considering the Link Microtek report, Professor Heroux observes that an individual can be exposed at a location to the signals of all providers simultaneously, as shown by the coexisting peaks in all the graphs. The measurements quoted were for the signal of each particular provider only.

⁴⁴ P.169

⁴⁵ P.171

⁴⁶ P.175 explains that this aggregate of the highest readings should be an artificially high one because they should not all be at maximum levels at the same time. No reason as to why that should not occur is given, but the worst-case scenario is said to be double the individual peak recorded, which was the very high comparable maximum closest to Ms Rock’s home.

⁴⁷ Curriculum Vitae at P.206-P.231. A sufficiently impressive short summary is seen at P.206 and P.227, P.229-P.231.

⁴⁸ P.183-P.205. Exhibit LH-05.

Separate networks however are able to radiate simultaneously; indeed providers can compete for dominance in the strength of the signal as is shown in the graphs in the Link Microtek report. On those graphs of the readings taken, for example, the true peak could be seven times higher. The industry firm's report therefore under rates the exposures possible for individuals at the location⁴⁹. In addition, it is observed by the expert that the readings were taken over a 6-minute period. This was a snapshot with no attempt to establish if other readings exist at other times of day for example, and whether all antennas were in operation or not in that particular 6-minute period⁵⁰.

36. Professor Heroux notes that the rural residence of Mmes Hackett and Openshaw would be estimated typically to involve daily exposure to levels 100 times less than those to which they were exposed for a short period of hours on 7 September 2020⁵¹. He notes the symptoms in keeping with a diagnosis of EHS. He notes the research trials that evidence that Electromagnetic Hypersensitivity may occur after an acute event with acute onset, and that cutaneous reactions in the skin, and erythema are documented in the scientific studies. When an acute event occurs, the cellular population of mitochondria is altered, transiently or permanently (this is known as heteroplasmy), which lead to a condition with uncertain recovery. The population of mitochondria within cells (300,000 per cell in human eggs and 50,000 per cell in heart cells) is a diverse population that can be modified, with or without recovery after toxic insult⁵². Professor Heroux concludes that Mmes Hackett and Openshaw are further victims of EMR intoxication and suffered EHS⁵³.

37. Dr. Jenny Goodman is a UK-based environmental doctor. She began practising in Environmental Medicine in 2000. She saw her first patient with Electro-HyperSensitivity (EHS) in 2010 and, since then, has seen more and more people who are made ill by devices which emit EMR. Her witness statement describes four anonymised case studies of patients suffering from EHS, and comments that those who

⁴⁹ P.184-P.185

⁵⁰ P.185

⁵¹ P.202-P.203

⁵² P.204

⁵³ P.205

do not experience such obvious clinical reactions to EMR exposure are arguably more at risk in the long term, because they take no steps to limit their exposure⁵⁴.

Evidence concerning 5G technology and risk of harm to humans

38. Electromagnetic fields (EMFs) are packets of energy that have no mass⁵⁵. They vary in frequency and wavelength. Radiofrequency radiation (RFR), such as the electromagnetic waves emitted by mobile i.e. ‘cell’ phones, and Wi-Fi, are referred to as non-ionizing. This means that in contrast to ionizing radiation, which does induce ionization of water and biologically important macromolecules, RFR does not have a capacity for such effects. Unlike, for example X-rays, the energy of RFR is not enough to break electrons off the molecules. However, the evidence has mounted that radiation at the lower frequencies of RFR is capable of effects upon the body and living cells.
39. All types of man-made Electromagnetic Fields (EMFs)/Electromagnetic Radiation (EMR) - in contrast to naturally occurring EMFs/EMR - are polarized. Polarized EMFs/EMR can have increased biological activity. They are able to produce amplified intensities – a phenomenon not present in natural forms of EMF. They have the ability to force all charged/polar molecules and especially free ions within and around all living cells to oscillate on parallel planes and in phase with the applied polarized field. Such ionic forced-oscillations exert additive electrostatic forces on the sensors of cell membrane electro-sensitive ion channels, resulting in their irregular gating and consequent disruption of the cell’s electrochemical balance. These features render man-made EMFs/EMR more bioactive⁵⁶. Experiments have shown that not only linear but circular and elliptical polarizations are important parameters for the biological action of EMR, and that molecular structure of biomolecules may be important for the interaction between polarized EMF and the biological tissue. Polarized microwave radiation of maximum power 1 W emitted by a mobile phone can damage DNA and

⁵⁴ P379-386

⁵⁵ P.818. Belpomme et al.

⁵⁶ P.808-P.817. Panagopoulos, D, Johannson, O, and Carlo, G. (2015) *Polarization: A Key Difference between Man-made and Natural Electromagnetic Fields, in regard to Biological Activity. Sci. Rep. 5*, 14914; doi: 10.1038/srep14914 (2015). The study was supported by the Karolinska Institute, Stockholm, Sweden, the Irish Doctors Environmental Association, and the Alliance for Irish Radiation Protection.

cause adverse health effects, while non-polarized infrared, visible, and ultraviolet radiation from a 100 W light bulb, or ~400 W infrared and visible EMR from a human body, cannot. The study of the polarization effects produced in the bundle notes that there is a need for further experiments, to supplement those that have studied the effects of the polarised EMFs, those additional studies to compare non-polarized and polarized EMFs/EMR of identical other characteristics (intensity, frequency, waveform, etc) on certain biological models to increase knowledge in this area. The role of polarization in the ability of EMFs/non-ionizing EMR to induce biological effects, as described in the study, is largely underestimated in the previous EMF-bioeffects literature. The effect appears to be an explanation for ‘the large and increasing number of studies during the past few decades have indicated a variety of adverse biological effects to be triggered by exposure to man-made EMFs, especially of radio frequency (RF)/microwaves, and extremely low frequency (ELF). The recorded biological effects range from alterations in the synthesis rates and intracellular concentrations of different biomolecules, to DNA and protein damage, which may result in cell death, reproductive declines, or even cancer^{1–7}. Under the weight of this evidence the International Agency for Research on Cancer (IARC) has classified both ELF magnetic fields and RF EMFs as possibly carcinogenic to humans’⁵⁷.

40. Non-Ionising Radiation used in 5G and RFR requires potential two effects to be considered. One effect is thermal, i.e. heat, generation. For instance, a microwave oven heats using RF-EMFs⁵⁸. The other is non-thermal and concerns the biological consequences and risks from this radiation exposure.

41. Professor Heroux explains that –

Over time, proponents of thermal limits have proposed that effects below thermal limits were impossible on the basis of physics (radiation is non-ionizing, and too low in energy for the thermal agitation of molecules). These two arguments attempt to steer the discussion towards irrelevant principles. First, whether the radiation is ionizing or not does not mean anything in this context. The human body is full of molecules that are already ionized. Therefore, the question is whether the electromagnetic fields in question can interact with charges in the body that are released in various ongoing metabolic

⁵⁷ P.808

⁵⁸ It is understood that consumer microwave ovens use non-ionising electromagnetic radiation to heat material, at a nominal 2.45 gigahertz (GHz), i.e. a wavelength of 12.2cm; and a frequency in the range of 300 MHz to 300 GHz.

processes, such as oxidative phosphorylation and the rate of action of different enzymes. Second, thermal motion is a thermodynamic variable that changes the rate of reactions between molecules, but does not exclude a separate action of electromagnetic fields on the transfer of charges (electrons and protons) between molecules.⁵⁹

42. Numerous studies have shown biological effects at the cellular level of electromagnetic fields (EMF) at magnetic (ELF) and radio-frequency (RF) frequencies in extremely low intensities. Many of the mechanisms described for Multiple Chemical Sensitivity (MCS) apply with modification to EHS. Repeated exposures result in sensitization and consequent enhancement of response. Many hypersensitive patients appear to have impaired detoxification systems that become overloaded by excessive oxidative stress. EMF can induce changes in calcium signaling cascades, significant activation of free radical processes and overproduction of reactive oxygen species (ROS) in living cells as well as altered neurological and cognitive functions and disruption of the blood-brain barrier⁶⁰
43. Other common effects of EMF include effects on skin, microvasculature, immune and haematologic systems. It is concluded that the mechanisms underlying the symptoms of EHS are biologically plausible and that many organic physiologic responses occur following EMF exposure. Patients can have neurologic, neuro-hormonal and neuro-psychiatric symptoms following exposure to EMF as a consequence of neural damage and over-sensitized neural responses⁶¹.
44. Preliminary observations show that the millimeter waves (MMW), i.e. those used by 5G alone, increase skin temperature, alter gene expression, promote cellular proliferation and synthesis of proteins linked with oxidative stress, inflammatory and metabolic processes, could generate ocular damages, and affect neuro-muscular dynamics⁶². Di Ciaula considered at length the peer reviewed articles addressing health or biological effects of exposure to millimeter waves, or the general effects of RF-EMF exposure. He reports that-

⁵⁹ P.193

⁶⁰ P.886-P.889. Stein, Y and Udasin, I *Electromagnetic hypersensitivity (EHS, microwave syndrome) – Review of mechanisms*. Environmental Research 186 (2020) 109445

⁶¹ Ibid.

⁶² P.834-P.862. Ciaula, Agostino Di, (2018) *Towards 5G communication systems: are there health implications?* International Journal of Hygiene and Environmental Health.

The spread of radiofrequency electromagnetic fields (RF-EMF) is rising and health effects are still under investigation. RF-EMF promote oxidative stress, a condition involved in cancer onset, in several acute and chronic diseases and in vascular homeostasis. Although some evidences are still controversial, the WHO IARC classified RF-EMF as “possible carcinogenic to humans”, and more recent studies suggested reproductive, metabolic and neurologic effects of RF-EMF, which are also able to alter bacterial antibiotic resistance. In this evolving scenario, although the biological effects of 5G communication systems are very scarcely investigated, an international action plan for the development of 5G networks has started, with a forthcoming increment in devices and density of small cells, and with the future use of millimeter waves (MMW)... Further studies are needed to better and independently explore the health effects of RF-EMF in general and of MMW in particular. However, available findings seem sufficient to demonstrate the existence of biomedical effects, to invoke the precautionary principle, to define exposed subjects as potentially vulnerable and to revise existing limits.⁶³

45. Professor Heroux explains that biologically the transfer of electrons and protons between molecules is critical to numerous enzymatic reactions. Free electrons and protons exist transiently in living systems, and the traffic of charges is particularly intense in the vital process called *oxidative phosphorylation*, which occurs in mitochondria⁶⁴. All living cells are maintained by a continuous flow of free protons. The proton flow is maintained by oxidative phosphorylation, this chain of enzymes that are highly dependent on the movement of charges through tunneling. The influence of EMR on oxidative phosphorylation has been confirmed by Sanders et al⁶⁵ with various types of externally applied non-thermal RF radiation. The scientific literature documents *at least* the following components of EMR bioeffects-

1. Interference with short movements of electrons (generally <1.5 nm) and protons (generally <0.3 nm);
2. Hyperpolarization of mitochondrial inner membrane, resulting in electron leakages (Reactive Oxygen Species);
3. Reduction in pH, with liberation of Calcium, because of competitive binding with protein such as albumin.

He concludes that-

Artificial EMR is biologically active, and exposure of the general population to such fields should be much more limited than it is now. For years, the

⁶³ P.834. Ciaula, Agostino Di, (2018) *Towards 5G communication systems: are there health implications?* International Journal of Hygiene and Environmental Health.

⁶⁴ P.189

⁶⁵ P.191. Aaron P. Sanders, Daniel J. Schaefer, and William T. Joines, Microwave Effects on Energy Metabolism of Rat Brain. *Bioelectromagnetics* 1: 171-181, 1980; Aaron P. Sanders, William T. Joines, and John W. Allis. Effects of Continuous-Wave, Pulsed, and Sinusoidal-Amplitude-Modulated Microwaves on Brain Energy Metabolism, *Bioelectromagnetics* 6:89-97, 1985)

electrical industry argued that ionizing action on molecules was necessary for any biological action, while in fact, very low field levels can act directly on electrical charges (electrons and protons) freed in enzymatic reactions. The denial of these non-thermal effects is incompatible with science,..⁶⁶

46. The significance of different biomarkers measured in the peripheral blood of EHS and EHS/MCS patients is that the results imply that these patients present with some degree of oxidative/nitrosative stress, inflammation and autoimmune response. Increased levels of several of these markers (notably protein S100B and NTT) may reflect hypoxia-associated oxidative stress-induced blood brain barrier (BBB) opening⁶⁷. The inflammatory and oxidative/nitrosative states that have been documented in EHS patients are remarkable since they confirm the data obtained experimentally in animals exposed to non-thermal EMFs, and especially in the brain. The limbic system associated capsulo-thalamic abnormalities that the Belpomme^[68] group has observed by using UCTS in EHS and/or MCS patients may likely correspond to the hippocampal neuronal alterations caused by EMF exposure in the rats.⁶⁹
47. A study in 2020 by Geesink and Meijer⁷⁰, which particularly looks at the quantum biological operation of non-thermal electromagnetic waves upon biological cellular activity, finds a general consensus in the research that: 1) non-thermal electromagnetic waves have an impact on health, 2) frequency modulations of coherent frequencies for the major part show a disadvantageous influence on health properties, and 3) since selected frequencies can either be related to health promoting effects or to frequencies related to unhealthy situations, presently used communication technology can be fine-tuned to achieve a greater extent of safety⁷¹. Non-thermal EMF's biological effects are found to depend upon various physical wave or field parameters, and this is capable of explaining different findings in different studies as to the effects of the RFR exposure. (N.B. Without changes to the current 5G operation it is seen that 80% of its planned

⁶⁶ P.191

⁶⁷ P.823

⁶⁸ P.825

⁶⁹ P.825

⁷⁰ P.890-P.892, though the main report ends at P.924. Geesink, H and Meijer, D (2020) *An integral predictive model that reveals a causal relation between exposures to non-thermal electromagnetic waves and healthy or unhealthy effects.*

⁷¹ P.924. A meta-analysis of about 721 papers has shown that external non-thermal electromagnetic waves can be beneficial in disease treatment, or detrimental for living cells and biomolecules, depending on the nature of the typical external electromagnetic frequency patterns that can stabilise internal coherent frequency patterns or induce internal decoherent frequency patterns [P.923]

frequencies have an effect on biomolecular functioning). The effects of RFR upon conformational changes in the components of living cells is established by the research. This has an impact upon the biomolecular structures, which are in a constant process of building, rearrangement, homeostasis, rebuilding, and apoptosis; and the coherence or decoherence of the biomolecules is related to quantum wave equations. The study is also particularly interesting because it relates the effects upon health that may be negative, from destabilising effects upon tissues, cells and biomolecules, or positive from using electromagnetic field effects in therapeutic measures to treat illnesses. The authors explain that ‘the cornerstone of our work is an extensive meta- analysis of about 750 articles from 1950 to 2017, dealing with endogenously measured and exogenously applied electromagnetic field frequencies in tissues, cells and biomolecules. This analysis unequivocally showed band patterns of beneficial (stabilizing) or detrimental (destabilizing) EMF frequencies of the experimentally chosen electromagnetic fields in the sub Hertz till Peta Hertz region as exposed to or within in a large variety of vitro and in vivo life systems. Of note even the pattern of destabilizing and unhealthy biological effects fit with a quantum behaviour that is adequately described by a quantum equation⁷². Destabilising experiments of EMF exposure had found numerous ill health effects⁷³. It is summarised that –

⁷² P.899.

⁷³ P.899. These are listed to include

- tumour growth,
- influence on teratogenic potential,
- DNA single-strand breaks,
- gene expression, chromosomal instability,
- inhibition of cell growth,
- influences on sperm viability parameters,
- influence on sleeping,
- influence on the permeability of the blood-brain barrier,
- influence on social behaviour,
- cognitive impairment,
- learning and memory alterations,
- maculopathy,
- influence on specific brain rhythms,
- alter of protein conformation,
- effects on blood pressure,
- cardiovascular responses,
- phototoxic effects on human eye health and on the retina,
- influence on alkaline phosphatase activity
- antigen-antibody interaction,
- ADHD,
- cardiovascular effects; etc.

Conformational states of living cells have typical spatial arrangements of atoms, that are characteristic for building, homeostasis, decay and apoptosis. We earlier found clear evidence, indicating that such states of biomolecules are related to spectral coherence and decoherence frequency bands, providing a quantitative physical resource. The patterned arrangements of EMF frequencies can be described by electromagnetic wave patterns positioned on an acoustic scale, on the basis of an underlying quantum wave equation. The proposed equation shows a discrete distribution of energy... that supports quantum entanglement, and is in line with the earlier published models of Fröhlich and Davydov. The overall results show the presence of a molecular code-script, which supplies information to realize biological order in life cells and substantiates collective (Bose-Einstein) type of coherent wave behaviour. The particular wave

equation was inferred from a meta-analysis of 724 biomedical publications, from 1970 till 2020, reporting either beneficial or detrimental biological effects caused by external non-thermal EMF-frequencies from ELF till THz. Based on this new biophysical principle, solid evidence is provided to support a causal relation between exposure of electromagnetic waves and healthy or unhealthy effects for living cells and biomolecules. External exposures to non-thermal KHz, MHz- and GHz electromagnetic waves can therefore lead to unhealthy conditions depending on wave frequency, pulsing properties, field intensity and exposure time. An additional analysis of 229 experiments confirms that non-thermal electromagnetic waves are able to induce significant changes in human cells. The currently applied single or composed frequencies in communication technology, fit for 94.2% with the proposed quantum model related to either healthy or unhealthy behaviour. For example, up to 80% of the planned 5G frequencies belong to the detrimental decoherent or modulated coherent frequency bands...⁷⁴

48. Without seeking to do justice to the full wealth and breadth of scientific and medical learning evidenced in the papers, it is sufficient for present purposes to recognise the risks and effects from the existing and increasing use of RFR - and further danger in prematurely adding to it the 5G cell network – due to the effects and possible effects of-

- i. Oxidative stress⁷⁵; and nitrosative stress⁷⁶;
- ii. Cancer. Indeed in 2011 the World Health Organization, WHO and the International Agency for Research on Cancer classified radiofrequency radiation as a possible carcinogen to humans⁷⁷;
- iii. Dementia / neurodegenerative diseases;

⁷⁴ P.891

⁷⁵ P.805. ‘Oxidative stress is an induced imbalance between prooxidant and antioxidant systems resulting in oxidative damage to proteins, lipids and DNA; and is closely connected to overproduction of reactive oxygen species (ROS) in living cells’ [1].ss has within the body’s cells. Figure 5 at P432 depicts the effects that oxidative stress has within the body's cells.

⁷⁶ i.e. overproduction of nitric oxide.

⁷⁷ P.805-P.807; at p805. Yakymenko, I, Sidorik. E, et al (2014) *Low Intensity Radiofrequency radiation: a new oxidant for living cells* (2014) *Oxid Antioxid Med Sci*. DOI 10.5455

- iv. Infertility, particularly sperm function⁷⁸;
- v. Heightened risks to developing immune and health systems in infants and children. Neurodevelopmental or immunological harm;
- vi. Electromagnetic Hypersensitivity Syndrome, EHS. Exposure to non-ionising radiation including radiofrequency is notably a recorded disease or illness recognised by the WHO, since 2005, in the International Classification of Diseases, ICD⁷⁹.

49. RF-EMF exposure is rising and its health effects are still under investigation and study. Nonetheless, both oncologic and non-cancerous chronic effects are suggested by the research⁸⁰.

50. The effect of RFR as an oxidant for living cells has been examined in detail by Yakymenko *et al*⁸¹, who studied 80 peer-reviewed published papers, and found over 92% detected significant oxidative stress. The effects most often included overproduction of ROS, lipid peroxidation/increased concentrations of malondialdehyde, protein peroxidation, increased concentrations of nitric oxide (NO) and changes in the activity of antioxidant enzymes. Some papers point to the role of particular ROS and the ROS related pathways. For example, the mitochondrial pathways of superoxide/ROS generation have been shown to be activated in living cells during exposure to low intensity RFR. Importantly, a non-phagocyte NADH oxidase, a known enzymatic source of ROS, was shown to be significantly activated just after a few minutes of exposure to low intensity RFR. More to that, a possibility of mechanochemical disruption of water molecule clusters with dissociation of water molecules due to low intensity microwave exposure was demonstrated already many years ago. Whilst questions remain over mechanisms, it is now understood that levels of ROS in living cells caused by low intensity RFR exposure could lead to mutagenic effects through expressive oxidative damage of DNA. The study concluded that –

Whatever the particular first-step molecular mechanisms, it is clear that the substantial overproduction of ROS in living cells under low intensity RFR

⁷⁸ P.842. At [3.1.2] Di Ciaula.

⁷⁹ <https://icd.who.int/browse10/2019/en#/W90>

⁸⁰ P834-P.862. Ciaula, Agostino Di, (2018) *Towards 5G communication systems: are there health implications? International Journal of Hygiene and Environmental Health.*

⁸¹ P.805-P.807. Yakymenko, I, Sidorik, E, et al (2014) *Low Intensity Radiofrequency radiation: a new oxidant for living cells (2014) Oxid Antioxid Med Sci. DOI 10.5455*

exposure could cause a broad spectrum of health disorders and diseases, including cancer in humans. Undoubtedly, this calls for the further intensive research in the area, as well as to a precautionary approach in routine usage of wireless devices.⁸²

51. Regarding carcinogenic effects, epidemiological studies have indicated a significant increase in the occurrence of various tumours among long-term and “heavy” users of cellular phones. These include brain tumours, acoustic neuromas, tumours of parotid glands, seminomas, melanomas and lymphomas. Further, a similar increase in tumour incidence has been found among people living nearby cellular base transmitting stations [i.e. masts]⁸³.
52. Cancer is a plain focus of medical concern given its lethality and so has received significant study. The *International Agency for Research on Cancer (IARC)*, which deals with human epidemiology in the field, has already issued two reports, in 2002 and 2011⁸⁴, that have classified EMR as “possibly carcinogenic” (“2B”) at both ELF (left) and RF (right) frequencies. IARC will reassess its “2B” classification within 2 years, possibly with EMR to become a “confirmed human carcinogen”.⁸⁵
53. Oncologist Dr. S. Ramkumar, a Consultant Clinical Oncologist at University Hospital Southampton NHS Foundation Trust, has conducted a review of published studies of the correlation between mobile telephone use and acoustic neuroma and brain tumours⁸⁶. He notes that the data published in the past five years has indicated that long term (over 10 years) usage of a mobile telephone increased the risk of intracranial tumours, most of all glioma, especially in the case of ipsilateral exposure⁸⁷. His study noted a European Union commissioned study in these terms -

The European REFLEX study (2004) was conducted on behalf of the EU by 12 institutions. The results show that even at a SAR [Specific Absorption Rate] value of 1,3W / kg (representative of many mobile phones) significant biological damage was done in human cells and especially to the DNA. The key point is that structural research has finally been carried out into the non-

⁸² P.806

⁸³ P.805

⁸⁴ IARC, 2013. Non-ionizing radiation, part 2: radiofrequency electromagnetic fields. In: Organization, W.H. (Ed.), *IARC Monographs on the Evaluation of Carcinogenic Risks to Humans*. WHO – International Agency for Research on Cancer, Geneva .

⁸⁵ P.195

⁸⁶ P.709-P.719.

⁸⁷ P.709

thermal effects of 2G (GSM) radiation, 3G (UMTS) radiation and magnetic fields from electrical installations and devices. The effect of the electromagnetic radiation from these sources turns out to be very similar to the effect of X-rays. This is remarkable because many physicists still insist that radio frequency electromagnetic radiation cannot cause damage to the DNA because of its non-ionizing nature. The EU Reflex study shows that prolonged radiation from a cell phone and magnetic fields can cause genetic damage similar to that caused by radioactive radiation. The Reflex study also shows that there is a relationship with exposure duration, a dose-response relationship.⁸⁸

54. The report of Prof. Heroux⁸⁹ references the volume of work, in laboratory and animal experimentation, and human study, that has very strongly evidenced effects below the ICNIRP limits, both for sources close to humans such as a cell phone or modem, and for remote sources, such as cell towers, documented by the Instituto Ramazzini of Italy in 2019. Epidemiological study has shown that living within 500 m of a cell tower reduces the chances of surviving cancer by up to 40%⁹⁰. The cancer evidence shows that retaining heat only is inadequate protection, and that the afflictions described in the 59 publications on electrical hypersensitivity cited in this document are very real. The animal model results of the US National Toxicology Program 2019⁹¹, show “clear evidence of carcinogenicity”; as does the Ramazzini Institute work⁹². A number of different experiments conducted by the cited studies documented increases by two- or four-fold in tumor rates in exposed animals compared to non-exposed. These animal studies involved accordingly 4,288 rats and 2,180 mice, who do not share the view taken by ICNIRP’s guidelines.⁹³

⁸⁸ P.710

⁸⁹ At P.194

⁹⁰ Dode 2011 et al. Mortality by neoplasia and cellular telephone base stations in the Belo Horizonte municipality, Minas Gerais state, Brazil. *Science of the Total Environment* 409 (2011) 3649–3665. <https://www.ncbi.nlm.nih.gov/pubmed/21741680>

⁹¹ <https://ntp.niehs.nih.gov/whatwestudy/topics/cellphones/index.html>, See P.297-P.298 for details.

⁹² Falcioni 2018 et al. Report of final results regarding brain and heart tumors in Sprague-Dawley rats exposed from prenatal life until natural death to mobile phone radiofrequency field representative of a 1.8 GHz GSM base station environmental emission. *Environmental Research*, Volume 165, August 2018, Pages 496-503. <https://pubmed.ncbi.nlm.nih.gov/29530389>. See P.439 for details.

⁹³ P.195

55. Professor Tom Butler⁹⁴, of University College Cork, provides both a formal court report in these proceedings⁹⁵, and a shorter scientific article⁹⁶, each addressing two important questions. The first question addressed is to ascertain the findings of peer-reviewed scientific studies on the health effects of RFR and the implications for human health and wellbeing. Professor Butler found 90% of studies corroborated the oxidative effect of RFR, and 68% of studies found biological non-thermal and adverse health effects⁹⁷. Thus the ‘weight of objective scientific evidence has consistently found significant risks to human health—these risks are magnified where children are concerned’⁹⁸. The evidence from extant scientific research, into the existing RFR in use in the community, and the nascent body of research on 5G strongly suggests that 5G is likely to increase and, in some cases, magnify the risks of existing wireless technologies⁹⁹.

56. Regarding Electromagnetic Hypersensitivity Syndrome (EHS), known in the past as “Microwave syndrome”, this is a clinical syndrome characterized by the presence of a wide spectrum of non-specific multiple organ symptoms, typically including central nervous system symptoms, that occur following the patient's acute or chronic exposure to electromagnetic fields in the environment or in occupational settings¹⁰⁰. It is recorded that this malady has increased at the same time as the increases in use of RFR technology in everyday life. In 1985 it affected 0.06% of the population, but this has now risen, to be estimated at as much as 10% of the European population, but appears to be around 3-5%¹⁰¹. EHS is a medical condition by which subjects suffer due to RFR

⁹⁴ Tom Butler PhD MSc is a Professor of Information Systems (IS) at University College Cork, Ireland. A former satellite and microwave telecommunications engineer. In 2015 he began researching the risks posed by wireless technologies to children, following a suggestion by the Chief Risk Officer for a major insurance company concerned about the impact of WiFi on children [P.406]

⁹⁵ P.403-P.547.

⁹⁶ P.983-1020.

⁹⁷ P.1010. Also in report at P.415; P.426-P.427.

⁹⁸ P.989

⁹⁹ P.986

¹⁰⁰ P.886. Stein, Y and Udasin, I *Electromagnetic hypersensitivity (EHS, microwave syndrome)* – *Review of mechanisms*. Environmental Research 186 (2020) 109445.

¹⁰¹ P.805. Yakymenko, I, Sidorik, E, et al (2014) *Low Intensity Radiofrequency radiation: a new oxidant for living cells (2014)* Oxid Antioxid Med Sci. [Other estimates have been provided of EHS prevalence. ‘Johansson (2015) estimates that over 3% of Swedish people have a functional impairment due to EHS. However, Huang et al. (2018) conclude that in developed nations, the incidence may be closer to 5% of the population (cf. Belpomme et al., 2018)’. P.1012 refers]. P.1020 Belpomme.

exposure. Typically these people suffer from skin and mucosa related symptoms (itching, pain, heat sensation), or heart and nervous system disorders after exposure to computer monitors, cell phones and other electromagnetic devices.¹⁰²

57. Dr Andrew Tresidder explains that exposure to radiofrequency is recognised in the International Classification of Diseases ICD.10 W.90.0. Nonetheless it is not taught to doctors, and most people will only be diagnosed if they themselves observe the cause and effect. He observes that modern biology recognises that cells communicate using electromagnetic and not only chemical means. Organs such as the brain and the heart have electrical signals; the ‘heart is a large electromagnetic organ, with a measurable field over a metre from the body, whilst the brain is well-known to produce electromagnetic signals’¹⁰³.

58. The symptoms of EHS have some similarity it might be said to those described as ‘long-COVID’ symptoms, as Mrs Hackett has pointed out¹⁰⁴. Whilst there remains no understanding of why or how some individuals suffer this continuing condition, it has not met with the same undue scepticism with which EHS sufferers have had to contend.

59. Descriptions of electromagnetic hypersensitivity include fatigue, headache, drowsiness, irritability, loss of appetite, memory impairment, mental changes, unstable mood, hypochondria and anxiety, tinnitus, recurrent infections, difficulty concentrating, skin symptoms, insomnia, heart problems, bad blood circulation, disorientation, nasal congestion, reduced libido, thyroid disorders, eye discomfort, increased urge to urinate, listlessness, capillary fragility, cold hands and stiff feet and muscles¹⁰⁵. The diversity of symptoms is due to the fact that electromagnetic waves influence the base of metabolism, so the symptoms of different individuals depends upon the physiologic

¹⁰² P.805. Yakymenko, I, Sidorik. E, et al (2014) *Low Intensity Radiofrequency radiation: a new oxidant for living cells (2014) Oxid Antioxid Med Sci.*

¹⁰³ P.345

¹⁰⁴ Dr Tresidder makes the point – ‘There is a school of thought that dismissed the issue as purely psychological: similar schools have argued in the same way about Gulf War Syndrome, a problem known to be tragically real by thousands of veterans. Twenty years ago, other thinkers might have dismissed Chronic Fatigue and Myalgic Encephalomyelitis as psychological (and therefore unimportant and non-existent) illnesses. Time has moved on. Indeed, there might be shared mechanisms, as a number of people with CFS/ME also suffer from symptoms of ES. There may be links in mitochondrial function, or implicated in chronic fatigue [P.347]

¹⁰⁵ P.200; per Professor Heroux.

vulnerabilities of different tissues and different people. Low level exposure to non-thermal electromagnetic radiation has been shown to affect the electroencephalogram [i.e EEG brain activity reading]. The cholinergic system of the rat brain has shown that after exposure, changes occur in muscarinic cholinergic receptors, mediated by opioids and corticotropin. Reduced spectral power and interhemispheric coherence in humans are observed in the alpha and beta bands of the frontal and temporal brain regions. These findings are corroborated using functional magnetic resonance imaging¹⁰⁶.

60. Professor Heroux also notes that specific physiological changes have already been documented: inflammation, hypoperfusion in the temporal lobes during chemical stimulation in the clinic and a specific modification of the permeability of the blood-brain barrier¹⁰⁷. These symptoms are worse in the vicinity of electrical devices, transformers, cell phone antennas and other sources of radiation, but absent if patients are not exposed¹⁰⁸.
61. As well as those genetically or environmentally susceptible to suffer cancer or EHS in the future from the exposure to RFR, there are also existing vulnerable groups to be considered including -
- i. Those who presently suffer disability arising from existing cancer;
 - ii. Those presently suffering pre-cancerous conditions;
 - iii. Those exposed habitually to radiation in the workplace, of particular levels or longevity;
 - iv. Those with immunosuppressant conditions;
 - v. Those suffering ME;
 - vi. Those presently suffering from EHS;
 - vii. Those with disabilities that required the implant of metal to their body;
 - viii. Those with disabilities that require medical implants with electrical currents or conductivity, including pace-makers in the heart for example;
 - ix. Children.

¹⁰⁶ P.201

¹⁰⁷ Bellepomme, 2015, *Reliable disease biomarkers characterizing and identifying electrohypersensitivity and multiple chemical sensitivity as two etiopathogenic aspects of a unique pathological disorder*. *Rev Environ Health* 2015; 30(4): 251–271

¹⁰⁸ P.201

62. These categories demonstrate that fair consideration must be given to those with disabilities that qualify for equal treatment protection, discharge of the Public Sector Equality Duty protection. Furthermore, where necessary reasonable adjustments ought to be made by public authorities such as the Defendants for those who are disabled and face a higher risk than the general public.

63. For those with disability treated by medical implant the consideration of safety given by ICNIRP, in its revised 2020 guidelines expressly do not cater for their safety. It is stated simply -

radiofrequency EMFs can indirectly cause harm by unintentionally interfering with active implantable medical devices (see ISO 2012) or altering EMFs due to the presence of conductive implants.

As medical procedures rely on medical expertise to weigh potential harm against intended benefits, ICNIRP considers such exposure managed by qualified medical practitioners (i.e., to patients, carers and comforters, including, where relevant, fetuses), as well as the utilization of conducting materials for medical procedures, as beyond the scope of these guidelines¹⁰⁹

64. Children's interests and safety obviously deserves specific and careful attention. Their best interests must be placed at the heart of decision-making. Professor Butler records that 'Children are particularly vulnerable and their risk from exposure is very high (Belyaev et al., 2016; Birks et al., 2017; Divan et al., 2008, 2012; Gandhi et al., 2012; Grigoriev and Khorseva, 2018; Han et al., 2010; Morgan et al., 2018; Melnick, 2020)'¹¹⁰. Dr Erica Mallery-Blythe, for the Physicians' Health Initiative for Radiation and Environment, 'PHIRE', summarises¹¹¹ studies leading to identified vulnerability of children -

Children are more vulnerable due to multiple factors:82¹¹². It is noteworthy that brain tumours have overtaken leukaemia as a leading cause of cancer death in young people.

a) Children absorb more radiation:

□ The brain of a child (age 5-8yrs) can absorb 2x the radiation of an adult.83¹¹³

¹⁰⁹ P733. ICNIRP. Guidelines for limiting exposure to electromagnetic fields (100 kHz to 300 GHz) Health Phys 118(5):483–524; 2020. [At internal p734].

¹¹⁰ P.1011; and at P.501

¹¹¹ P.395

¹¹² Morgan et al., 2014. Why children absorb more microwave radiation than adults: The consequences JMAU 2014; 2 (4): 197 – 204 <https://www.sciencedirect.com/science/article/pii/S2213879X14000583>

¹¹³ Wiart, J., et al, 2008. Analysis of RF exposure in the head tissues of children and adults. Physics in Medicine and Biology.

- Exposure in bone marrow can be up to 10x greater than an adult.⁸⁴¹¹⁴
- b) Outcomes in children may be worse as:
 - Children have systems which are still developing.
 - Children have a longer time ahead for latent effects to manifest.

65. As seen above, there is considerable scientific evidence that ELF (extreme low frequency) - EMF (electromagnetic field) exposures clearly pose a health risk. Geesink and Meijer observe that ‘The strongest evidence for health effects comes from an association observed with childhood leukaemia. This lies at the basis of a classification performed by the International Agency for Research on Cancer in 2001, ranking ELF magnetic fields as possibly carcinogenic to humans (Group 2B) (IARC, 2002). The classifications, essentially, were based on the fact that epidemiological studies showed a consistent association between magnetic fields above approximately 0.3/0.4 μT (Marino, 2016)’.¹¹⁵

66. Belpomme *et al* report that, as regards the health effects of RFR upon humans that they have observed from the studies undertaken, ‘Unfortunately standards set by most national and international bodies are not protective of human health. This is a particular concern in children, given the rapid expansion of use of wireless technologies, the greater susceptibility of the developing nervous system, the hyperconductivity of their brain tissue, the greater penetration of radiofrequency radiation relative to head size and their potential for a longer lifetime exposure’.¹¹⁶

67. A study published in the USA has criticised the mobile [cell] phone certification process in that country that uses a plastic model of a head called the Specific Anthropomorphic Mannequin (SAM), which represented the top 10% of U.S. military recruits in 1989 – i.e. tall male adults¹¹⁷. This model is ‘greatly underestimating the Specific Absorption

¹¹⁴ Christ, A., Gosselin, M-C., Christopoulou, M., et al., 2010. Age-dependent tissue-specific exposure of cell phone users.

Phys. Med. Biol. 55:1767–1783. <https://iopscience.iop.org/article/10.1088/0031-9155/55/7/001/pdf>

¹¹⁵ P.892. Geesink, H and Meijer, D (2020) *An integral predictive model that reveals a causal relation between exposures to non-thermal electromagnetic waves and healthy or unhealthy effects.*

¹¹⁶ P.818-P.833. At P.818, and see P.822. Belpomme, D, Hardell, L et al (2018) *Thermal and non-thermal health effects of low intensity non-ionizing radiation: An international perspective,* Environmental Pollution 242 643-658

¹¹⁷ P.460

Rate (SAR) for typical mobile phone users, especially children'¹¹⁸. The study warns that 'Radiofrequency (RF) exposure to a head smaller than SAM will absorb a relatively higher SAR. Also, SAM uses a fluid having the average electrical properties of the head that cannot indicate differential absorption of specific brain tissue, nor absorption in children or smaller adults. The SAR for a 10-year old is up to 153% higher than the SAR for the SAM model. When electrical properties are considered, a child's head's absorption can be over two times greater, and absorption of the skull's bone marrow can be ten times greater than adults. Therefore, a new certification process is needed that incorporates different modes of use, head sizes, and tissue properties. Anatomically based models should be employed in revising safety standards for these ubiquitous modern devices and standards should be set by accountable, independent groups'. The study concluded that 'Because billions of young children and adults with heads smaller than SAM are now using cell phones extensively, and because they absorb proportionally greater cell phone radiation, it is essential and urgent that governments around the world revise approaches to setting standards for cell phone radiation, to include sufficient protection of children'.

68. The risks and potential risks posed by RFR are not discounted by insurance underwriters as being insignificant. Professor Heroux, amongst others, also records the fact that the major underwriting insurers do not accept liability for claims arising from chronic effects of EMR¹¹⁹.

69. Professor Butler concludes that there is sufficient scientific evidence of risks to human health to require a temporary halt to any further deployment of wireless technologies in the environment, pending the results of independent and relevant research into "unknowns," such as the effects of the novel and complex exposures to 5G¹²⁰.

¹¹⁸ P.776-P.784 Gandhi et al *Exposure Limits: The underestimation of absorbed cell phone radiation, especially in children, Electromagnetic Biology and Medicine, 31(1): 34-51, 2012*

¹¹⁹ P.192. He provides primary source references -

<https://www.scribd.com/document/261610831/Insurance-AE-CFC-Underwriting-Limited-Lloyds-Latest-Version-February-7th-2015>

<https://www.businessinsurance.com/article/20070603/ISSUE03/100022051/insurers-excluderisks-associated-with-electromagnetic-radiation>

¹²⁰ P.1015

70. The First Claimant, Ms Angell, was diagnosed in July 2015 with ductal carcinoma insitu, 'DCIS'. This is a precancerous change within the ducts of the breast. Left untreated it may produce cancer, though it may also remain indolent. She undergoes yearly mammograms to monitor the progress of the disease¹²¹. In July 2018 she first learned of the harm being caused by Wi-Fi, particularly in schools. She became very troubled that increasing numbers of people were trying to find ways to live sheltering from levels of radiation that are now virtually everywhere in the built environment. From experts¹²² she heard from, it was apparent that there was much research on biological harm from RFR that, in the fast advance of technology, was simply being overlooked or ignored. She began to investigate the biological science for herself. She examined the reports of international bodies, and identified the absence of biological as opposed to technological expertise represented on such bodies. She observed the increased risk to children; even from existing ubiquitous RFR before introducing additional microwave radiation of the 5G variety. She found that the government had not required PHE (or COMARE) to look at the science itself but was content to allow PHE to rely on another entity, namely ICNIRP. She feels that this private entity, with its close fiscal ties to the technology industry and its serious conflicts of interest, is not in any way a reliable last word in safety. It was apparent that the issue was national and could only be addressed at a national level. Questions arose as to whether the government had been lobbied by the telecommunications industry, and whether the competition for advances in technology, and potential profits in this field, were such that all realistic concerns had simply been set aside.

71. Karen Churchill, the Second Claimant, lives in Rode, Somerset. She suffers from myalgic encephalomyelitis ('ME') which she developed after 9 years as a computer programmer. Having a compromised immune system and weak nervous system means it is vitally important that she is not exposed to environmental factors which may adversely impact upon these systems. She has also suffered skin cancer. She is seeking to prevent 5G being installed in Somerset in places she would otherwise be going to, and need to go to, in her ordinary daily life. She has been actively campaigning against the installation of 5G across, principally, the South West of the country, and has sought

¹²¹ P.249. Exhibit VC-01. The Royal Marsden NHS Foundation Trust letter dated 11 June 2020.

¹²² The details of those eminent experts speaking at the conferences at which she attended in 2018 are given in the witness statement, at [8]-[9]. P.235-P.236

to assist local individuals and organisations objecting to planning applications for individual masts. She has successfully secured at the town council level in Frome, Shepton Mallet and Wells and Somerset County, the adoption of a precautionary principle against endorsing local 5G roll out, but this does not prevent 5G masts actually being installed in light of the national framework, which does not even require planning permission for many installations, and absence of national authority investigation into the evidence of harm and that would scrutinise the body ICNIRP's guidelines [discussed below]. Planning authorities have not been equipped to address the health risks and concerns about radiation in any meaningful or proper manner that safeguards against the harm or potential harm of the 5G form of radiation. The central problem is at the national level the failure to take appropriately seriously and actively the scientific evidence of risk to human health and to take appropriate steps accordingly, including giving consideration to the evidence that has mounted.

72. As Belpomme *et al* explain, exposure to low frequency and radiofrequency electromagnetic fields at low intensities poses a significant health hazard that has not been adequately addressed by national and international organizations such as the World Health Organization. There is strong evidence that excessive exposure to mobile phone-frequencies over long periods of time increases the risk of brain cancer both in humans and animals. The mechanism(s) responsible include induction of reactive oxygen species, gene expression alteration and DNA damage through both epigenetic and genetic processes. In vivo and in vitro studies demonstrate adverse effects on male and female reproduction, almost certainly due to generation of reactive oxygen species. There is increasing evidence the exposures can result in neurobehavioral decrements and that some individuals develop a syndrome of “electro-hypersensitivity” or “microwave illness”, which is one of several syndromes commonly categorized as “idiopathic environmental intolerance”. While the symptoms are non-specific, new biochemical indicators and imaging techniques allow diagnosis that excludes the symptoms as being only psychosomatic¹²³

¹²³ P.818-P.833. At P.818. Belpomme, D, Hardell, L et al (2018) *Thermal and non-thermal health effects of low intensity non-ionizing radiation: An international perspective*, Environmental Pollution 242 643-658

73. The above material is of course necessarily a very small representation of the volume of material that has established effects of RFR and EMF, and of the harmful consequences for some individuals from either acute or longer-term chronic low level frequency exposure to radiation placed in the manmade environment for telecommunication purposes. However these views represent a mainstream of independent qualified expert opinion, not a small or insignificant outlier. As well as the voluminous publications referred to within the expert reports submitted, the Court is invited to note –

- i. The very large number of scientists and doctors who are calling for a moratorium, with 415 scientists and doctors signing an open declaration calling for a moratorium in Europe on 5G expansion because “5G will substantially increase exposure to radiofrequency electromagnetic fields (RF-EMF) on top of the 2G, 3G, 4G, Wi-Fi, etc. for telecommunications already in place. RF-EMF has been proven to be harmful for humans and the environment”. The confirmed harm is expressly cited as its carcinogenic effect¹²⁴;
- ii. the International EMF Scientist Appeal. Since 2015 – when the document was first published in the European Journal of Oncology – the ever-growing scientific community specifically of those who have published research on electromagnetic radiation has been appealing to the United Nations, given the failures of the private non-governmental organisation in Germany of ICNIRP. More than 250 scientists and doctors from 43 nations urgently call for protective EMF guidelines until the serious potential hazards for human health and the environment have been fully investigated by scientists independent from industry. The scientists give notice that ‘numerous recent scientific publications have shown that EMF affects living organisms at levels well below most international and national guidelines. Effects include increased cancer risk, cellular stress, increase in harmful free radicals, genetic damages, structural and functional changes of the reproductive system, learning and memory deficits, neurological disorders, and negative impacts on

¹²⁴ P.557-P.567. <http://www.5gappeal.eu/the-5g-appeal/>. By 11 March 2021 this had attracted 415 signatories.

general well-being in humans. Damage goes well beyond the human race, as there is growing evidence of harmful effects to both plant and animal life'¹²⁵; and

- iii. the many medical and scientific professional groups that endorse the 2020 Consensus Statement of UK and International Medical and Scientific Experts and Practitioners on Health Effects of Non-Ionising Radiation¹²⁶.

74. It must be questioned why all of these studies, experiments and publications have not been accepted to at the very least give rise to a need to carefully examine the health consequences of increasing the environmental exposure of the population to these unnatural radiation forces.

75. Early wireless technology innovation focused on military, aviation, and telecommunication applications, such as radar and microwave communications. However, the 1980s saw the rollout of commercial consumer-oriented wireless cellular telecommunications systems. While concerns on adverse health effects from exposure to RFR emerged in the military-industrial context in the 1950s, it was not until the early 1990s that there was an institutional response to calls for health and safety protection guidelines. Unfortunately, these guidelines were based on NIR/RFR thermal risks only—the science and technology body responsible for the guidelines ignored and dismissed a considerable body of research finding adverse health effects from non-thermal exposures. By 2020, that body of research had grown considerably – as seen above. Yet, ‘for reasons that are unclear to concerned scientists, guidelines from the 1990s remain unchanged’¹²⁷.

International bodies and RFR and Non-Ionising Radiation

¹²⁵ <https://emfscientist.org/index.php/emf-scientist-appeal>

¹²⁶ P.391-P.402. 10 November 2020; Dr Erica Mallery-Blythe lists the many organisations representative of thousands of medical doctors, and of members of the scientific community also.

¹²⁷ P.983. Per Professor Butler

76. Professor Butler sets out the history of earlier structures, and the industry need that led to the creation of the body ICNIRP¹²⁸. In 1991 the body IEEE which represented the telecommunications industry released the C95.-1991 standard covering “*safety levels with respect to human exposure to radio frequency electromagnetic fields, 3 kHz to 300 GHz*”. This standard rubberstamped the industry position that human health and safety was not at risk. At the General Assembly of the International Radiation Protection Association (IRPA) on May 29, 1992, held in Montreal, IRPA members created the ICNIRP for the purpose of protecting public health from non-ionising radiation. ICNIRP was a non-governmental organisation charged with employing the same fundamental principles and approaches as IRPA.

77. Three issues require particular consideration in relation to this private non-governmental organisation –

- i. The methodology it adopts to setting its own recommendation of guidelines. This is conducted by review of others’ work [It conducts no experiments or studies as an entity]. An issue as to whether such method could be fit-for-purpose for the Defendants’ discharge of duties arises;
- ii. The membership of it; both as to fields of expertise within the small 14-member Commission; and the member cross-relationship to other bodies;
- iii. The independence or otherwise, in funding, appointment, and influence of the membership and organisation.

78. ICNIRP issued guidelines, which it publishes in a journal, as it has no official status, in 1998¹²⁹, again in 2009¹³⁰, and most recently revised in 2020¹³¹. Describing the 2020 changes, the accompanying media release states ‘The guidelines cover the upcoming 5G technologies, as well as AM and DAB radio, WiFi, Bluetooth and the currently used 3G/4G mobile phones’. The Chairman of ICNIRP states -

¹²⁸ p.995

¹²⁹ ICNIRP (1998). Guidelines for limiting exposure to time-varying electric, magnetic, and electromagnetic fields (up to 300 GHz). *Health Phys*, 74(4), 494-522.

¹³⁰ ICNIRP (2009). Guidelines for limiting exposure to time-varying electric, magnetic and electromagnetic fields (up to 300 GHz). *Health Phys* 97, 257-258

¹³¹ ICNIRP (2020). Guidelines for limiting exposure to electromagnetic fields (100 kHz to 300 GHz). *Health Physics*, 118(5), 733-775.

“We know parts of the community are concerned about the safety of 5G and we hope the updated guidelines will help put people at ease,”...

“The guidelines have been developed after a thorough review of all relevant scientific literature, scientific workshops and an extensive public consultation process. They provide protection against all scientifically substantiated adverse health effects due to EMF exposure in the 100 kHz to 300 GHz range.

...the new guidelines provide better and more detailed exposure guidance in particular for the higher frequency range, above 6 GHz, which is of importance to 5G and future technologies using these higher frequencies. The most important thing for people to remember is that 5G technologies will not be able to cause harm when these new guidelines are adhered to”

79. Even leaving aside for a moment whether the focus upon only thermal effects and dismissal of non-thermal effects of RFR is flawed, it is entirely unclear how these guidelines could be said to govern 5G when the RFR ranges that uses have been so little studied to-date, and where studies of less aggressive and less powerful RFR - which has in the past been farther away along the spectrum from the frequency and wavelength of radiation that is, precisely for its known effects on the human body, used in medicine and illegal warfare – have shown epidemiological adverse health effects already. In effect, an experiment is to be conducted of the population, and then a report back made on any further harmful health effects as they are subsequently evidenced by the use of 5G. This is a fundamentally reckless approach – and not one a government can lawfully adopt. Proper foresight of risks of harm does not require that the harm first be caused to the human population.

80. The continued focus of ICNIRP remains upon thermal effects only –

From a health risk perspective, we are generally interested in how much EMF power is absorbed by biological tissues, as this is largely responsible for the heating effects described above.¹³²

It is important to note that these guidelines restrict radiofrequency EMF exposure to limit temperature rise rather than absolute temperature, whereas health effects are primarily related to absolute temperature. This strategy is used because it is not feasible to limit absolute temperature, which is dependent on many factors that are outside the scope of these guidelines, such as environmental temperature, clothing and work rate¹³³.

The present guidelines treat radiofrequency EMF exposure that results in local temperatures of 41°C or greater as potentially harmful¹³⁴

¹³² P.736

¹³³ P.738

¹³⁴ P.740

81. ICNIRP explains that its approach is to regard exposures as safe for health unless the contrary is proved, and in a particular manner it describes as meeting its own standards, set to try to allow dismissal of the contrary indications –

ICNIRP considers that, in general, reported adverse effects of radiofrequency EMFs on health need to be independently verified, be of sufficient scientific quality and consistent with current scientific understanding, in order to be taken as “evidence” and used for setting exposure restrictions.

Within the guidelines, “evidence” will be used within this context, and “substantiated effect” used to describe reported effects that satisfy this definition of evidence.¹³⁵

82. An appendix is provided purporting to address the volume of literature considering the concerns over health effects. This is not any studies or work undertaken by ICNIRP itself, merely a ‘brief overview’ and conclusion given of its members, who operate as volunteers according to its website; a conclusion which is not encumbered by any detailed scientific analysis set out. Indeed, reliance is heavily placed on other bodies’ work which ICNIRP then relies upon rather than undertaking its own full study. What is important for present purposes is that there is not denied to be a body of study identifying harm, but that the reason that it is not factored into the guidelines of ICNIRP is the level of *consistent one-way proof of harm caused*, without any ‘white-swan’ studies where no black swans are found to be able to put into the mix. In short, it is akin to looking at whether there is an unanswerable case pointing in only one direction – it is not asking if there is an evidential basis for finding that a real risk has been shown. The following is stated, with emphasis added -

APPENDIX B: HEALTH RISK ASSESSMENT LITERATURE

...the Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR), a European Commission initiative, also produced a report on potential health effects of exposure to electromagnetic fields (SCENIHR 2015), and the Swedish Radiation Safety Authority (SSM) have produced several international reports regarding this issue (SSM 2015, 2016, 2018). Accordingly, the present guidelines have used these literature reviews as the basis for the health risk assessment associated with exposure to radiofrequency EMFs rather than providing another review of the individual studies. However, for completeness, ICNIRP considered more recent research published after the reviews from WHO, SCENIHR and SSM in the development of the current guidelines (cut-off date September 1st, 2019). The discussion of ICNIRP’s appraisal of the radiofrequency health literature below provides a brief overview of the literature, a limited number of examples to help explain the overview, and the conclusions reached by ICNIRP.

...

¹³⁵ P.735

It is important to note that ICNIRP **bases its guidelines on substantiated adverse health effects. This makes the difference between a biological and an adverse health effect an important distinction**, where only adverse health effects require restrictions for the protection of humans. Research on the health effects of radiofrequency EMFs has tended to concentrate on a few areas of particular interest and concern, with some other areas receiving little or no attention. There is not sufficient research addressing potential relations between radiofrequency EMFs and the skeletal, muscular, respiratory, digestive, and excretory systems, and so these are not considered further.¹³⁶

83. Expressly therefore, the evidence that RFR has certain impacts upon the body biologically is regarded as unimportant. Once one factors in the approach taken to the necessity for epidemiological study rather than animal or in vitro study, this means that only once such biological effects have already been substantiated to have harmed human health would notice be taken by ICNIRP. ICNIRP's Appendix B considered brain function -

... A number of sporadic findings have been reported, but these do not show a consistent or meaningful pattern. This may be a result of the large number of statistical comparisons and occasional chance findings. There are therefore no substantiated reports of radiofrequency EMFs adversely affecting performance, CBF, or event-related potential measures of cognitive function¹³⁷.

...

There is limited epidemiological research on higher cognitive function. There have been reports of subtle changes to performance measures with radiofrequency EMFs, but findings have been contradictory, as there is no evidence that the reported changes are related to radiofrequency EMF exposure and alternative explanations for observed effects are plausible.

In summary, there is no substantiated experimental or epidemiological evidence that exposure to radiofrequency EMFs affects higher cognitive functions relevant to health¹³⁸

...

Epidemiological research has addressed potential longterm effects of radiofrequency EMF exposure from fixedsite transmitters and devices used close to the body on both symptoms and well-being, but with a few exceptions these are cross-sectional studies with self-reported information about symptoms and exposure. Selection bias, reporting bias, poor exposure assessment, and nocebo effects are of concern in these studies. In studies on transmitters, no consistent associations between exposure and symptoms or well-being have been observed when objective measurements of exposure were made or when exposure information was collected prospectively. In studies on mobile phone use, associations with symptoms and problematic behavior have been observed. However, these studies can generally not differentiate between potential effects from radiofrequency EMF exposure and other consequences of mobile phone use, such as sleep deprivation when using the mobile phone at night. Overall, the epidemiological research does not

¹³⁶ P.768

¹³⁷ P.769

¹³⁸ P.769

provide evidence of a causal effect of radiofrequency EMF exposure on symptoms or well-being.¹³⁹

...

A number of studies of potential adverse effects of radiofrequency EMFs on physiological functions that could adversely affect health have been conducted, primarily using in vitro techniques. These have included multiple cell lines and assessed functions such as intra- and intercellular signaling, membrane ion channel currents and input resistance, Ca²⁺ dynamics, signal transduction pathways, cytokine expression, biomarkers of neurodegeneration, heat shock proteins, and oxidative stress-related processes. There have been some reports of morphological changes to cells, but these have not been verified, and their relevance to health has also not been demonstrated. There have also been reports of radiofrequency EMFs inducing leakage of albumin across the blood-brain barrier in rats (e.g., Nittby et al., 2009), but due to methodological limitations of the studies and failed attempts to independently verify the results, there remains no evidence of an effect¹⁴⁰.

84. The approach taken by ICNIRP within the Appendix B may be seen also in these extracts -

NEUROENDOCRINE SYSTEM

Epidemiological studies on potential effects of exposure to radiofrequency EMFs on melatonin levels have reported conflicting results and suffer methodological limitations. For other hormonal endpoints, no epidemiological studies of sufficient scientific quality have been identified.

In summary, the lowest level at which an effect of radiofrequency EMFs on the neuroendocrine system has been observed is 4 W kg⁻¹ (in rodents and primates), but there is no evidence that this translates to humans or is relevant to human health. No other reported effects have been substantiated.¹⁴¹

CANCER

There is a large body of literature concerning cellular and molecular processes that are of particular relevance to cancer. This includes studies of cell proliferation, differentiation and apoptosis-related processes, proto-oncogene expression, genotoxicity, increased oxidative stress, and DNA strand breaks. Although there are reports of effects of radiofrequency EMFs on a number of these endpoints, there is no substantiated evidence of health-relevant effects (Vijayalaxmi and Prihoda 2019).¹⁴²

Two recent animal studies investigating the carcinogenic potential of long-term exposure to radiofrequency EMFs associated with mobile phones and mobile phone base stations have also been released: one by the U.S. National Toxicology Program (NTP 2018a and b) and the other from the Ramazzini Institute (Falcioni et al. 2018). Although both studies used large numbers of animals, best laboratory practice, and exposed animals for the whole of their lives, they also have inconsistencies and important limitations that affect the usefulness of their results for setting exposure guidelines. Of particular

¹³⁹ P.770

¹⁴⁰ P.770

¹⁴¹ P.771

¹⁴² P.772

importance is that the statistical methods employed were not sufficient to differentiate between radiofrequency-related and chance differences between treatment conditions; interpretation of the data is difficult due to the high body core temperature changes that resulted from the very high exposure levels used; and no consistency was seen across these two studies. Thus, when considered either in isolation (e.g., ICNIRP 2019) or within the context of other animal and human carcinogenicity research (HCN 2014, 2016), their findings do not provide evidence that radiofrequency EMFs are carcinogenic.

A large number of epidemiological studies of mobile phone use and cancer risk have also been performed. Most have focused on brain tumors, acoustic neuroma and parotid gland tumors, as these occur in close proximity to the typical exposure source from mobile phones (Röösli et al. 2019). However, some studies have also been conducted on other types of tumors, such as leukaemia, lymphoma, uveal melanoma, pituitary gland tumors, testicular cancer, and malignant melanoma. With a few exceptions, the studies have used a case-control design and have relied on retrospectively collected self-reported information about mobile phone use history. Only two cohort studies with prospective exposure information are available. Several studies have had follow-ups that were too short to allow assessment of a potential effect of long-term exposure, and results from case control studies with longer follow-up are not consistent.¹⁴³

...

Taken together, the epidemiological studies do not provide evidence of a carcinogenic effect of radiofrequency EMF exposure at levels encountered in the general population.

In summary, no effects of radiofrequency EMFs on the induction or development of cancer have been substantiated.¹⁴⁴

85. ICNIRP summarises that it concludes, based on its tests discussed above, that -

The only substantiated adverse health effects caused by exposure to radiofrequency EMFs are nerve stimulation, changes in the permeability of cell membranes, and effects due to temperature elevation¹⁴⁵

86. Professor Butler observes that -

...ICNIRP guidelines focus on short-term risks only, not near- or long-term exposures to weak RFR: this despite “*a large and growing amount of evidence indicates that long-term exposure to weak fields can affect biological systems and might have effects on human health*” with significant “*public health issues*” (Barnes and Greenebaum, 2020. p. 1). In contrast, the “*ICNIRP bases its guidelines on substantiated adverse health effects. This makes the difference between a biological and an adverse health effect an important distinction, where only adverse health effects require restrictions for the protection of humans*” (ICNIRP, 2020). This is an extraordinary statement that requires attention. Considering extant approaches in environmental toxicology, it is standard practice to consider both the biological and health effects of environmental toxins (see Yu, Tsunoda, & Tsunoda, 2011). As this report illustrates, RFR is considered an environmental toxin and a carcinogen: it,

¹⁴³ P.772

¹⁴⁴ P.773

¹⁴⁵ P.773

therefore, follows that any institution responsible for issuing general guidelines should include both biological and adverse health effects, as both are related, and with 5G the risks are unknown.¹⁴⁶

87. An extensive critique of ICNIRP's purported analysis of the health effects caused by non-thermal effects of RFR is provided by Professor Pall, and summarised in Professor Butler's report¹⁴⁷. A central message is that ICNIRP has simply failed to engage with the well-documented findings from multiple studies, including those pointed out to it by Professor Pall at the draft stage¹⁴⁸ but not reflected by any improvement, and ICNIRP does not explain any basis for disregarding the findings of harm from those studies. In effect ICNIRP makes unscientific blandishments as to its general rejection of the evidence available, but does not actually address or answer it. The wide scientific condemnation of ICNIRP's attempt to sideline the carcinogenic findings of the National Toxicology Program, NTP, in the USA, and the Ramazzini Institute is summarised by Professor Butler¹⁴⁹. ICNIRP also chooses not to address studies by its former members, or by its current vice-chair, that found risks of cancer arising from RFR. The NTP was not –

the NTP study was subject to extensive peer-review between 2016 and 2018, including former ICNIRP scientist Prof. J.C. Lin. Prof. Lin is Professor Emeritus of electrical engineering, bioengineering, physiology, and biophysics at the University of Illinois, Chicago. He was a long-standing member of ICNIRP (2004- 2016). He was invited by the National Institute of Environmental Health Sciences (NIEHS) with 13 scientists (10 pathologists and toxicologists, 2 electrical engineers, and 1 biostatistician) to carry out a peer-review of the NTP draft reports on cancer development through RFR. Subsequently, he published several papers, the first in 2018 titled: *Clear evidence of cell phone RF radiation cancer risk* (Lin, 2018). This view stands at odds with that of his former colleagues.¹⁵⁰

88. ICNIRP is criticised for taking the *minority view* of scientists published on the topic of health effects from RFR study regarding harm occurring absent a thermal heating of the body from the RFR signals. Its new chair, in 2020, is noted for example to have co-authored a study as recently as 2018 in which it is described -

Indeed, a study co-authored by Professor Rösli in 2018 found “*a potential adverse effect of RF-EMF brain dose on cognitive functions [of adolescents] that involve brain regions mostly exposed during mobile phone use*” (Foerster

¹⁴⁶ P.431

¹⁴⁷ P.467-P.473

¹⁴⁸ See the list of peer-reviewed publications at P.541-P.550.

¹⁴⁹ P.489-P.493

¹⁵⁰ P.489

et al. 2018). Why would Professor Rösli, like Michael Repacholi [previous Chair – a reference to his report in 1997 finding carcinogenic effect upon rats, before the 1998 ICNIRP guidelines] before him (Fist, 1999), ignore the findings of his research? Hardell and Carlberg point to significant conflicts of interests involving Professor Rösli...¹⁵¹

89. The manner in which ICNIRP has addressed all studies showing harmful health effects is analysed and criticised by Dr Neil Cherry, who reported to the New Zealand government, that a practice of ‘constructive dismissal’ was in operation, whereby each study is systematically individually dismissed, and no interpretation of the pattern of results is considered¹⁵².
90. Dr Tresidder notes that ICNIRP ignores all the recent scientific evidence on longer-term effects in favour of concentrating only on short term heating effects. This is equated to the Emperor’s Clothes in terms of the suggestion such guidelines could keep persons healthy¹⁵³.
91. Subsequently, eminent scientists Frank Barnes and Ben Greenebaum, among hundreds of other scientists from across disciplines, take issue with ICNIRP Guidelines (1998, 2020). Twenty years on from Cherry’s (2000, 2004) report to the New Zealand government, they argue: “Current limits for exposures to non-ionizing electromagnetic fields (EMF) are set, based on relatively short-term exposures. Long-term exposures to weak EMF are not addressed in the current guidelines. Nevertheless, a large and growing amount of evidence indicates that long-term exposure to weak fields can affect biological systems and might have effects on human health. If they do, the public health issues could be important because of the very large fraction of the population worldwide that is exposed” (Barnes and Greenebaum, 2020)¹⁵⁴. That study also found –

The results of these papers have not been considered convincing or relevant by the [ICNIRP and WHO] panels due to methodological issues, because they did not relate closely enough to human health, and because the experimental results are mixed, showing increases, decreases, or no change in similar situations. However, taken as a group, they do provide strong evidence that weak EMF can be sensed by biological systems, as well as suggestive evidence that fields may affect human health.”¹⁵⁵

¹⁵¹ p.491

¹⁵² p.997

¹⁵³ p.345

¹⁵⁴ p.998-P.999

¹⁵⁵ p.999

92. The very substantial difference in permissible RFR levels identified by scientific groupings responsible for identifying guidelines for safe levels are illustrated in the Table 1 Professor Butler supplies¹⁵⁶. The basis for other guidelines has been the bio-effects or health effects upon people, and seeking to take precaution against that harm. A further important difference is to take not just 30 minutes exposure, as ICNIRP does, but to take longer term exposure of many hours, or even longer term levels, as the exposure to be considered for safety. In the real-world exposure people are in fact exposed to far higher levels than would be deemed safe by the guidelines adopted to take account of biological effects or health effects.
93. European Academy for Environmental Medicine, EUROPAEM,¹⁵⁷ recommendations are much lower than ICNIRP's, and were arrived at through public health data and assessment of biological symptoms and health impacts.
94. CIPRACEM is the Ibero-American Commission (Comision Iberoamericana de Proteccion Radiologica de les Campos Electro-magneticos y las Radiaciones No Ionizantes). CIPRACEM has, in a 2020 report, analysed the latest ICNIRP publications and contrasted them with the ICRP Radioprotection criteria, the ethical principles that govern IRPA activities and the criteria established in the statute of creation of the ICNIRP in 1992¹⁵⁸. It concludes that ICNIRP is not fulfilling its responsibilities and takes an approach inconsistent with that of the International Commission on Radiological Protection¹⁵⁹. It also criticises the attempt of ICNIRP to ignore the evidence of carcinogenic effect from animal studies. Further it notes ICNIRP expressly accepts that *there is a large body of literature concerning cellular and molecular processes that are of particular relevance to cancer. This includes studies of cell proliferation, differentiation and apoptosis-related processes, proto-oncogene expression, genotoxicity, increased oxidative stress, and DNA strand breaks. ICNIRP says that 'although there are reports of effects of radiofrequency EMF on a number of these endpoints, there is no substantiated evidence of health-relevant effects'*.

¹⁵⁶ P.425

¹⁵⁷ P.196. Citing DOI: 10.1515/reveh-2016-0011.

<https://www.degruyter.com/document/doi/10.1515/reveh-2016-0011/html>

¹⁵⁸ P.1006

¹⁵⁹ P.879

CIPRACEM criticises this on the grounds that observing the tremendous amount of scientific literature that demonstrates, for each of these effects, an important role in the causes of cancer, it is inexplicable that someone declares that they are not relevant to health. CIPRACEM considers that affirming that DNA breaks, oncogenes expression, oxidative stress and genotoxicity is not evidence of damage to health differs from the criteria applied by the ICRP that uses precisely this information for the development of the Biological dosimetry used in Operational Radioprotection. In short, ICNIRP members work together with the industry (IES / IEEE) to harmonize regulations and do not respect the Radioprotection principles that are established in the IRPA code of ethics¹⁶⁰.

95. As noted above, there are at least three fundamental problems with the reliance upon ICNIRP – even leaving aside whether the responsibility for assessing the health risks of a product being placed into the UK environment could be passed by the elected UK government to a third-party international private NGO. The three problems are -
- i. Methodology and limitations
 - ii. Membership of the body
 - iii. Industry influence and conflicts of interest.

Each should be sufficient to immediately identify why it is the case that, even if the important obligations of the Defendants to assess risk could be delegated or a simple adoption made of another body's assessment instead, it cannot be lawful to regard ICNIRP as providing a suitable guidance to obtain that the public's safety is ensured.

96. Regarding methodology, the following points are particularly evident –
- i. Reliance on the theory that without heating of the body no adverse health effects can be occasioned by the RFR;
 - ii. Adoption of a threshold for acceptance of evidence or information of adverse health effects that artificially excludes all identification of risks of harm [essentially until ex post facto]. There is not a due and adequate consideration of the evidence;

¹⁶⁰ P.877

- iii. The adoption of thermal guidelines based on 6 to 30 minutes of acute exposure fails to reflect real-world conditions to which people are being exposed to a chronic prolonged or sustained longevity of exposure;
- iv. The use of single device emission of RFR fails to reflect real-world exposure to multiple RFR sources;
- v. Absence of any consideration of vulnerable or disabled individuals and the requirements for safety for those groups.

97. Turning to membership, the approach now embedded with ICNIRP originated in a telecommunications and electrical engineer dominated body. It is a small body, and has lacked relevant medical expertise through its history. Dr Tresidder explains -

Current UK safety limits derive from ICNIRP, (International Commission on Non-Ionising Radiation Protection) advice, which gives short term (6 or 30 minute) thermal limits only, on the basis that heating to less than one degree C, averaged over the whole body, is harmless. ICNIRP's advice unfortunately ignores much modern biology telling us that life is electromagnetic – because of course EM fields will interact with each other. I can only speculate that maybe ICNIRP has made this dogmatic error because they rely only upon Schwan's thermal hypothesis from the 1950s, and because their dozen or so experts have included no practicing medical doctors or biologists who understand this. Furthermore, they appear to ignore or dismiss thousands of scientific studies showing mechanisms of harm (selected ones here <http://www.es-uk.info/wp-content/uploads/2018/11/02.3-Selected-ES-and-EHS-Studies-2018.pdf>), including the recent US National Toxicology Programme and Italian Ramazzini Institute studies showing cancer in rats from near and far field RF – which were hardly reported in the UK press¹⁶¹

98. In a 98-page detailed report on the ICNIRP and its activities, Members of the European Parliament, Michèle Rivasi and Dr. Klaus Buchner find that “[t]he composition of ICNIRP is very one sided. With only one medically qualified person (but not an expert in wireless radiation) out of a total of 14 scientists in the ICNIRP Commission and also a small minority of members with medical qualifications in the Scientific Expert Group, we can safely say that ICNIRP has been, and is still, dominated by physical scientists. This may not be the wisest composition when your remit is to offer advice on human health and safety to governments around the world.” However, they demonstrate that this makes it easier to ignore or dismiss research from medical and related disciplines. Buchner and Rivasi (2020) observe that “a closed circle of like-minded scientists” has turned ICNIRP into a self-indulgent science club, with a lack of bio-medical expertise,

¹⁶¹ P.345

as well as a lack of scientific expertise in specific risk assessments. Thereby, creating a situation which might easily lead to “tunnel-vision” in the organisation’s scope. Two leading experts, Hans Kromhout and Chris Portier, confirmed to us that ICNIRP is a closed, non-accountable and one-sided organisation.” They report that “In addition to the fact that certain members of ICNIRP, are simultaneously members of the International Committee on Electromagnetic Safety (ICES) of the US-registered Institute of Electrical and Electronics Engineers (IEEE), we have seen further evidence of a close cooperation between ICNIRP and ICES, an organisation in which many people from the media and telecom industries, as well as from the military, are actively and structurally involved. During the current leadership of ICNIRP, these ties have become even closer “with the goal of setting internationally harmonized safety limits for exposure to electromagnetic fields.” This must surely be considered as a situation in which conflicts of interest are a real possibility. It is clear from ICES minutes that ICNIRP worked very closely with IEEE/ICES on the creation of the new RF safety guidelines that were published in March 2020. And this implies that large telecom-companies such as Motorola and others, as well as US military, had a direct influence on the ICNIRP guidelines, which are still the basis for EU-policies in this domain.” The Buchner and Rivasi (2020) report provides detailed evidence of a range of conflicts of interests of ICNIRP members, including its current chair.¹⁶²

99. Thirdly, there is the question of what ICNIRP really is as an entity, who funds it, what conflicts of interest its members have, and what influence industry has over this private body. Independence is of obvious importance and vitality. Gandhi *et al* conclude their study with the warning that -

The long-term impact of cell phone radiation is a matter that merits major research investment and serious public scrutiny. Anatomically based models should be employed in revising safety standards for these ubiquitous modern devices. Standard setting should not be the province of non-governmental, non-accountable agencies, such as ICNIRP which has been heavily funded by industry, but should be carried out by governmental agencies accountable to the public or by independent experts accountable to governments.

100. In his review of the relevant literature Professor Butler finds ‘there are significant moral, ethical, and related questions to be answered by the ICNIRP. One

¹⁶² P.1000; and at P.490

central question concerns conflicts of interests: While Starkey (2016) and Pockett (2019) provide convincing evidence, the studies published by Buchner and Rivasi (2020) and Hardell and Carlberg (2020) are conclusive'¹⁶³. Professor Butler observes that -

One explanation for the UK government position is that it uncritically accepts the minority scientific view (referenced above), which emanates chiefly from the ICNIRP. The ICNIRP is characterized by poor governance, traditionally close ties to industry, no independent oversight, insufficient expertise in critical areas, and a failure to account for its funding (Buchner and Rivasi, 2020)¹⁶⁴.

101. The report of Professor Butler is signed and endorsed by 22 international experts – scientists, academics, and doctors¹⁶⁵. He finds unethical behaviour in a variety of institutional and organisational actors, the consequence of which is a significant risk to the health and wellbeing of adults and children. It has been observed that ‘...ICNIRP members play key or dominant roles in relevant decision-making processes and in the drafting of periodic reports issued by each of these organisations or committees. To have ICNIRP scientists drafting safety guidelines while also acting as members of expert groups responsible for objectively assessing those safety guidelines is anathema to all principles of good governance (see Hardell and Carlberg, 2020). It is akin to academics acting as authors and reviewers of their scientific papers’¹⁶⁶.

102. It is significant that through the agency of its champion within the IRPA and its first Chair, Michael Repacholi, the ICNIRP had the support of the WHO from the outset. It also had the support of the telecommunications and electrical industries, and particularly the IEEE. Evidence shows that the ICNIRP has, since its inception, systematically rejected independent scientific evidence demonstrating adverse health effects from RFR (Cherry, 2000, 2004; Hardell, 2019; Hardell and Carlberg, 2020)¹⁶⁷. The ICNIRP’s founder and first chair carefully selected commission members and advisors to have one thing in common: To share the values and beliefs of Dr Herman Schwan, fellow physicists, and members of the IEEE. Many ICNIRP members also have or had close funding and scientific relationships with the telecommunications industry. According to

¹⁶³ P.1000

¹⁶⁴ P.411

¹⁶⁵ P.547

¹⁶⁶ P.412

¹⁶⁷ P.995

Professor Franz Adlkofer (2015): “A milestone in putting through the interests of the mobile communication industry was the establishment of the International Commission on Non-Ionizing Radiation Protection (ICNIRP) in 1992. It is a non-governmental organization. Michael Repacholi, [later] head of the WHO’s EMF Project, managed to get official recognition for this group by the WHO as well as the EU and a series of its member states, among them Germany. Repacholi, first ICNIRP chairman and later emeritus – member, left the WHO after allegations of corruption in 2006 and found a new position as a consultant to an American electricity provider.” Adlkofer adds that when the ICNIRP “established the European safety limits it uncritically based its decision on Schwan’s pseudo-theorem [of 10 mW /cm²]. The American safety limits were taken over with only minor alterations”¹⁶⁸.

103. Professor Butler records the evidence also that the Chair Emeritus of ICNIRP, Michael Repacholi, in 1997 led research at the Royal Adelaide Hospital in Australia that found long-term intermittent exposure to RFR in mice led to 2.4 times greater proportion of lymphomas developing. However despite knowing these results, Repacholi, as head of the WHO’s EMF Project at that time, claimed there was no significant result from the research and promulgated the industry view that there was no evidence of harmful health consequences¹⁶⁹.

104. Additionally, there is no transparency as to the funding of any activities and work by ICNIRP. Its Annual Report 2018 shows an income that year of €133,254, and expenditures listed at €150,959¹⁷⁰. This is troubling as the sums are significantly less than the salaries of university professors sitting on the Commission. If not funded directly or indirectly by industry, then ICNIRP should be capable of providing full and clear accounts of its expenditures and incomes¹⁷¹.

105. Professor Heroux¹⁷² observes that -

The *International Commission on Non-Ionizing Radiation Protection* (ICNIRP) was created and promoted to maintain the “safe” EMR exposure

¹⁶⁸ P.996

¹⁶⁹ P.996-P.997

¹⁷⁰ Accounts reproduced at P.534

¹⁷¹ P.999

¹⁷² P.187

limits at high levels, to stabilize standards and secure investments, thus filling a vital need for industry.

Since 1992, ICNIRP, a self-appointed, independent commission based in Germany, has lobbied its influence into the World Health Organization (WHO), as well as in many governments.

A report titled “The International Commission on Non-Ionizing Radiation Protection: Conflicts of interest, corporate capture and the push for 5G”, by two members of the European Parliament (Klaus Buchner and Michèle Rivasi) relates how “the scientific debate has been hijacked by corporate interests”¹⁷³

106. He also notes that the renowned epidemiologist Dr. Lennart Hardell, among many others, has also commented on industry influence in ICNIRP, and stated that its recommendations qualify as *scientific misconduct*¹⁷⁴.

107. Professor Frank, of the University of Edinburgh, details the criticism of ICNIRP in useful summary-

Persistent allegations of unscientific bases for existing health protection guidelines on RF-EMFs and unmanaged conflicts of interest on expert advisory panels

A senior epidemiologist from Sweden, Hardell, has repeatedly published in peer-reviewed journals detailed allegations regarding the main WHO scientific advisory body on EMF health effects and safety—the previously mentioned ICNIRP. Hardell contends that ICNIRP’s membership includes over-representation of vested interests, especially the giant multinational telecommunications firms who are heavily invested in the roll out of 5G systems internationally. ICNIRP has long been influential in EMF regulation: its scientific recommendations to WHO were first issued in 1998, updated in 2009, and revised and updated again in March 2020. Hardell points out that ICNIRP’s pro-industry bias may explain its continued reliance only on studies of the thermogenic (heat-producing) effect of RF-EMFs in biological tissues: these studies would be expected to paint an overly benign picture of RF-EMF safety. This narrow ICNIRP focus flies in the face of published reviews by independent scientists citing compelling research evidence, accumulating steadily over the last few decades, of non-thermogenic adverse effects of RF-EMFs, affecting diverse human and animal subcellular function, tissues and organ systems (see above). In detailed, almost lawyer-like publications Hardell fastidiously documents the ICNIRP’s 20 years of dogged defiance, in the face of widespread criticism by other scientists, that the scientific base for their recommendations remains dated and narrow, rendering their guidelines on ‘safe’ RF-EMF exposure unsafe.

The most damning evidence adduced by Hardell is a table of the cross-appointments held by six members of the WHO Monograph Group, across five major international advisory panels on the health effects of non-ionising radiation [36 – page 408].

¹⁷³ https://www.michele-rivasi.eu/wp-content/uploads/2020/06/ICNIRP-report-FINAL-JUNE-2020_EN.pdf

¹⁷⁴ “Health Risks from Radiofrequency Radiation, including 5G, should be assessed by experts with no conflicts of interest”, Lennart Hardell and Michael Carlberg, *Oncology Letters* 20: 15, 2020

Hardell also describes these scientists' strong personal links to the telecommunications industry, a situation likely arising from the fact that the ICNIRP itself is a 'private organisation (non-governmental organisation; NGO) based in Germany. New expert members can only be elected by members of ICNIRP.'

Hardell contrasts the ICNIRP's reports to the publications of the 'BioInitiative 2012' group, of nearly 30 international experts in this field, whose operations are not only wholly independent of any such 'vested interests,' but also entirely transparent. The current version (March 2020) of the BioInitiative 2012 website provides detailed descriptions of 988 peer-reviewed scientific studies of adverse potential health and biological effects of EMFs arising from RF and similar non-ionising sources. The vast majority (84.6%) of these 988 studies document disruptive biological effects from such EMFs, almost all of them operating via non-thermogenic pathways. (This writer would have preferred to see more 'critical appraisal' of the quality of the studies than the BioInitiative 2012 website provides. However, the major effort entailed in assembling this massive body of scientific evidence, and updating it regularly since 2012, is impressive).¹⁷⁵

108. Hardell and Carlberg (2020), among many others, echo this conclusion by Pockett (2019, p. 4): *"ICNIRP is a self-selected, private (non-governmental) organization, populated exclusively by members invited by existing members"¹⁷⁶. The organization is very concerned to project the image that it is composed of disinterested scientists—indeed all ICNIRP members are required to post on the organization's website detailed declarations of interest (DOIs). However, a closer inspection of these DOIs reveals that a good many of the sections of a good many of the forms remain unfilled, and a detailed list of undeclared conflicts of interest among ICNIRP members has been published by a group of concerned citizens [...]. The relevant section of WHO is essentially identical to ICNIRP [...]: Michael Repacholi, the founder of ICNIRP, established the WHO International EMF Project (IEMFP) in 1996 and remained in*

¹⁷⁵ P.883-P.884

¹⁷⁶ ICNIRP's website now states the Commission membership of 14 persons are

'Composition: The Commission membership consists of a Chairperson, Vice-Chairperson and up to 12 members. Commission members are independent experts in the scientific disciplines relevant to non-ionizing radiation protection (biology, epidemiology, physics, bio-physics, medicine). In carrying out their voluntary work for the Commission they do not represent either their countries of origin or their institutes. ICNIRP members are required to declare any personal interests in relation to their activities for ICNIRP. Members' declarations of personal interests are available below along the member's profile. **Election:** Members are elected to the Commission from nominations received by current members, by the Executive Council of the International Radiation Protection Association (IRPA) and the IRPA Associate Societies, and by national agencies for radiation protection following an open call for nominations published on the ICNIRP website. 2015 the call for nominations was extended to international and national radiation protection bodies. The election takes place every 4 years at the last ICNIRP Annual General Meeting before each IRPA Congress.' <https://www.icnirp.org/en/about-icnirp/commission/index.html>

charge of it until 2006 [...], when he reportedly resigned after allegations of corruption [...] to officially become an industry consultant [...]. In 2004, Repacholi stated in a conference presentation that the IEMFP was able to “receive funding from any source through Royal Adelaide Hospital; an agency established through WHO Legal Department agreement to collect funds for the project”—an arrangement that reportedly enabled receipt of annual payments of \$150,000 from the cellphone industry [...].” Thus, in spite of their stated rules and protestations to the contrary, there have been persistent allegations that both ICNIRP and the relevant section of WHO are riddled with undeclared conflicts of interest.”¹⁷⁷

109. Hardell and Carlberg (2020, p. 4) conclude the following in relation to conflicts of interest at the ICNIRP and its influence on policymaking:

“As shown in Table [6], few individuals, and mostly the same ones, are involved in different evaluations of health risks from RF radiation and will thus propagate the same views on the risks in agencies of different countries associated with the ICNIRP views (...). Therefore, it is unlikely that they will change their opinions when participating in different organizations.

Furthermore, their competence in natural sciences, such as medicine, is often low or nonexistent due to a lack of education in these disciplines (...). Therefore, any chance for solid evaluations of medical issues is hampered. Additionally, it must be concluded that if the ‘thermal only’ dogma is dismissed, this will have wide consequences for the whole wireless community, including permissions for base stations, regulations of the wireless technology and marketing, plans to roll out 5G, and it would therefore have a large impact on the industry.

This may explain the resistance to acknowledge the risk by ICNIRP, EU, WHO, SSM and other agencies. However, the most important aspects to consider are human wellbeing and a healthy environment.”¹⁷⁸

110. The interconnection between the relevant body within WHO and the ICNIRP organisation has been noted above. Professor Heroux recounts the poor historical performance of the WHO, including on air pollution, and evinces his scepticism that it is a body capable of any independent active protective against developing technology and its economic interests¹⁷⁹. Its relevant committee membership is also one with a close relationship to ICNIRP given the co-memberships of many of the members [see Table 6 provided by Professor Butler¹⁸⁰].

¹⁷⁷ P.1003

¹⁷⁸ P.1004

¹⁷⁹ P.187-P.188

¹⁸⁰ P.492

The Council of Europe's Parliamentary Assembly Resolution

111. Within the geography of Europe, two matters are worth particular mention. Firstly, in support of the need to apply a precautionary principle to this technology in light of the present information about its risks, there is the May 2011 recommendation of the Council of Europe (Res. 1815/11)¹⁸¹, entitled *The potential dangers of electromagnetic fields and their effect on the environment*. The Council of Europe clearly had in mind ICNIRP's performance as well as the emerging scientific study, when it noted -

6. The Assembly regrets that, ...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 their 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.

112. In light of this the Assembly recommended that the member states of the Council of Europe take steps, including the following:

8.1.1. take all reasonable measures to reduce exposure to electromagnetic fields, especially to radio frequencies from mobile phones, and particularly the exposure to children and young people who seem to be most at risk from head tumours;

8.1.2. reconsider the scientific basis for the present standards on exposure to electromagnetic fields set by the International Commission on Non-Ionising Radiation Protection, which have serious limitations, and apply ALARA principles, covering both thermal effects and the athermic or biological effects of electromagnetic emissions or radiation;

8.1.3. put in place information and awareness-raising campaigns on the risks of potentially harmful long-term biological effects on the environment and on human health, especially targeting children, teenagers and young people of reproductive age;

8.1.4. pay particular attention to "electrosensitive" people who suffer from a syndrome of intolerance to electromagnetic fields and introduce special measures to protect them, including the creation of wave-free areas not covered by the wireless network;

...

¹⁸¹ <http://assembly.coe.int/nw/xml/XRef/Xref-XML2HTML-en.asp?fileid=17994>

Further matters raised included undertaking appropriate risk-assessment procedures for all new types of device prior to licensing; raising awareness on potential health risks of wireless telephones, baby monitors and other domestic appliances which emit continuous pulse waves, if all electrical equipment is left permanently on standby, and recommend the use of wired, fixed telephones at home or, failing that, models which do not permanently emit pulse waves. Concerning the protection of children it is recommended that states:

- 8.3.1. develop within different ministries (education, environment and health) targeted information campaigns aimed at teachers, parents and children to alert them to the specific risks of early, ill-considered and prolonged use of mobiles and other devices emitting microwaves;
- 8.3.2. for children in general, and particularly in schools and classrooms, give preference to wired Internet connections, and strictly regulate the use of mobile phones by schoolchildren on school premises.

Comparative approaches

113. Other countries are acting to protect their children, and vulnerable population, from non-ionising radiation and 5G in light of the information now available. For example –
- i. France has removed WiFi from pre-schools and ordered Wi-Fi to be shut off in elementary schools when not in use¹⁸².
 - ii. Professor Frank records that ‘France, Israel, Cyprus and Russia have banned WiFi in preschool and restricted its use in primary schools. Belgium has banned the sale of mobile phones to children under seven. In response to such concerns, several jurisdictions have recently blocked the installation of 5G antennae systems in their communities: Brussels, Florence, Rome, as well as Glastonbury, Frome and Totnes in the UK’¹⁸³;
 - iii. Others, such as Cyprus, have government led, targeted public information campaigns and medical statements published to better inform and educate their citizens about risks to children¹⁸⁴. In Cyprus the government campaign informs and warns parents about wireless

¹⁸² P.829. (<http://www.telegraph.co.uk/news/2017/12/11/france-ipose-total-ban-mobile-phones-schools/>). And P.394.

¹⁸³ P.882

¹⁸⁴ P.394.

radiation exposure including large adverts on buses – Exhibit KC-04¹⁸⁵. The campaign points out, with a picture of children under an umbrella protecting them from electronic Wi-Fi, 4G and 5G devices, that the WHO had in 2011 noted these are potentially carcinogenic.

- iv. The State of California Department of Public Health has issued a warning on use of mobile phones and offered advice on how to reduce exposure¹⁸⁶.
- v. Many countries, such as China, India, Poland, Russia, Italy, Switzerland, and regions of Belgium or cities like Paris have decided to use the Justification criterion and optimize exposures by setting exposure limits 100 or 1000 times lower than those of the ICNIRP¹⁸⁷.
- vi. In March 2019 the Belgian Minister for the Environment halted a 5G roll-out¹⁸⁸;
- vii. Another member of ICNIRP is Professor Martin Rööslı, the scientist in charge of BERENIS, the Swiss expert group on electromagnetic fields and non-ionizing radiation. BERENIS “regularly screen the scientific literature, and assess the publications which they consider relevant for the protection of humans from potentially adverse effects.” BERENIS states “In summary, the majority of the animal and more than half of the cell studies provided evidence of increased oxidative stress caused by RF-EMF or ELF-MF.” It supports a precautionary approach for regulating RF EMF based on the findings and their evaluation”¹⁸⁹
- viii. The state of New Hampshire State Commission to Study the Environmental and Health Effects of Evolving 5G Technology produced an extensive report in November 2020 which found that the Federal Communications Commission is dominated by the industry it is

¹⁸⁵ P.298

¹⁸⁶ P.829

¹⁸⁷ P.874

¹⁸⁸ saying “The people of Brussels are not guinea pigs whose health I can sell at a profit. We cannot leave anything to doubt.” <https://brussels-express.eu/brussels-suspends-5g-plan/>.

¹⁸⁹ P. 239 Ms Angell’s witness statement at [16]. <https://www.emfacts.com/2021/01/low-dose-exposure-to-emr-may-cause-severe-health-effects/>

supposed to regulate, and recommended that a precautionary principle must be practised in relation to 5G¹⁹⁰.

- ix. ‘International comparisons show that the safety limit for RF-EMF exposure set by ICNIRP is 10-fold higher than that set by the next most liberal guidelines, found in Israel and India, and 100-or-more-fold higher than the limits set by other guidelines, spanning 14 EU jurisdictions as well as China. ...one reason that ICNIRP’s permitted exposures are so high is that they are based solely on the acute thermogenic (heat-producing) effects of RF-EMF in animal tissues; this is unlike more conservative jurisdictions’ guidelines, which are based on a wider variety of biological and health effects documented in recent decades, including effects resulting from chronic rather than acute exposures, and effects not mediated by thermogenesis’¹⁹¹.

114. The recognition of the developing public health harm and brewing crises are also underway in other states. Electromagnetic hypersensitivity is recognized as a functional impairment in Sweden¹⁹². Spain has recognized electromagnetic hypersensitivity as a permanent disability; and the Nordic Council of Ministers classifies electromagnetic hypersensitivity as an occupational injury of international codification ICD-10 R68.8 (“electromagnetic intolerance”)¹⁹³. The Austrian Medical Association sets a much lower potentially safe level for RFR¹⁹⁴. A working group of the Austrian Medical Association has developed guidelines for the diagnosis and treatment of electromagnetic hypersensitivity, or health problems and diseases associated with exposure to electromagnetic radiation¹⁹⁵. The Austrians also recognise symptoms of EHS can include, for example, sleep problems, muscle and joint issues, headaches, difficulty concentrating, memory problems, as well as tinnitus and sensation

¹⁹⁰ P.700-P.702 refers.

¹⁹¹ P.882

¹⁹² P.886. (<https://ecfsapi.fcc.gov/file/1092912632123/47%20-%20Attachment%2047%20-ElectroSensitivity%20UK%20-%20EHS%20in%20Sweden.pdf>)

¹⁹³ P.201

¹⁹⁴ P.196; citing the Guideline of the Austrian Medical Association for the diagnosis and treatment of EMF related health problems and illnesses (EMF syndrome). <https://vagbrytaren.org/Guideline%20%20AGEMF.pdf>

¹⁹⁵ <http://freiburger-appell-2012.info/media/EMF%20Guideline%20OAK-AG%20%202012%2003%2003.pdf>

of pressure within the ears¹⁹⁶. Two public hospitals and one clinic in Canada offer treatment for EHS sufferers¹⁹⁷.

115. Recent decisions of the courts in certain jurisdictions have accepted the evidence of the risks and harm arising from telecommunications radiation, including notably a decision of the Italian courts, the Court of Appeal in Turin, which found, in December 2019, that the exposure to telecommunications devices through heavy mobile telephone usage in the course of employment had caused an acoustic neurinoma¹⁹⁸. It also noted the conflicts of ICNIRP members and its guidance was criticised.

Defendant's/state's consideration of RFR and Non-Ionising Radiation

116. Prior to the creation of Public Health England, in 2004 the UK's National Radiological Protection Board, as was, adopted the 1998 ICNIRP guidelines¹⁹⁹ as the basis for UK policy in relation to health and NIR from RFR emissions.
117. In 2012 the UK's independent Advisory Group on Non-Ionising Radiation, AGNIR, is said to have reported 'no convincing evidence' that RFR causes health effects. That body was disbanded by PHE in May 2017. The Defendants describe the report reached -

The overall conclusion was that, although a substantial amount of research has been conducted in this area, there is no convincing evidence that radiofrequency field exposures below guideline levels cause health effects in either adults or children.²⁰⁰

¹⁹⁶ P.887

¹⁹⁷ P.202. i.e. Toronto: Nova Scotia and the Ottawa Environmental Health Clinic.

¹⁹⁸ P.610-684 translation of transcript of judgment. [Original language version at P.900-936]. Reference is also made to this decision at P.606 in the parties' correspondence.

¹⁹⁹ ICNIRP, 1998. Guidelines for limiting exposure to time-varying electric, magnetic, and electromagnetic fields (up to 300 GHz). International Commission on Non-Ionizing Radiation Protection. Health Phys. 74, 494-522.

²⁰⁰ <https://www.gov.uk/government/publications/mobile-phone-base-stations-radio-waves-and-health/mobile-phone-base-stations-radio-waves-and-health>

118. Professor Butler's report notes in this respect that the ICNIRP's 'minority view continues to influence critical decisions by other bodies such as the World Health Organization (WHO), and the EU's Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR) (Hardell and Carlberg, 2020). It also influenced the UK's Advisory Group on Non-ionising Radiation (AGNIR) (Starkey, 201[6])'²⁰¹.
119. The Defendants have also raised in pre-action correspondence the 2015 European Commission Scientific Committee on Emerging and Newly Identified Health Risks report. Professor Butler also notes in this respect that the independent peer-reviewed research continues to identify significant research deficiencies, omissions, inaccuracies, falsehoods, and distortions in ICNIRP research reviews and guidelines (Adlkofer, 2015; Hardell, 2017; Hardell and Carlberg, 2019; Hardell and Nyberg 2020; Pockett, 2019; Melnick, 2019, 2020): they also question SCENIHR reports, due to the significant participation of ICNIRP commissioners (Starkey, 2016; Belpomme et al. 2018; Pockett, 2019). It is also significant that five of the six core group members responsible for drafting the WHO's Monograph on RF fields were directly affiliated with the ICNIRP NGO (Hardell, 2017; Hardell and Carlberg, 2020).²⁰²
120. Presently PHE says that the Committee on Medical Aspects of Radiation in the Environment (COMARE) is an existing Department of Health expert committee that has a watching brief on non-ionising radiation²⁰³. It is not therefore dedicated to this important topic. It also meets infrequently, only several times each year. As Ms Angell describes in her statement, its minutes demonstrate its failure to consider the problem. At the 117th meeting on 18 July 2017 (point 2.1): following the disbanding of AGNIR in May of that year, those activities were now passed to COMARE and would 'be addressed through the formation of a subcommittee with co-opted experts'. The following meeting (118th) on 21 November 2017 (point 6.2) 'Members discussed possibility of having more frequent updates on individual studies and whether COMARE should consider a working group for non-ionising radiation issues'. On 13 March 2018 (119th meeting), at point 2.9, 'The Chairman advised members that, as part

²⁰¹ P.416. I.e. Starkey, S. J. (2016). Inaccurate official assessment of radiofrequency safety by the Advisory Group on Non-ionising Radiation. *Reviews on environmental health*, 31(4), 493-503.

²⁰² P.489 [Internal p86]

²⁰³ <https://www.gov.uk/government/groups/advisory-group-on-non-ionising-radiation-agnir>

of its remit, the concept of a more proactive approach for non-ionising radiation has been prioritised’ and ‘to consider establishing a formal working group.’ He would discuss this with the Department, i.e. the DHSC. However at the 120th meeting on 3 July 2018 (point 2.6) ‘The Chairman noted that he was still to discuss with DHSC the suggestion of having a working group’. Thus the issue had not in fact been prioritised. At the 121st meeting on 22 November 2018 (point 2.12) it was then said that ‘The Chair has discussed the working group suggestion with DHSC’ but ‘While health issues associated with electromagnetic fields (EMFs) are within COMARE’s remit, the formation of a NIR working group now is not considered a productive use of committee’s time’²⁰⁴.

121. Accordingly, and of concern, the members of COMARE, as the specialists in the health effects of radiation, were told by the Defendant SSHSC, not to form a sub-committee to assess the effects of EMF/RFR on health. This is obviously concerning given the role reversal as to who is advising who as to what relevant risks the research is demonstrating. This appears to be an example of inappropriate interference by policymakers with particular objectives not wishing to investigate the science.

122. It may also be noted that the UK government misdescribes the assessment of the 2020 ICNIRP guidelines *as if a positive finding of safety is made*, rather than, as shown above, merely a finding of a negative kind, that there is no evidence sufficient in its [flawed] view to currently or yet prove convincingly that harm has been caused. The description of a positive conclusion ‘ICNIRP concluded that exposure below the heating threshold is unlikely to be associated with adverse health effects’ is inaccurate²⁰⁵.

Chronology of correspondence

123. The following exchange of communications demonstrates the extensive attempts made by the Claimants to avert the need for proceedings and to have the

²⁰⁴ P.276

²⁰⁵ <https://www.gov.uk/government/publications/mobile-phone-base-stations-radio-waves-and-health/mobile-phone-base-stations-radio-waves-and-health>

Defendants engage actively with the issues and evidence available, and the responses received. The Claimants have submitted significant material to the Defendants which has simply not been reviewed and considered properly or at all. As will also be apparent the Defendants have not provided candid information in relation to certain important matters.

124. The following correspondence has been exchanged and is available within the bundle:

20.5.20 Letter on behalf of two Cs' to the Defendants, identifying failings and attaching supporting materials. Relief requested to avert litigation²⁰⁶

17.6.20 Response of GLD on behalf of all Defendants. Denies any unlawfulness²⁰⁷

7.10.20 Cs' letter to the Defendants, supplies further evidence and presents further representations²⁰⁸

28.10.20 Letter from GLD to Cs. Rejects complaints of unlawfulness.²⁰⁹

16.11.20 *Cs' email to SSDCMS*²¹⁰. Cs raised the response to the EECC and important issues concerning that.

*Cs' email to SSEFRA*²¹¹. Cs challenged why DEFRA is not involved as a Competent Authority for environmental hazards from 5G.

*Cs' email to PHE*²¹², for whom SSHSC responsible. Cs pointed out ICNIRP does not cater for people with implants; and only a 6-minute exposure measurement was involved. Ofcom is not the right body to police health. There is a need that a Competent Authority be designated. A need also for local authorities to be empowered to fulfil statutory duties including under the Pollution Prevention Control Act 1999 and Environmental Protection Act 1990.

30.11.20 Letter from SSDCMS to Cs²¹³

²⁰⁶ P.548-556

²⁰⁷ P.597-600

²⁰⁸ P.601-609

²⁰⁹ P.692-695

²¹⁰ P.723-730

²¹¹ P.723-730

²¹² P.723-730

²¹³ P.731-732

- 4.12.20 Cs' letter to Defendants; including challenge to failure to consider the evidence, and failure to act to comply with legal obligations.²¹⁴
- 22.12.20 Decision of Defendants communicated to Claimants²¹⁵
- 20.1.21 Letter Before Action sent challenging 22.12.20 decision²¹⁶
- 3.2.21 Defendants' email in response to LBA²¹⁷

LEGAL FRAMEWORK

125. By virtue of section 6(1) of the Human Rights Act 1998 (“HRA 1998”), “It is unlawful for a public authority to act in a way which is incompatible with a Convention right”. Schedule 1 to the HRA 1998 includes certain relevant protections to which the Act gives domestic effect. The text of the articles is subject to the interpretation and jurisprudence of the Strasbourg court which ensures that the rights are practical and effective and not theoretical or illusory. Domestic courts must have regard to that jurisprudence when considering the rights and obligations (by section 2 HRA 1998).

126. All the rights contained within the Act must be secured without discrimination, which includes unjustified differential treatment by reason of disability, or on grounds of age, which is an accepted ‘other status’ (Article 14²¹⁸). Further, it is an aim of the United Nations Convention on the Rights of Persons with Disabilities (2006), to which the UK has chosen to be signatory, to secure the full enjoyment of human rights by disabled people and to ensure they have full equality under the law.

127. Article 8 of the ECHR provides that:

1. Everyone has the right to respect for his private and family life, his home and his correspondence.
2. There shall be no interference by a public authority with the exercise of this right except such as is in accordance with the law and is necessary in a democratic society in the interests of national security, public safety or the

²¹⁴ P.696-703

²¹⁵ P.714-716

²¹⁶ P.717-720

²¹⁷ P.721

²¹⁸ Article 14 - Prohibition of discrimination

The enjoyment of the rights and freedoms set forth in this Convention shall be secured without discrimination on any ground such as sex, race, colour, language, religion, political or other opinion, national or social origin, association with a national minority, property, birth or other status’

economic well-being of the country, for the prevention of disorder or crime, for the protection of health or morals, or for the protection of the rights and freedom of others.

128. This should be applied in a manner informed by and consistent also with the UN Convention on the Rights of the Child 1989, Article 3, establishing a principle that actions affecting children should have their best interests as a primary consideration. That also provides a binding obligation in international law that the Defendants must meet. As Baroness Hale described it in ZH Tanzania, *post* -

23. For our purposes the most relevant national and international obligation of the United Kingdom is contained in article 3.1 of the UNCRC : “In all actions concerning children, whether undertaken by public or private social welfare institutions, courts of law, administrative authorities or legislative bodies, the best interests of the child shall be a primary consideration. This is a binding obligation in international law...”

129. Two further articles are relevant to the protection from degrading harm and injury, and death -

Article 2 Right to life.

1. Everyone’s right to life shall be protected by law. No one shall be deprived of his life intentionally save in the execution of a sentence of a court following his conviction of a crime for which this penalty is provided by law.
2. Deprivation of life shall not be regarded as inflicted in contravention of this Article when it results from the use of force which is no more than absolutely necessary:
 - (a) in defence of any person from unlawful violence;
 - (b) in order to effect a lawful arrest or to prevent the escape of a person lawfully detained;
 - (c) in action lawfully taken for the purpose of quelling a riot or insurrection.

Article 3 Prohibition of torture.

No one shall be subjected to torture or to inhuman or degrading treatment or punishment.

130. These are essentially inviolable and absolute protections. Whilst expressed in the text as an obligation of negative refrain, in fact the jurisprudence makes clear that positive obligations arise under these protections that requires certain actions to be taken by state parties to ensure these protections are reasonably met and duties discharged. Two aspects to the substantive positive obligations owed by the state authorities under Arts. 2, 3, and also 8, ECHR are particularly relevant:

- (1) A general positive obligation of a systemic nature; and
- (2) A protective (operational) obligation towards a person for whose care the state has responsibility or who has a recognised vulnerability.

131. Section 2A of the National Health Service Act 2006 imposes a duty upon the SSHSC in terms that -

2A. Secretary of State's duty as to protection of public health.

(1) The Secretary of State must take such steps as the Secretary of State considers appropriate for the purpose of protecting the public in England from disease or other dangers to health.

(2) The steps that may be taken under subsection (1) include—

(a) the conduct of research or such other steps as the Secretary of State considers appropriate for advancing knowledge and understanding;

(b) providing microbiological or other technical services (whether in laboratories or otherwise);

(c) providing vaccination, immunisation or screening services;

(d) providing other services or facilities for the prevention, diagnosis or treatment of illness;

(e) providing training;

(f) providing information and advice;

(g) making available the services of any person or any facilities.

(3) Subsection (4) applies in relation to any function under this section which relates to—

(a) the protection of the public from ionising or non-ionising radiation, and

(b) a matter in respect of which a relevant body has a function.

(4) In exercising the function, the Secretary of State must—

(a) consult the relevant body, and

(b) have regard to its policies.

(5) For the purposes of subsections (3) and (4), each of the following is a relevant body—

(a) the Health and Safety Executive;

(b) the Office for Nuclear Regulation.

132. The Equality Act 2010 contains an obligation to consider those for example who are disabled, or the young or old when exercising the functions of the office of Secretary of State, or as a health body -

149 Public sector equality duty.

(1) A public authority must, in the exercise of its functions, have due regard to the need to—

(a) eliminate discrimination, harassment, victimisation and any other conduct that is prohibited by or under this Act;

(b) advance equality of opportunity between persons who share a relevant protected characteristic and persons who do not share it;

(c) foster good relations between persons who share a relevant protected characteristic and persons who do not share it.

- (2) ...
- (3) Having due regard to the need to advance equality of opportunity between persons who share a relevant protected characteristic and persons who do not share it involves having due regard, in particular, to the need to—
- (a) remove or minimise disadvantages suffered by persons who share a relevant protected characteristic that are connected to that characteristic;
- (b) take steps to meet the needs of persons who share a relevant protected characteristic that are different from the needs of persons who do not share it;
- (c) encourage persons who share a relevant protected characteristic to participate in public life or in any other activity in which participation by such persons is disproportionately low.
- (4) The steps involved in meeting the needs of disabled persons that are different from the needs of persons who are not disabled include, in particular, steps to take account of disabled persons' disabilities.
- (5) ...
- (6) Compliance with the duties in this section may involve treating some persons more favourably than others; but that is not to be taken as permitting conduct that would otherwise be prohibited by or under this Act.
- (7) The relevant protected characteristics are—
- age;
 - disability;
 - gender reassignment;
 - pregnancy and maternity;
 - race;
 - religion or belief;
 - sex;
 - sexual orientation.
- (8)...

GROUNDS FOR JUDICIAL REVIEW

133. The grounds have been listed above at paragraph 6.

SUBMISSIONS

Ground 1

134. The Defendants are in breach of section 6 of the Human Rights Act 1998 resulting from omissions and failings in violation of the positive obligations required to be met by Articles 2, 3 and/or 8 of the European Convention on Human Rights.

135. There has been a failure on the part of the Defendants to abide by the positive obligations in order to secure the effective enjoyment of the right to life guaranteed under Article 2, the right to be free from inhumane or degrading treatment or suffering under Article 3, and the right to respect for private and family life protected by Article 8 ECHR. The prime characteristic of a positive obligation is that it requires national authorities to take necessary measures to safeguard the right, or more specifically to adopt reasonable and suitable measures to protect the rights from the risk of violation (Lopez-Ostra v Spain, ECtHR judgement of 9 December 1994).
136. The state is under a duty to take appropriate steps to safeguard the lives of those within its jurisdiction, and the Defendants must not fail to take any measures within the scope of their powers which, judged reasonably, might have been expected to avoid that risk of harm, serious injury or death. The authorities must do *all* that may be reasonably expected of them to avoid a real risk of harm or to life. A failure and violation of the protection may arise by a failure to remove the real *risk* of a violation. It is not in fact necessary that the individual claimant already have suffered injury.
137. The duty is “particularly stringent in relation to those who are especially vulnerable by reason of their physical or mental condition” (Rabone v Pennine Care NHS Foundation Trust [2012] 2 AC 72, per Lord Dyson at [22]).
138. The Defendants are under the duty to safeguard individuals to the greatest possible extent from the real risk of a breach of Article 3 ECHR, i.e. the occurrence of degrading or inhumane suffering; e.g. Rabone v Pennine Care NHS Foundation Trust [2012] 2 AC 72 at [33]-[43]. It is immaterial if the threat of harm arises from a non-state agent: R (DSD) v Commr of Police for the Metropolis [2018] 2 WLR 895, SC. Rabone also notes the “operational duty will be held to exist where there has been an assumption of responsibility by the state for the individual's welfare and safety” [22].
139. A “real” risk of a violation means simply not a fanciful one and may be established even by a relatively low percentage chance of 5-20%: Rabone [2012] 2 AC 72 at [35]; and at [2010] EWCA Civ 698 at [73].

140. There are three important aspects to the positive obligations owed by the authorities. There is:

1. A general positive obligation of a systemic nature;
2. A protective obligation towards a person in the state's custody; and
3. An investigative duty to investigate any ill-treatment properly and promptly.

141. The general positive obligation under Art. 2 or 3 ECHR is to establish a framework of laws, policies, procedures and means of enforcement of the law that protects against and prevents the occurrence of inhuman or degrading treatment to the greatest extent possible. Lord Bingham explained the nature of the systemic obligation in R (Middleton) v West Somerset Coroner [2004] 2 AC 182 as a duty “to establish a framework of laws, precautions, procedures and means of enforcement which will, to the greatest extent reasonably practicable, protect life” (at [2]). Articles 2 and 3 require the state to take measures to prevent, or to avert the real risk of, the violation: Osman v United Kingdom (2000) 29 EHRR 245; Sarjantson v Chief Constable of Humberside [2014] QB 411 (and that does not in fact depend on identification of a specific individual at risk, but the general obligation can exist independently of that: [13]-[25]); MC v Bulgaria (2003) 40 EHRR 20.

142. In Van Colle v Chief Constable of Herts. [2009] 1 AC 225 it was identified by Lord Bingham that:

In its formulation of the “real and immediate risk” test the Strasbourg court, in para 116 of its Osman judgment, laid emphasis on what the authorities knew or ought to have known “at the time”. ... But the application of the test depends not only on what the authorities knew, but also on what they ought to have known. Thus stupidity, lack of imagination and inertia do not afford an excuse to a national authority which reasonably ought, in the light of what it knew or was told, to make further inquiries or investigations: it is then to be treated as knowing what such further inquiries or investigations would have elicited. [32]

143. Practicable steps may relate to various matters including putting in place sufficient resources to tackle the problem (e.g. DSD v Met. Police [2016] QB 161, CA, at [48]).

144. There must not be a ‘systemic dysfunction arising from a regulatory failure’: R

(Maguire) v HM Senior Coroner for Blackpool and Fylde [2019] EWHC 1232 (Admin) at [44].

145. There is overlap with positive obligations owed by virtue of the need to respect private life of an individual guaranteed by Article 8(1) ECHR (“Everyone has the right to respect for his private and family life...”). The positive obligations to respect private and family life interests are considered for example in VC v Slovakia (*App. No. 18968/07*) at [140]; Anufrijeva v Southwark LBC [2004] QB 1124, CA, at [16]²¹⁹. Treatment that falls short of a breach of Article 3 may be a breach of Article 8 (Raninen v Finland (1998) 26 EHRR 563 at [63]). Under Article 8 ECHR, the Defendants have a duty to protect the physical and psychological integrity of the Claimants and of the public. Even in relation to the qualified right in Article 8 ECHR any action or omission would have to be demonstrated by the Defendants to be a necessary and proportionate one where it leads to an interference with the personal life, including safety, of the individual.
146. The state’s positive duty to protect the health, welfare and life of the population includes reasonable steps safeguarding the public, and elements of the public, from foreseeable risks from dangerous activities posed either to life or injury and harm to health. The production of radiation microwaves is a hazardous activity. In the context of dangerous industrial activities the Court has placed a special emphasis on regulations geared to the special features of the activity in question, particularly with regard to the level of the potential risk to human lives. States must govern the licensing, setting up, operation, security and supervision of the activity and must make it compulsory for all those concerned to take practical measures to ensure the effective protection of citizens whose lives might be endangered by the inherent risks. Risks must be minimised. These positive duties require the state to -
- i. Carefully assess, investigate and monitor the risks arising. This involves taking into account relevant information about the risks, which the state must show it has fully assessed and had regard to;
 - ii. Inform the public of the evidence of the risks, and how those risks may

²¹⁹ “Where the ECtHR identifies a positive obligation on a State in the context of Article 8 it often has two aspects: (1) to require the introduction of a legislative or administrative scheme to protect the right to respect for private and family life: and (2) to require the scheme to be operated competently so as to achieve its aim”.

be avoided. Among the preventive measures, a particular weight is placed on the public's right to information²²⁰; and

- iii. To put in place appropriate safeguards to protect the public from the risks.²²¹

147. In light of the facts set out above, it is plain that the Defendants have failed to properly investigate the risks posed by 5G prior to exposing the public to it. This is an abdication of the legal responsibility which is impermissible. The obligation to review the available scientific evidence rests with the Secretaries of State responsible for the safety of UK citizens. It is not acceptable to suggest that the opinion of one non-governmental body, a group of 14 'volunteers', should be simply adopted. It should merely be one opinion to be considered, with appropriate weight attached after a detailed consideration of all relevant material and opinions.

148. Flowing from that approach, there is a failure to properly take account of evidence of the risk posed to human health by radiofrequency radiation, 'RFR', and/or 5G, and to undertake an effective independent and sufficiently informed assessment of the risks.

149. The Defendants have failed furthermore to implement effective safeguards to protect the public from the risks or potential risks, including those posed to children attending schools and nurseries and/or to those with a disability. This is a breach of the principal protections and/or a failure to secure the enjoyment of the same rights without discrimination on the basis of age or disability. The fact that the ICNIRP guidelines for example do not cater for some categories of disabled persons means no guidelines have been adopted by the UK for the protection from harm for those groups.

150. In light of its approach seen above, the state has failed to provide adequate or effective information to the general public about the risks arising and how individuals might seek to avoid or minimise the risks.

²²⁰ Öneryıldız v. Turkey [GC], 2005 41 EHRR 20 at §90; Budayeva and Others v. Russia, 15339/02, 20 March 2008 at §132; Kolyadenko and Others v. Russia, 17423/05, 28 February 2012, at §159.

²²¹ Jugheli v Georgia, 38342/05, 13 July 2017; Brincat v Malta, 60908/11, 24 July 2014; Giacomelli v Italy, 59909/00, 2 November 2006; Tatar v Romania, 67021/01, 27 January 2009; Taskin v Turkey, 46117/99, 10 November 2004.

151. There is also an unlawful absence of sufficient measures to provide effective protection for children from the real risk of harm. The failure to provide adequate or effective safety information to the public or to vulnerable sections of the public concerning risks or steps to minimise risks²²².
152. The adoption of ICNIRP RFR exposure guidelines concerned with thermal effects only does not suffice to discharge the duty to take all practicable steps to the greatest extent possible to protect against harm.
153. Many of the experts cited above have demonstrated the reasonable steps of enquiry and of action to minimise risk that are available. A moratorium on expanding a 5G network whilst adequate testing is conducted to establish safety and the safest means of pulsing and operating such network is identified could save lives from cancer and/or from the debilitating damage of EHS. Examples include reduction of exposure limits lowered to safeguard against biologic effects of EMF; the spread of wireless networks should be decreased, and safer wired networks used instead of wireless to protect susceptible members of the public. Public places could be made accessible for electro- hypersensitive individuals²²³.
154. The roll out of 5G is not required urgently to combat a global pandemic or lockdown of life, but for commercial development and extension of existing systems of telecommunications that already exist and provide services albeit of a lesser speed. A proper reasonable caution to protect the public from identified foreseeable risks ought to result from the taking of a reasonable investigative step. Professor Butler opines that-

...UK policymakers were remiss in not seeking the advice of an independent multidisciplinary panel of international scientists to conduct a study of the health and environmental implications of RFR, particularly as it relates to 5G (cf. Miller et al., 2019). The outcome of such a review may have produced a biologically-based exposure standard, reflecting both the precautionary principle⁴ and the common radiological practice of ensuring that exposures

²²² Request was made for '[12] Confirmation that there is no information made publicly available by any governmental body providing guidance and information as to the actual or potential risks arising from non-ionising radiation in general, or to specific population groups, or specific individuals with certain characteristics. Alternatively, if there is such, copy of the same' P.719. The reply does not engage with this P.721.

²²³ P.886. Stein, Y and Udasin, I *Electromagnetic hypersensitivity (EHS, microwave syndrome) – Review of mechanisms*. Environmental Research 186 (2020) 109445

conform to the ALARA principle (As Low As Reasonably Achievable). This approach would have taken account of critical parameters such as the type, intensity, frequency, duration and variability of exposure to RFR. Unfortunately, this did not happen.

...

Given the weight of the evidence presented, this report concludes that the UK government has failed in its duty to identify, assess, and mitigate the risks posed by RFR-based wireless technologies to human health, including 5G.²²⁴

155. Many informed independent scientists are advocating adopting a precautionary approach to 5G, as has been seen. As Di Ciaula says -

...underestimating the relevance of available results (in particular those from in vitro and animal models) do not appear to be ethically acceptable since, as has been observed reasoning in terms of primary prevention, it “is equivalent to accepting that a potential hazardous effect of an environmental agent can be assessed only a posteriori, after the agent has had time to cause its harmful effects” (Tomatis, 2002). Results already available should be sufficient to invoke the respect of the precautionary principle (Hau et al., 2014; Lo, 2009) considering the large number of subjects involved in this form of environmental exposure and classifiable as “vulnerable” (Bracken-Roche et al., 2017), and possible interactions between multiple and heterogeneous exposures, overcoming the single-pollutant approach with the measurement of the absorbed internal dose of multiple pollutants (the concept of exposome (Wild, 2012)).²²⁵

156. Professor Butler warns within his expert report that –

A ‘recent study commissioned by Deutsche Telecom found only two studies on the biological effects of exposures to the pioneer band of extremely high frequencies at 26-28Ghz planned for 5G in Europe and the US. Both studies indicated adverse biological effects...²²⁶

The evidence from extant scientific research and the nascent body of research on 5G strongly suggests that 5G is likely to increase and, in some cases, magnify the risks of existing wireless technologies (Kostoff et al., 2020).²²⁷

Ground 2

157. The Defendants have failed to consider the best interests of children when considering formulating, updating or reviewing the appropriate approach to 5G policy and risk assessment for exposed children. In the alternative, they have failed to make this a primary consideration.

²²⁴ P.412

²²⁵ Ciaula, Agostino Di, (2018) *Towards 5G communication systems: are there health implications?* *International Journal of Hygiene and Environmental Health*.

²²⁶ P.407

²²⁷ P.408

158. By ratifying a Convention a state undertakes that wherever possible its laws will conform to the norms and values that the Convention enshrines: AH v West London MHT [2011] AACR 15, per Lord Carnwath LJ (as he then was) at [16]-[17] (concerning the UN Convention on the Rights of Persons with Disabilities).

159. In ZH (Tanzania) v Secretary of State for the Home Department [2011] 2 A.C. 166, SC, (per Baroness Hale JSC at [21]-[33]) the application of the UN Convention on the Rights of the Child 1989 (“UNCRC”) was considered. Her Ladyship (at [22]) noted that in Neulinger v Switzerland (2010) 28 BHRC 706 the Strasbourg Court observed that the European Convention on Human Rights 1950 cannot be interpreted in a vacuum but must be interpreted in harmony with the general principles of international law and that “there is currently a broad consensus—including in international law—in support of the idea that in all decisions concerning children, their best interests must be paramount” [135]. The most relevant national and international obligation of the United Kingdom was said to be contained in Article 3(1) of the UNCRC:

In all actions concerning children, whether undertaken by public or private social welfare institutions, courts of law, administrative authorities or legislative bodies, the best interests of the child shall be a primary consideration.

Baroness Hale said this “This is a binding obligation in international law, and the spirit, if not the precise language, has also been translated into our national law” [23].

160. On 20 January 2021 the Defendant was asked for ‘Full details and copy of any decision supportive of the roll-out of 5G technology that has considered the welfare of or best interests of children’²²⁸. No evidence has been supplied of any such consideration²²⁹.

Ground 3

²²⁸ P.719 at [13].

²²⁹ P.721

161. The Defendants are in breach of the Public Sector Equality Duty (“PSED”) (s149 EA 2010). There has been no equality assessment, within the meaning and terms of the PSED, to properly inform and be considered in decisions as to the risk posed by RFR and affecting for example approval of 5G generally and/or of permissible locations of 5G and/or of the policy to adopt ICNIRP guidelines.

162. The necessary enquiry under this ground asks whether the Defendants have conducted the PSED exercise or not. There is no evidence that they have done so in considering whether to exercise a power to consult or investigate or what policy to adopt or maintain, or as to measures that would be appropriate to adopt on behalf of vulnerable disabled persons. It is immaterial what the outcome of that PSED exercise might be: even if it would not thereafter lead to any change or difference, that is immaterial: R (Coll) v SSJ [2015] 1 W.L.R. 3781, CA at [52]. The public law duty is to comply with the PSED. The exercise would consider the effects upon disabled persons, *inter alia*, as persons having protected characteristics. There does not have to exist any discrimination or inequality against any individual at all for there to be a breach: Coll at [12], [36]²³⁰.

163. On 20 January 2021 request was made to the Defendants in terms seeking-

[11]...confirmation of the absence of consideration of the Public Sector Equality Duty, and specifically as to the manner 5G technology may affect those with protected characteristics including disability, race, and age, by the Secretaries of State and/or any decision-making public bodies when considering whether to support the fact, pace or extent of 5G infrastructure building and implementation in the UK.²³¹

²³⁰ In that case the breach was upheld in those proceedings despite the fact that the concurrent findings made were that: (a) women had greater access to approved premises than men so had advantage not disadvantage so there was no discrimination; and (b) the complaint was about release to approved premises after tariff-expiry, but both applicants were considerably pre-tariff at the time. At [10] Elias LJ recorded it was accepted concerning the claimant: “that she cannot demonstrate that she has personally been subject to any discrimination of the kind alleged in the application, and it is likely that she will never be able to do so”.

The breach of the PSED finding was not challenged on appeal, and not doubted at all in the appeal at the Supreme Court. That Court heard an appeal on other issues raised by the appellant. Again no criticism was made of the PSED finding which was implicitly adopted: R (Coll) v SSJ [2017] 1 WLR 2093 at [5]-[7], [19], [42], [44]-[45].

²³¹ P.719. see also [15] P.720

164. The Defendant has not engaged with this, nor provided any evidence of consideration of the vulnerable disabled, or young or old.

Ground 4

165. The SSHSC is in breach of his statutory duty under s2A of the National Health Service Act 2006, either resulting from (a) unlawful delegation or abdication of the statutory function to an external private organisation; and/or (b) irrationally failing to take appropriate steps under this power and/or failing to exercise a discretion in accordance with the statutory purpose.

166. Whilst the power is a broad one, it is not at large. He must exercise it rather than simply rely on a different body to decide what is appropriate to protect public health. Further he must exercise it in accordance with the statutory purpose – i.e. so as to keep the public safe. Lastly, he must exercise it rationally.

167. In R (Justice for Health Ltd) v Secretary of State for Health [2016] EWHC 2338 (Admin), Green J. (as he then was described the provision in these terms-

Section 2A — The duty to protect the public:

92. Section 2A NHSA 2006 also sets out duties on the Secretary of State. The section defines the duty as a duty “as to protection of public health” and in section 2A(1) it is cast in the following terms: “ The Secretary of State must take such steps as the Secretary of State considers appropriate for the purpose of protecting the public in England from disease or other dangers to health”. The duty is framed in terms of a broad objective of “protecting public health” and is a duty only to take such of the “steps” (analysed below) which he considers are appropriate. It leaves a considerable leeway to the Minister as to ways and means.

168. The statute makes plain that the duty rests upon the Secretary of State who must take such steps as he considers appropriate for the purpose of protecting the public in England from dangers to health. The steps that may be taken under subsection (1) include (a) the conduct of research or other steps he considers appropriate for advancing knowledge and understanding; (f) providing information and advice. Where the matter involves, however, the protection of the public from ionising or non-ionising radiation, and is a matter in respect of which a relevant body has a function, in exercising the function, the Secretary of State must (a) consult the relevant body, and (b) have regard to its policies.

169. The SSHSC must to discharge his public law duty to use the discretion afforded by this power in such a way so as to promote, not defeat, the broader legislative scheme to protect health. In Padfield v Minister of Agriculture, Fisheries & Food [1968] AC 997 the House explained that:

“Parliament must have conferred the discretion with the intention that it should be used to promote the policy and objects of the Act, the policy and objects of the Act must be determined by construing the Act as a whole and construction is always a matter of law for the court. In a matter of this kind it is not possible to draw a hard and fast line, but if the Minister, by reason of his having misconstrued the Act or for any other reason, so uses his discretion as to thwart or run counter to the policy and objects of the Act, then our law would be very defective if persons aggrieved were not entitled to the protection of the court” (per Lord Reid at p1030B-D)

“It was for the Minister to use his discretion to promote Parliament's intention” (per Lord Pearce at p1054G)

170. The principles have been applied to find unlawfulness more recently in R. (Ben Hoare Bell Solicitors) v Lord Chancellor [2015] 1 WLR 4175; and by Lord Reed JSC in M v Scottish Ministers [2012] 1 WLR 3386 at [42]-[47]. Lord Reed confirmed that it is a fundamental flaw to assume that a failure to exercise a discretionary power can only be unlawful where a right exists; and it is proper to go behind the words which confer a statutory power to the general scope and objects of the Act in order to find what was intended [46]. Padfield's case shows that, even where a statute confers a discretionary power, a failure to exercise the power will be unlawful if it is contrary to Parliament's intention [47].

171. In the instant case the SSHSC has failed to exercise or consider his statutory duty at all, or has failed to exercise it in accordance with the purpose of its being entrusted to him by the Act, or he has failed to rationally determine what steps are appropriate to take in the present circumstances.

Ground 5

172. The Defendants have failed to take into account as a relevant consideration, and give due and proper consideration to, all the evidence, information and concerns raised which are set out in the statement of facts and grounds above.

173. The Defendants commit the public law error of failing to give proper regard to relevant evidence and factors. The legal error might be also described as ‘misunderstanding... of an established and relevant fact’ (e.g. SSETR v Tameside [1977] AC 1014 at p1030; R (Alconbury Developments Ltd) v SSETR [2003] 2 AC 295); or as factual misappreciation leading to unfairness. The review ground can also be described as being that ‘there is no evidence to support factual findings made or they are plainly untenable’ or ‘perverse or irrational; or there is no evidence to support it; or it was made by reference to irrelevant factors or without regard to relevant factors... misunderstood or overlooked relevant evidence or misdirected itself in law’ (Begum v Tower Hamlets LBC [2003] 2 AC 430 at [7] per Lord Bingham; and at [99] per Lord Millett respectively).

Ground 6

174. The Defendants have failed to provide adequate and sufficient reasons for the decision not to establish a process to investigate and establish the adverse health effects and risks of adverse health effects from 5G technology and/or for discounting the risks presented by the evidence available.

175. Following the communication of the 22 December 2020 decisions refusing to revisit or amend the approach taken in respect to adopted ICNIRP standards, a request made on 20 January 2021 for -

[1] A copy of the decision taken by COMARE, the Committee on Medical Aspects of Radiation in the Environment, not to review the available science but, whilst 5G installation is continuing apace, to await a review by the World Health Organisation. Your letter of 22 December 2020 refers.

[2] A copy of the review of, or decision not to review, the material we previously supplied undertaken by PHE’s Centre for Radiation, Chemical and Environmental Hazards, and any reasons for concluding whether this information justifies any departure from its current approach.²³²

176. On 3 February 2021 a reply was received which supplied no reasons.

²³² P.718

177. In South Bucks District Council v. Porter (No. 2) [2004] 1 WLR 1953, the speech of Lord Brown famously summarised the principles applicable to the duty to give sufficient reasons (at paragraph 36):

The reasons for a decision must be intelligible and they must be adequate. They must enable the reader to understand why the matter was decided as it was and what conclusions were reached on the “principal important controversial issues”, disclosing how any issue of law or fact was resolved. Reasons can be briefly stated, the degree of particularity required depending entirely on the nature of the issues falling for decision. The reasoning must not give rise to a substantial doubt as to whether the decision-maker erred in law, for example by misunderstanding some relevant policy or some other important matter or by failing to reach a rational decision on relevant grounds.

178. In R (Stephenson) v. Secretary of State of Housing, Communities and Local Government [2019] EWHC 519 (Admin.), a case involving what is commonly known as “fracking”, Dove J had held that it was necessary for the Secretary of State to address the specific points which had been raised and, in particular, the challenges which were made to the accepted scientific basis on which the government was proceeding.

179. In this case no intelligible and sufficient reasoning has been provided by the Defendants to justify the adoption of one scientific opinion – a minority view of researchers and published experts – as to the biological effects and anticipated or witnessed harm from RFR, over the other conclusions and opinions available. In all of the circumstances set out in detail above, there is an overriding need for the decisions to be set out in with appropriate reasoning and explanation.

180. In the further alternative, there has been a failure by the Defendants to meet the requirements of transparency and openness required of a public body. In R (Justice for Health Ltd) v Secretary of State for Health [2016] EWHC 2338 (Admin), on the issue of principle, Green J. (as he then was) noted the principle of transparency had evolved from Strasbourg jurisprudence but is now well-established as a common law principle, and a component of the broad principle of “good administration”, the “rule of law”, and “legal certainty” [148]. Laws LJ’s dicta (in Nadarajah v SSHD [2005] EWCA Civ 363 at [68]) that transparency was a requirement of good administration, and “public bodies ought to deal straightforwardly and consistently with the public”

was cited [141]. Such principles of good administration and transparency of course have applicability to the qualities to be expected of a lawful decision-making here, and they are absent.

Ground 7

181. In the further alternative, the refusal to conduct a due and sufficient enquiry into the evidence and issues presented is *Wednesbury* unreasonable or illogical. Equally, it is *Wednesbury* unreasonable to adhere, in the face of the current evidence, to a policy that 5G technology is only required to adhere to International Commission on Non-Ionizing Radiation Protection, ‘ICNIRP’ guidelines.
182. The Defendants’ decision, challenged in these proceedings, is that notwithstanding the matters raised the UK ought simply to continue to rely upon ICNIRP and need not investigate the body of scientific material indicating that there is a risk to human health. The Defendant rejects the suggestions of lack of independence at ICNIRP, and does not engage with its methodology or membership.
183. For avoidance of doubt, on 20 January 2021 the Claimants’ solicitor responded to the Defendant’s suggestion, made notwithstanding a decision had already been taken by PHE, that again they might present the evidence directly to Public Health England for consideration. It was pointed out that there had been no response to direct communication sent twice to that body; and in any event the Defendants have already liaised with them in relation to the issues raised and have communicated PHE’s negative decision in the 22 December 2020 letter.
184. The Defendants’ reference within the pre-action correspondence to a permission decision in R (Watts) v SSDCMS and SSHCLG [2020] EWHC 3808 (Admin); CO/3668/2020 is misplaced. That was a challenge to a consultation process in relation to planning policy framework. Cranston J found that health was not within the remit of the particular consultation at all [33]. The case did not raise any substantive legal duties owed to health care, nor fundamental human rights protections. To the extent that any consideration was given to health outwith its remit it simply demonstrates that in many areas of life the problem being created by the PHE approach

will have concrete effects creating risks for individuals due to the erroneous use of the ICNIRP guidelines. The instant case by distinction is a direct challenge to the flaws and legal failings that have left the risks to human health ignored and endangered by the present approach of the Defendants.

185. The Defendants also cite the decision in Secretary of State for the Environment, Food and Rural Affairs v Downs [2009] EWCA Civ 664; 3 CMLR 46 where an EC provision was at stake so the test was not *Wednesbury*, but ‘manifest error’, and the Court pointed out that there it was accepted by the claimant that the system was “at the forefront of international standards”; and no other Member States used any better system. However, in the instant case it is precisely challenged that the correct system and standard is not being used, and that it is a standard inferior to many others. It is also notable that in R (Mott) v Environment Agency [2016] EWCA Civ 564; [2016] 1 W.L.R. 4338, a case concerned with fishing quota percentage calculation, whilst the appeal against the successful common law claim was allowed, it was dismissed as against the Article 1 Protocol 1 head of claim. The third case cited by the Defendants is a notable example of action being taken to protect public health. In R v Secretary of State for Health ex p Eastside Cheese Co [1999] 3 C.M.L.R. 123, a cheese manufacturer’s product carried E-Coli and led to an illness. The court upheld emergency control orders imposed for public health interests even though commercially damaging to the cheese producer. The important interest of public safety, and the need to take action on an urgent basis, was emphasised.

186. Irrationally, without sufficient inquiry, or otherwise unlawfully the Defendants have adopted a policy that 5G technology is only required to adhere to ICNIRP guidelines. That only considers very short-term exposure risk and only if thermal effect occurs in that short time. It is irrational to rely on ICNIRP where those are not fit for purpose. In addition, there are no guidelines for those vulnerable categories of persons expressly excluded from the ICNIRP guidelines. That is a failure that is irrational or unreasonable.

187. The Claimants rely upon the wealth of evidence set out hereinbefore as to why the ICNIRP approach is dangerous and an irrational reckless approach for government to adopt.

188. Professor John William Frank, of the University of Edinburgh, is a physician-epidemiologist with 44 years' experience of primary care/ public health practice, research, teaching and consulting, in four countries. In his October 2020 publication²³³, he explains that 'for the current 5G roll-out, there is a sound basis for invoking 'the precautionary principle'. This is the environmental and occupational health principle by which significant doubt about the safety of a new and potentially widespread human exposure should be a reason to call a moratorium on that exposure, pending adequate scientific investigation of its suspected adverse health effects. In short, one should 'err on the side of caution'. In the case of 5G transmission systems, there is no compelling public health or safety rationale for their rapid deployment'²³⁴. Professor Frank notes that 5G cells must be much more spatially densely located than previous networks in order to work; and that the system adds not only much higher frequencies than previous forms of wireless technology but adds the untested supportive technologies of pulsing, beaming, phased arrays and massive input/massive output, MIMO, which facilitate the higher data transmission capacity. The abstract to his piece summarises identification of –

...four relevant sources of scientific uncertainty and concern: (1) lack of clarity about precisely what technology is included in 5G; (2) a rapidly accumulating body of laboratory studies documenting disruptive in vitro and in vivo effects of RF-EMFs— but one with many gaps in it; (3) an almost total lack (as yet) of high-quality epidemiological studies of adverse human health effects from 5G EMF exposure specifically, but rapidly emerging epidemiological evidence of such effects from past generations of RF-EMF exposure; (4) persistent allegations that some national telecommunications regulatory authorities do not base their RF-EMF safety policies on the latest science, related to unmanaged conflicts of interest. The author, an experienced epidemiologist, concludes that one cannot dismiss the growing health concerns about RF-EMFs, especially in an era when higher population levels of exposure are occurring widely, due to the spatially dense transmitters which 5G systems require. Based on the precautionary principle, the author echoes the calls of others for a moratorium on the further roll-out of 5G systems globally, pending more conclusive research on their safety²³⁵.

189. Having read the published material, Professor Frank states 'After reviewing the evidence cited above, the writer, an experienced physician-epidemiologist, is convinced that RF-EMFs may well have serious human health

²³³ P.881-P.885. Frank, John (2020) *Electromagnetic fields, 5G and health: what about the precautionary principle?* *J Epidemiol Community Health* 2021

²³⁴ P.884

²³⁵ P.881

effects. While there is also increasing scientific evidence for RF-EMF effects of ecological concern in other species, both plant and animal, these have not been reviewed here, for reasons of space and the author's disciplinary limitations. In addition, there is convincing evidence, cited above, that several nations' regulatory apparatus, for telecommunications innovations such as the 5G roll-out, is not fit for purpose. Indeed, significant elements in that apparatus appear to have been captured by vested interests. Every society's public health—and especially the health of those most likely to be susceptible to the hazard in question (in the case of EMFs, children and pregnant women)—needs to be protected by evidence-based regulations, free from significant bias'²³⁶.

190. Dr Tresidder notes²³⁷ that the editors of the *Handbook of Biological Effects of Electromagnetic Fields*, Barnes and Greenebaum, in 2020²³⁸ made the important point that current limits for exposures to nonionizing electromagnetic fields (EMF) are set, based on relatively short-term exposures. Long-term exposures to weak EMF are not addressed in the current guidelines. Nevertheless, a large and growing amount of evidence indicates that long-term exposure to weak fields can affect biological systems and might have effects on human health. If they do, the public health issues could be important because of the very large fraction of the population that is exposed. The point may be put metaphorically -

People with ES may well be the canaries in the coalmine, warning us all of the potential effects upon our health – however, society must consider carefully whether it is happy to sanction the 24/7 irradiation of people with what the insurance industry describes as a pollutant, and how to ensure long term health. One only needs one black swan to disprove the hypothesis that all swans are white – so we can no longer maintain the hopes that ‘Nonthermal= non-harmful’ and ‘non-ionising=non-dangerous’, as there are now thousands of black swans²³⁹.

191. Professor Butler concludes that
- The scientific evidence is that humanity may be faced with a silent health catastrophe.
- The consequences of not facing the scientific truth and addressing the risks RFR poses is eloquently stated in the concluding paragraph of *Deceit and denial: The deadly politics of industrial pollution*: It may never “be possible to evaluate the lost potential of individuals whose intelligence has been slightly

²³⁶ P.884.

²³⁷ P.345

²³⁸ <https://onlinelibrary.wiley.com/doi/abs/10.1002/bem.22267>

²³⁹ P.347

lowered, whose behavior has become a bit more erratic, whose personalities have been altered in ways imperceptible to scientific measurement. We will never know the social, economic, and personal costs to society from the lost potential of our citizens” (Markowitz and Rosner, 2013). These points are reinforced in context of the association between RFR exposures and cancer by Hardell and Carlberg (2021, p.10) who state that there were “missed opportunities for cancer prevention exemplified by asbestos, tobacco, certain pesticides and now RF radiation. No doubt economic considerations are favored instead of cancer prevention. The cancer victim is the loser in terms of suffering, life quality and shorter life expectancy. Also the life for the next-of-kin is affected. A strategy to sow doubt on cancer risks was established decades ago and is now adopted and implemented in more sophisticated way by the telecom industry regarding RF-EMF risks to human beings and the environment. Industry has the economic power, access to politicians and media whereas concerned people are unheard.”²⁴⁰

Sufficient interest

192. It is plain that the Claimants have standing to bring the claim and to seek the relief identified below. The factual circumstances of each have been set out above of course. The relevant jurisprudence was identified by letter dated 4 December 2020²⁴¹. To add to those decisions, it may also be noted that it is established that a relatively low threshold for standing to bring judicial review applies, and a claimant need only establish a sufficient interest in the subject matter. The instant Claimants plainly have sufficient interest. The Court will be very familiar also with the practice in the Administrative Court of interested bodies bringing claims concerning matters not directly affecting that bodies’ own rights, rather than some interest that it seeks to represent. In R v Foreign Secretary, ex parte Rees-Mogg [1994] QB 552 the court accepted "without question" that Lord Rees-Mogg had standing to seek judicial review of the Foreign Secretary's decision to ratify the Maastricht treaty "because of his sincere concern for constitutional issues" [p562A]. Even by the middle of the 1980s it was established in the public law that the real control over public law challenges rests in the permission requirement which addresses merely vexatious claims. In the case of R v Her Majesty's Treasury ex p Smedley [1985] QB 657 the Court of Appeal heard a challenge to the proposed exercise of a discretion (indeed, a discretion of Her Majesty in Council²⁴²) [p672D]. The case was brought by a Mr Smedley ‘in his capacity as Mr.

²⁴⁰ P.1012

²⁴¹ P.698.

²⁴² This decision was concerned with taxation in a forerunner to what in modern terms was Brexit campaigning, concerned with the payment due by the UK to the European Community as it then was.

Smedley, British taxpayer and elector. What troubles him is an expressed intention by H.M. Treasury to pay the European Community a sum in excess of £121.5 million out of the Consolidated Fund' [p664F]. Although the substantive appeal was dismissed, the Court was in no doubt about the standing that required the claim and then appeal to be heard. Sir John Donaldson MR noted the 'submission by Mr. Laws that Mr. Smedley has no sufficient interest within the meaning of [the then] R.S.C., Ord. 53, r. 3(7). Woolf J. did not find it necessary to decide this point and neither do I, although I agree with the judge that I should be extremely surprised to find myself obliged to uphold that submission' [p667F]. Slade LJ was still more clear:

The speeches of their Lordships in *Reg. v. Inland Revenue Commissioners, Ex parte National Federation of Self-Employed and Small Businesses Ltd.* [1982] A.C. 617 well illustrate that there has been what Lord Roskill described at p. 656G-H as a "change in legal policy," which has in recent years greatly relaxed the rules as to locus standi. Lord Diplock referred at p.640C to a "virtual abandonment" of the former restrictive rules as to the locus standi of persons seeking prerogative orders against authorities exercising governmental powers... It raises a serious question as to the powers of Her Majesty in Council to make an Order in Council in the form of the draft now before Parliament... I do not feel much doubt that Mr. Smedley, if only in his capacity as a taxpayer, has sufficient locus standi to raise this question by way of an application for judicial review; on the present state of the authorities, I cannot think that any such right of challenge belongs to the Attorney-General alone. [p669G-p670C]

193. The Claimants in this case are entitled to the rule of law to ensure that public authorities be held to account for their actions or omissions. The matters herein concern the protection of the environment in which each Claimant lives, and the personage of each. This case is concerned with the risk of ubiquitous radiation waves that create a risk posed to each Claimant being added to without due consideration by the Defendants of the health consequences for them, their relations including children, nor the wider public.

RELIEF PRAYER

194. This Honourable Court shall be invited following the substantive hearing of this claim to grant such relief as it shall deem fit.
195. Without prejudice to the powers of the Court, specific invitation shall be made for the following in particular

- i. Declaratory relief recording the identified failings of public law duty, statutory duty, and/or violation of the obligations arising pursuant to s6 of the Human Rights Act and Articles 2, 3 or 8, and/or 14 ECHR; and/or
- ii. A mandatory order requiring that the relevant Defendant comply with the applicable duties forthwith, potentially to include -
 - a. A full reassessment of the risks posed by the intended use of 5G, to include all relevant evidence and to consider all members of the population including children and those with disabilities;
 - b. A moratorium on further 5G roll-out pending a proper and thorough examination of the evidence of the risk to health that is created by doing so; and/or
 - c. A reconsideration of the guidelines considered to be appropriate in light of the thorough and effective assessment carried out;
 - d. Publication of the findings of the study and assessment conducted, and of information detailing the risks identified and detailing steps that may be taken by individuals to reduce the risks they are exposed to;
 - e. Consideration given to whether to limit the installation or use of 5G near to schools and nurseries, and whether to provide for designated low Radio Frequency Radiation areas so that those who choose to do so, or need to do so due to any health condition, can protect themselves.

22 March 2021

Michael Mansfield QC

Philip Rule