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Y Gweinidog Iechyd a Gwasanaethau Cymdeithasol  
Minister for Health and Social Services



Llywodraeth Cymru  
Welsh Government

Eich cyf/Your ref P-04-553  
Ein cyf/Our ref MD/05160/14

Mr William Powell AM  
Chair of the Petitions Committee  
National Assembly for Wales  
Cardiff Bay  
Cardiff  
CF99 1NA

4 October 2014

Dear William,

Thank you for your recent letter asking for my views on petition P-04-553 from Cymru Sofren/Sovereign Wales which states:

*Petition - P-04-553 A full and independent investigation in to the health risks of wireless and mobile phone technologies in Wales including all schools*

The **Public Health England Centre for Radiation, Chemical and Environmental Hazards (PHE-CRCE)** (formerly the Health Protection Agency – HPA) provides advice to the Welsh Government on radiological protection matters. It provides an independent, impartial and authoritative source of scientific advice on questions related to health effects from ionising and non-ionising radiation.

Based on the advice I have received from PHE-CRCE, I do not support the petition's call for a full and independent investigation of these issues, as I am reassured that PHE-CRCE's continued monitoring of the scientific research data provides sufficient information to protect the public in this area.

I attach at Annex A advice given by PHE-CRCE on the specific issues raised by the petition, and at Annex B a summary of their current position on research into electromagnetic fields. I think the Committee will find the information presented helpful in the further consideration of the petition.

Best wishes,  
Mark.

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Wedi'i argraffu ar bapur wedi'i ailgylchu (100%)

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## Public Health England Centre for Radiation, Chemical and Environmental Hazards (PHE-CRCE)

### Advice on issues raised by petition P-04-553

The petition states that “*there is an enormous body of evidence demonstrating that the bombardment of modern traffic in electro-magnetic fields can be harmful*”. The most recent PHE-backed comprehensive review of scientific studies was undertaken by the independent Advisory Group on Non-ionising Radiation (AGNIR) and published at the end of April 2012. The AGNIR report considered whether there was evidence for health effects occurring in relation to exposures below the International Commission on Non-Ionizing Radiation Protection (ICNIRP) levels, which have been adopted in the UK. The overall conclusion was that, although a substantial amount of research has been conducted in this area, there is no convincing evidence that radio wave exposures below guideline levels cause health effects in either adults or children. The AGNIR report and associated PHE response can be found at:

<https://www.gov.uk/government/publications/radiofrequency-electromagnetic-fields-health-effects>

The petition particularly asks for the inclusion of schools in any investigation, and identifies children as particularly susceptible to the “*threats*” of electromagnetic exposure. PHE-CRCE has undertaken a systematic programme of research to assess exposures of children from wireless computer networking equipment used in schools. At the start of the project, comprehensive test facilities were set up and a review of technical standards and wireless equipment used in UK schools was carried out. The main objectives of the project were as follows.

- Measurements of the electromagnetic field strengths around selected Wi-Fi devices during transmission, and calculations of radiated powers.
- Computer modelling of Wi-Fi equipment in use by children in order to predict the specific absorption rate (SAR) of radiofrequency energy in the body.
- Measurements of the proportion of the time that individual Wi-Fi computers transmit during typical school lessons.

The project findings were published in September 2011 and summarised in an appendix contained within the 2012 AGNIR report. The data gathered during the project reinforced the position adopted by the former Health Protection Agency (HPA) at the beginning of the project that exposures from Wi-Fi equipment are small in relation to the ICNIRP guidelines and less than those from mobile phones. Note, a precautionary approach continues to be advised with mobile phones, and this recognises that exposures are much higher than occur in other situations, though still within the guidelines, when mobile phones are held to the head to make voice calls.

The siting of mobile phone masts near to schools is a topic on which concerns are sometimes expressed and we note that the Petitions Committee has also written to Ofcom to identify if there has been any recent research in this matter. The 2012 AGNIR review includes a summary of over 3,000 measurements made by Ofcom as part of a UK-wide audit programme at 541 sites near mobile phone masts, including 339 schools. The maximum exposure found at any location was hundreds of times below the ICNIRP guideline levels, and typical exposures were lower still.

In responding to the 2012 AGNIR report for situations giving rise to exposures that are already low in relation to guidelines (for example, those from Wi-Fi and mobile phone base stations), PHE advised that community and individual measures to reduce exposures are not necessary. PHE is also committed to carefully continue monitoring the emerging scientific evidence, providing any

### Summary of PHE advice about the health effects of exposure to radiofrequency fields

*Please note the weblinks to documents on the former HPA website provided below will not work at present because that site has been taken down. PHE is in the process of re-providing the material from HPA on [www.gov.uk](http://www.gov.uk). For the moment, it is best to obtain ex-HPA material from the snapshot of the HPA website that is held in the National Archives:*

*<http://webarchive.nationalarchives.gov.uk/20140722091854/http://www.hpa.org.uk/webw/HPAweb&Page&HPAwebAutoListName/Page/1317139282177>*

#### Role of Public Health England

Public Health England (PHE) came into being in April 2013, and advises the Government (including the Welsh Government) on all aspects of public health, including exposure to radio waves, the appropriate standards of protection for the general population and any measures necessary to protect sensitive groups. PHE inherited this responsibility from the former Health Protection Agency (HPA) and it continues to develop and provide a range of published information about radiofrequency topics. The material includes comprehensive scientific review reports and position statements, which can be found at:

<http://www.hpa.org.uk/Topics/Radiation/UnderstandingRadiation/UnderstandingRadiationTopics/ElectromagneticFields/RadioWaves/>

Within this suite of information are statements on the following frequently mentioned topics. The statements highlight assessments that have been done and which support the PHE view that exposures are small in relation to guidelines and not expected to pose a hazard to the public:

- Wireless networks (Wi-Fi), as used in schools and elsewhere;
- Mobile phone base stations, including the latest 4G systems;
- Smart meters for monitoring of domestic energy usage.

The situation with mobile phones, including their use by children, is somewhat different, as explained below, but also covered by published information.

#### Public exposure guidelines for radiofrequency fields: scientific evidence and consistency of PHE guidance with the international consensus

Central to PHE advice is that exposures to radio waves should comply with the guidelines published by the International Commission on Non-Ionizing Radiation Protection (ICNIRP). ICNIRP is formally recognised by the World Health Organization (WHO). PHE has also issued precautionary advice to discourage the non-essential use of mobile phones by children. This precautionary advice recognises that exposures are much higher than occur in other situations, though still within the guidelines, when mobile phones are held to the head to make voice calls. Similar advice is not considered necessary with the lower exposures that occur from Wi-Fi equipment, smart meters and mobile phone base stations, including the latest 4G systems.

While exposure to radio waves is not new and health-related research has been conducted on this topic for many years, a large amount of new scientific evidence has emerged over the past few years. This knowledge has arisen through dedicated national and international research programmes that have addressed concerns about rapidly proliferating wireless technologies. The UK has contributed to the international research effort through various projects that have been commissioned, including through the Mobile Telecommunications and Health Research

<http://monographs.iarc.fr/ENG/Monographs/vol102/index.php>

In putting the IARC “possibly carcinogenic” classification into context, it is worthy of note that, as of October 2013, 285 substances/situations are graded 2B by IARC, 66 as the higher “probably carcinogenic to humans” classification (group 2A) and 111 as the highest “carcinogenic to humans” classification (group 1). Among all of these classifications are many widespread and familiar substances/situations, including coffee and pickled vegetables (2B), shift working that involves circadian disruption (2A) and alcohol (1). The full lists can be found at:

<http://monographs.iarc.fr/ENG/Classification/index.php>

The IARC classification for radio waves was largely based on personal exposures associated with mobile phone use and the evidence was evaluated as being limited among users of wireless telephones for glioma and acoustic neuroma (cancers of brain/nerve tissues in the head), and inadequate to draw conclusions for other types of cancers. The evidence from environmental radiofrequency exposures, which include wireless telecommunications, was considered inadequate to draw conclusions.

Each carcinogenicity classification has to be looked at on its own merits, along with evidence relating to other health effects, in deciding on what is a proportionate public health response. IARC explains in the preamble to its monographs that their purpose is that of carcinogenic hazard identification, which is (only) the first step in performing a health risk assessment. For some exposures, it may be appropriate to do nothing, while for others it may be appropriate to seek to eliminate the exposure entirely. For radio wave exposures, the UK/PHE approach is between these two extremes and features the targeting of precautionary advice on the situation giving the highest exposure to the largest number of people, i.e. use of mobile phones held to the head in order to make voice calls. There is also a particular emphasis in that advice on those considered potentially most vulnerable, i.e. children, whose use of mobile phones should be discouraged.

HPA (now PHE) issued a response to the IARC classification when it was published and the classification has been taken into account in PHE advice. The response can be found at:

<http://www.hpa.org.uk/NewsCentre/NationalPressReleases/2011PressReleases/110531electromagneticfields/>

The topic of cancer effects also occupies a substantial part of the 2012 AGNIR report. The Group reviewed essentially the same evidence as the IARC working group and concluded that, although some positive findings have been reported in a few studies, overall the evidence does not suggest that using mobile phones causes brain tumours or any other type of cancer. The data, however, are essentially restricted to periods of less than 15 years from first exposure because mobile phones have only been in widespread use for that long. AGNIR considered it will be important to continue monitoring the evidence over the coming years, including that from national brain tumour trends, which have so far given no indication of any risk.

### **Continuing PHE precautionary advice about exposure to radiofrequency technologies**

PHE (as the former HPA) responded to the 2012 AGNIR report maintaining its advice to follow the ICNIRP guidelines and also maintaining its long-standing precautionary advice in respect of exposures from mobile phones, which can give rise to exposures that approach the international guidelines when they are held to the head to make voice calls. The decision to maintain the precautionary approach reflected the continuing possibility of: (a) biological effects, although not apparently harmful, occurring at exposure levels within the ICNIRP guidelines, and (b) the limited information regarding cancer effects in the long term. Measures that mobile phone users may take to reduce their exposures were described in the HPA response to the AGNIR report.

The Council of Europe Resolution 1815 (2011) also makes various recommendations and comes from the Council of Europe's Committee on the Environment, Agriculture and Local and Regional Affairs. It is not clear exactly what evidence was considered or which experts were approached to submit evidence to their review. The Council of Europe is separate from the European Parliament and the European Commission.

Government and PHE are aware that there are people and organisations who believe more precaution is warranted for public exposure to radio waves in light of their view of the scientific evidence. However, the published reviews by AGNIR and internationally recognised bodies do not, in the opinion of PHE, warrant more precaution than is already advised with respect to public exposure to radiofrequency fields.

### **PHE priorities for health improvement**

PHE is a new organisation and recently published the following document: "Public Health England: our priorities for 2013/14". Protection from environmental hazards, including uncertain ones like exposure to radio waves, is a priority for PHE, but it is important to take a broad view across the whole range of health topics in deciding what actions are appropriate and proportionate. Unlike hazards such as smoking, poor diet, lack of exercise etc., and despite much research, there remains no clear evidence of harm to health from exposure to radio waves below the internationally agreed (ICNIRP) guideline levels that are already adopted in the UK.

### **Promotion of UK precautionary advice about exposure to radiofrequency fields**

Precautionary advice for the public on radio wave exposures has been published by the Department of Health and the Welsh Government on the NHS choices website, and in more technical sources such as the previously mentioned PHE response to the AGNIR report. Leaflets have also been prepared in Wales with the involvement of school children. PHE's view is that provision of this material on the internet reflects the appropriate priority of this particular topic within the broader context of all messages directed to the public about their health.