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Experimental Dermatology Unit

Stockholm, January 9, 2012

Mr. Eugene O Cruadhlaoich (Clerk for Committee),
Joint Committee on Environment, Transport, Culture and Gaeltacht,
House of Oireachtas,
Leinster House, Kildare Street,
Dublin 2, Ireland

Ref: 'effects of electromagnetic radiation and in the numbers suffering from electrosensitivity'

by

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The present risk assessment of electromagnetic fields, such as mobile phone radiation, is scientifically untenable. In the official assessments from the World Health Organization (WHO) of the modern, man-made electromagnetic fields' health risks, epidemiology (the study of health-event, health-characteristic, or health-determinant patterns in a society) has had a strongly dominant position.

From the point of view of theory of science, it is not justifiable to establish safety mainly on epidemiology because this is a so-called ***"soft" approach with significant weaknesses that prevent reliable risk assessment.*** There are many examples of how epidemiological methods have lead to wrong conclusions.

A **classical example** is that this research method led to the belief that tuberculosis was caused by "bad smell". Only when better research methods evolved could it be established that tuberculosis was caused by bacteria.

A widely studied example of an erroneous conclusion based on numerous epidemiological studies is that women who were taking combined **hormone replacement therapy** (HRT) also had a lower-than-average incidence of coronary heart disease (CHD). This lead to the proposal that HRT was protective against CHD. But **randomized controlled trials** showed that HRT caused a small but statistically significant *increase* in risk of CHD (see Lawlor DA, Davey Smith G, Ebrahim S (2004). "Commentary: the hormone replacement-coronary heart disease conundrum: is this the death of observational epidemiology?". *Int J Epidemiol* **33** (3): 464-467).

Because it tries to deal with whole populations, mostly based on various population subsets,

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epidemiology is too blunt and indirect to be able to assess risks reliably, rapidly and correctly. For example, it is impossible to know exactly how great the exposure has been in the individual case, because one must rely on subjective estimates in such large-scale studies. Moreover, it is difficult to avoid all sources of error that may make a risk over- or underestimated. (The on-going debate over the recent Interphone and Danish cohort "cancer *versus* mobile phone use" studies is a grand example of precisely this.) Epidemiology has much weaker evidential strength than experimental approaches, something pointed out even in textbooks of epidemiology!

Some leading experts have questioned whether this method can yield useful results at all : *"And if we take into account the track record [of epidemiological research] .. Would not They do just as well if They simply tossed a coin?"* ***Sander Greenland,*** *professor of epidemiology at McGill University.*

In any case, it is ***not scientifically justifiable to base risk assessment of electromagnetic fields mainly on such an unreliable method.***

Proper scientific risk assessment must take into account many different aspects, relying mainly on methods that can establish causation in a correct way. Above all, it is by no means scientifically tenable to maintain that modern, man-made electromagnetic fields, including mobile phone radiation, is harmless on the basis of epidemiological data only (as has often been done).

Scientific risk assessment
To obtain a realistic idea of the risk you have to consider observations from several different research areas in addition to those of epidemiology, including experimental DNA research, cancer research, cell biology, physiology and pathophysiology, brain research, etc.

The observations in these areas all indicate that modern, man-made electromagnetic fields, including mobile phone radiation, causes a significant risk of various disturbances of the physiology as well as damage to biological tissues, cells and molecules, in particular proteins and DNA.

It is therefore high time to apply rigorous multidisciplinary assessment of electromagnetic fields' risks.

It is therefore high time to abandon the pseudo-scientific risk assessment methodology that industry-sponsored top experts have designed to benefit industry interests at the expense of the public health.

It is therefore high time to replace an inconclusive and unreliable epidemiology-based risk assessment with a rigorous interdisciplinary risk assessment, where epidemiology must assume the subordinate role it should have.

Since over 10 years there exists sufficient interdisciplinary data to indicate what will be the

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result of such a rigorous multidisciplinary risk assessment of modern, man-made electromagnetic fields, including mobile phone radiation. It is now very high time to do this assessment.

As a matter of fact, the current data are already so abundant that there is no need to wait for further research before action is taken to limit the exposure to e.g. mobile phone radiation. This is the clear responsibility of our radiation safety authorities, public health authorities and national boards of health and welfare as issued in the form of risk management protocols from parliaments and their governments, and has been pointed out many times (see e.g. Fragopoulou A, Grigoriev Y, Johansson O, Margaritis LH, Morgan L, Richter E, Sage C, (2010) Scientific panel on electromagnetic field health risks: Consensus points, recommendations, and rationales. *Rev Env Health,* 25(4):307-17).

Had all these points above been taken in consideration one can be sure that the recent classification of The International Agency for Research on Cancer (IARC; May 31, 2011) of radiofrequency electromagnetic fields, which are emitted by mobile phones, wireless devices, radar and radio and television broadcasts, as possibly cancerogenic to humans (IARC Group 2B) instead had been termed "probably" or even "definitely".

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From the above mentioned paper, The Seletun Scientific Panel Statement, by Fragopoulou et al (2010) the following may be summarized.

Electromagnetic field (EMF) exposures (static to 300 GHz) result from the use of electric power and from wireless telecommunications technologies for voice and data transmission, energy, security, military and radar use in weather and transportation. The Scientific Panel recognizes that the body of evidence on EMF requires a new approach to protection of public health; the growth and development of the fetus, and of children; and argues for strong preventative actions. Personally, I have met a vast number of sufferers, including persons with the functional impairment electrohypersensitivity, who have been referred to me over the years. The incidence increases seen for a multiplicity of diseases as well as dwindling health resources in the face of anticipated demand, do make me worried.

The existing scientific evidence, the body of evidence on biological and biomedical effects of electromagnetic fields, and public health implications of the unprecedented global exposures to artificial electromagnetic fields requires a new approach to:

1) Low-intensity (non-thermal) bioeffects and adverse health effects are demonstrated at levels significantly below existing exposure standards.

2) ICNIRP and IEEE/FCC public safety limits are inadequate and obsolete with respect to prolonged, low-intensity exposures.

3) New, biologically-based public exposure standards are urgently needed to protect public

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health world-wide.

4) It is not in the public interest to wait.

Strong concern has been voiced by the public, and by scientists as well as public health and environmental policy experts, that the deployment of technologies that expose billions of people worldwide to new sources of EMF may pose a pervasive risk to public health. Such exposures did not exist before the "age of industry and information". Prolonged exposure appears to disrupt biological processes that are fundamental to plant, animal and human growth and health. Life on earth did not evolve with biological protections or adaptive biological responses to these EMF exposures. Exceptionally small levels of EMF from earth and space existed during the time that all life evolved on earth on the order of less than a billionth to one ten-billionth of a Watt per meter squared. A rapidly accumulating body of scientific evidence of harm to health and well-being constitute warnings that adverse health effects can occur with prolonged exposures to very low-intensity EMF at biologically active frequencies or frequency combinations.

The Seletun Scientific Panel has adopted a Consensus Agreement that recommends preventative and precautionary actions that are warranted now, given the existing evidence for potential global health risks. We recognize the duty of governments and their health agencies to educate and warn the public, to implement measures balanced in favor of the Precautionary Principle, to monitor compliance with directives promoting alternatives to wireless, and to fund research and policy development geared toward prevention of exposures and development of new public safety measures.

Points of Agreement

· Global populations are not sufficiently protected from electromagnetic fields (EMF) from emerging communication and data transmission technologies that are being deployed worldwide, affecting billions of people;

· Sensitive populations (for example, the elderly, the ill, the genetically and/or immunologically challenged) and children and fetuses may be additionally vulnerable to health risks; their exposures are largely involuntary and they are less protected by existing public safety standards;

· It is well established that children are more vulnerable to health risks from environmental toxins in general;

· It is established that the combined effects of chemical toxins and EMF together is greater than either exposure alone;

· The Seletun Scientific Panel takes note of international scientific reviews, resolutions and recommendations documenting scientific and public health evidence on EMF exposures;

· The Seletun Scientific Panel notes that complete *"consistency"* of study findings is not to

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be expected, and it should not be interpreted as a necessary pre-condition for a consensus linking EMF exposure to health impacts. *"Consistency in nature does not* require that all or even a majority of studies find the same effect. If all studies of lead showed the same relationship between variables, one would be startled, perhaps *justifiably suspicious"* (Needleman HL. Making models of real world events: the use and abuse of inference. Neurotoxicol Teratol 1995;17: 241-2; discussion 249-51);

· The Seletun Scientific Panel acknowledges that some, but not all, of these exposures support preventative and precautionary action, and the need for more stringent public health limits (Fragopoulou et al, 2010). In addition to this, one may add the need for legislation limiting the number and types of frequencies a person can be exposed to simultaneously. In addition, the implementation of genuine Healthy and Smart Building codes is a must. Along this I strongly urge you to shield and bury cables rather than using pylon systems as carriers of information as well as power;

· The Seletun Scientific Panel takes note of international scientific resolutions and expressions of concern including the Salzburg, Catania, Freiberger Appeals, and the Helsinki, Irish Doctors (IDEA), Benevento, Venice, London, and Porto Alegre Resolutions (2000-2009);

· The Panel is guided by previously recommended target limits for EMF exposure in the BioInitiative Report (2007) and the London Resolution (2009);

· The Panel urges governments to adopt an explicit statement that "the standard for judging and acting on the scientific evidence shall be based on prudent public health planning principles rather than scientific certainty of effect (causal evidence)". Actions are warranted based on limited or weak scientific evidence – or a sufficiency of evidence – rather than a conclusive scientific evidence (causation or scientific certainty), where the consequence of doing nothing in the short term may cause irreparable public health harm, where the populations potentially at risk are very large, where there are alternatives without similar risks, or where the exposures are largely involuntary;

· The Seletun Scientific Panel urges governments to make explicit that the burden of proof of safety rests with the producers and providers of EMF-producing technologies, not with the users and consumers. (N.B. This means that the current use of whole - or parts of – populations as 'test rabbits' in a live environment must end. [I am aware of the fact that the Irish government "rents" frequencies for anybody to come and test their technology through a programme called "Test and Trial".]);

· The Seletun Scientific Panel recommends an international registry be established to track time-trends in incidence and mortality for cancers and neurological and immune diseases. Tracking effects of EMF on children and sensitive EHS populations is a high priority. There should be open access to this information;

· The Panel recommends existing brain tumour registries provide timely age-specific

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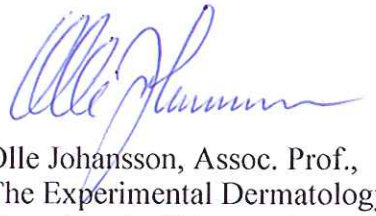
incidence rates. An early indication of brain tumors from mobile (cell) phone use could be in the younger age-specific incidence rates. Where such brain tumors registries to not exist, they should be established;

· In accordance with this, the introduction of a radiation-monitoring department is highly desirable. There should be open access to this information.

It must be in everyone's interest, including the industry and the financial sector, to develop tomorrow's human-friendly and "green" technology – *and to do it now!* This is the clear responsibility of the democratically elected body of every country as well as of the EU.

With my very best regards,
Yours sincerely,



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