

The Seletun Scientific Statement February 3rd 2011

International Scientists Recommend Global Governments Adopt New Exposure Guidelines for Electromagnetic Radiation, Pointing to Biological Hazards and Risks to the Genetic Code from Unchecked Proliferation of Wireless Technologies

Health Effects Occur at Exposure Levels Many Orders of Magnitude Below Existing Public Safety Standards Around the World, Scientists Say

In November 2009, a Scientific Panel comprised of international experts on the biological effects of electromagnetic fields met in Seletun, Norway, for three days of intensive discussion on existing scientific evidence and public health implications of the unprecedented global exposures to artificial electromagnetic fields (EMF) from telecommunications and electric power technologies. This meeting was a direct consequence of on-going discussions already from the mid-90ties, when cellular infrastructure began to rapidly proliferate, and stretching through, among many, the Benevento, Venice and London Resolutions from this decade, and involving important conclusions drawn from the 600-page Bioinitiative Report published August 31, 2007, which was a review of over 2,000 studies showing biological effects from electromagnetic radiation at non-thermal levels of exposure, which partly was published subsequently in the journal Pathophysiology.

From all of the above, it has become obvious that new, biologically-based public exposure standards, taking into account long-term as well as non-thermal exposures, are urgently needed to protect public health world-wide.

Therefore international scientists gathered in Norway with the objective of developing guidance for global governments on this important emerging public health issue. The Seletun Scientific Panel today announces a Consensus Agreement including 10 Key Recommendations to Protect Public Health. The text below is based on the recent paper published in *Reviews on Environmental Health* 25 (4), 2010. The original paper can be requested via Olle Johansson, Karolinska Institute, olle.johansson@ki.se.

Background

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 Seletun 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. These conclusions are built upon prior scientific and public health reports documenting the following:

1) Low-intensity (non-thermal) bioeffects and adverse health effects are demonstrated at levels significantly below existing exposure standards for telecommunications and power utility technologies in developed and developing countries.

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

3) New, biologically-based public exposure standards are urgently needed to protect public health world-wide.

4) It is not in the public interest to wait. Instead, governments should take decisive action now to protect biological function as well as the health of future generations.

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 world-wide to new sources of EMF pose a pervasive risk to public health, and may pose a serious risk to future generations. Such exposures did not exist before the “age of industry and information”. A rapidly accumulating body of scientific evidence of harm to health and well-being constitute warnings that adverse health effects can occur with short-term and 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 1) to educate and warn the public, 2) to implement measures balanced in favor of the Precautionary Principle, 3) to monitor compliance with directives promoting alternatives to wireless, and 4) to fund research and policy development geared toward prevention of exposures and development of new public safety measures as well as new, safer communications technologies.

10 Key Points:

1. The Global Population Is At Risk. 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;

2. Sensitive Populations Are Currently Vulnerable. 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; and they may amount to 40-50% of the population;

3. Government Actions Are Warranted Now Based on Evidence of Serious Disruption to Biological Systems. The Seletun Scientific 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 and economic harm, where the populations potentially at risk are very large, where there are alternatives without similar risks, or where the exposures are largely involuntary;

4. The Burden of Proof for the Safety of Radiation-Emitting Technologies Should Fall on Producers and Providers Not Consumers. 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.

5. EMF Exposures Should Be Reduced in Advance of Complete Understanding of Mechanisms of Action. EMF exposures should be reduced now rather than waiting for proof or understanding of mechanisms of harm before acting. This recommendation is in keeping with traditional public health principles, and is justified now given abundant evidence that biological effects and adverse health effects are occurring at exposure levels many orders of magnitude below existing public safety standards around the world;

6. The Current Accepted Measure of Radiation Risk—the Specific Absorption Rate (‘SAR’)—Is Inadequate, and Misguides on Safety and Risk. SAR is not an adequate approach to predict many important biologic effects in studies that report increased risks for cancer, neurological diseases, impairments to immune function, fertility and reproduction, and neurological function (cognition, behaviour, performance, mood status, disruption of sleep, increased risk for auto collisions, etc);

7. An International Disease Registry Is Needed To Track Time Trends of Illnesses to Correlate Illnesses with Exposures. 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;

8. Pre-Market Health Testing and Safety Demonstration of All Radiation-Emitting Technologies. There is a need for mandatory pre-market assessments of emissions and risks before deployment of new wireless technologies. There should be convincing evidence that products do not cause health harm before marketing;

9. Parity Needed for Occupational Exposure Standards. The Panel discourages use of more lenient public safety standards for workers, as compared to the general public. Separate safety limits are not ethically acceptable. Workers include women of childbearing age and men who wish to retain their fertility;

10. Functional Impairment Designation for Persons with Electrohypersensitivity. The Panel strongly recommends that persons with electrohypersensitivity symptoms (EHS) be classified as functionally impaired rather than with ‘idiopathic environmental disease’ or similar indistinct categories. This terminology accepts responsibility for the environmental cause of the related health challenges and will encourage governments to make adjustments in the living environment to better address social and well-being needs of this subpopulation of highly sensitive members of society.

New Recommended Exposure Standards

The Seletun Scientific Panel recommends global governments adopt the following exposure guidelines to protect public health and the health of future generations

Extremely Low Frequency Fields:

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- Exposure Limit Recommended. Based on the available evidence, the Seletun Scientific Panel recommends a 0.1 uT (1 mG) exposure limit for extremely low frequency (fields from electrical power) for all new installations, such as powerlines, indoor electric appliances, house-hold items, TVs, radios, computers, and telecommunication devices, based on findings of risk for leukemia, brain tumours, Alzheimer's, ALS, sperm damage and DNA strand breaks. This exposure limit does not include a safety margin, but starts right at the level where hazardous effects are found. The new recommendation is approx. 1,000 – 10,000 times lower than the current ICNIRP/IEEE standards;
- Set-Back Distance. For all newly installed, or newly upgraded electrical power distribution, the Panel recommends a 0.1 uT (1 mG) set-back distance, from residences, hospitals, schools, parks, and playgrounds schools (and similar locations occupied by children) ; this set-back distance easily can amount to 50 meters or more;
- Maximum 24-Hour Exposure Limit. For all newly constructed residences, offices, schools (and other facilities with children), and hospitals there shall be a 0.1 uT (1 mG) max. 24 hour average exposure limit;

Radiofrequency and Microwave Radiation:

Regarding radiofrequency/microwave radiation, the present guidelines, such as IEEE, FCC, and ICNIRP, are not adequate to protect humans from harmful effects of chronic EMF exposure. It is now instead recommended that:

- For whole-body (in vivo experiments) or cell culture-based exposure, 33 $\mu\text{W}/\text{kg}$. It is approx. 2,400 times lower than the current ICNIRP/FCC standards. No further safety margin or provision for sensitive populations, such as immune-compromised patients or persons with the functional impairment electrohypersensitivity, is incorporated. This may need to be lowered in the future.
- Based on power density measurements, the Seletun Scientific Panel finds sufficient evidence for a whole-body scientific benchmark for adverse health effect exists down to 0.17 mW/m^2 (also 0.000017 $\text{mW}/\text{cm}^2 = 0.017 \mu\text{W}/\text{cm}^2$). It is approx. 50,000 – 60,000 times lower than the current ICNIRP/FCC standards. This may need to be lowered in the future.
- The Scientific Panel acknowledges that numeric limits derived here for new biologically-based public exposure standards are still a billion times higher than natural EMF levels at which all life

evolved. It is a serious mistake to believe that we have always lived in man-made electromagnetic fields, such as from electrical power, radio, TV, computers, and wireless telecommunication, and therefore should not worry. It was not long ago when people thought that X-rays, radioactivity, strong ultraviolet light and radar were completely without harm. Nowadays we know much better!

“Science is about protecting free and open inquiry. It’s about ensuring that facts and evidence are never twisted or obscured by politics or ideology. It’s about listening to what scientists have to say, even when it’s inconvenient – especially when it is inconvenient!”

- Barack Obama

President of the United States

The Seletun Scientific Panel is comprised of 7 scientists from 5 countries, including Olle Johansson, PhD, Karolinska Institute, Chair, Adamantia Fragopoulou, Yuri Grigoriev, Lukas Margaritas, Lloyd Morgan, Elihu Richter, and Cindy Sage.