Dr. Havas' Response to …

INFORMATION-GATHERING QUESTIONS
ENVIRONMENTAL HEALTH MATTERS INITIATIVE
OF THE U.S. NATIONAL ACADEMIES, March 2018.

ANSWER: ELECTROMAGNETIC EXPOSURE!

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Below are my answers to the questions posed by the National Academies' *Environmental Health Matters Initiative*.

1. **What are the most important current and emerging topics for the National Academies' to address, related to environmental health?** Please consider suggesting complex issues that need multiple sectors (e.g., private sector, government academia, industry, NGOs, foundations, etc.) and multiple disciplines.

   One of the most pressing issues that has already emerged and one that is going to be a lot more problematic with the 5G (5th generation wireless technology) rollout is our environmental exposure to *radio frequency and microwave radiation* generated by wireless technology. This form of electromagnetic radiation (EMR) as well as *extremely low frequency electromagnetic fields* (ELF EMF) and *intermediate frequencies* (IF related to poor power quality) all have adverse biological effects. They have been shown to:

   (1) promote the growth of cancer (Havas 2017) and are classified by the International Agency for Research on Cancer (IARC) as class 2B carcinogens*, possibly carcinogenic*;

(2) adversely affect sperm and reproduction (Friesen 2015); and

(3) generate a variety of symptoms that are collectively referred to as electrohypersensitivity (EHS) (Bevington 2010).

The increase in chronic illness and the need for sleeping pills, pain killers, anti-depressant, and anti-anxiety medication is, in part, associated with increasing exposure to electromagnetic pollution. This information was first tabulated in 1972 (Glaser *et al.* 1972) by the U.S. Naval Medical Research Institute where they referenced more than 2000 studies and identified the key effects of exposure to microwave radiation. For more information about early studies refer to Zory's Archives at www.magdahavas.com.

Exposure to electrosmog and the biological effects is a complex issue that needs to be addressed by multiple sectors including but not limited to:

(1) the **private sector** to support industries that design safer (no or low EMF/EMR) technologies;

(2) **government agencies** that establish guidelines and that provide research funding. Especially important here are the **health agencies** that need to provide information on safer use of this technology. We need guidelines that are based on non-thermal bioeffects and that truly protect public health, especially the most vulnerable among us (pregnant women, infants, fetus, elderly, electrosensitives, etc.). The current FCC guideline is based only on a short-term heating effect and is outdated.

(3) **academia** that need to do more research on the biological and health effects of this technology and that need to examine not only the physiological damage (which is considerable) but also the issues of addiction and the effects on plants, bees and wildlife including livestock.

(4) **industries that design and manufacture wireless devices and antennas** and that are promoting the rollout of 5G and technology that relies on wireless telecommunication. This technology has not been tested for safety of long-term, chronic exposure, and municipalities are unable to restrict its deployment within their communities.

(5) **industries** need to be supported that provide **shielding technology** and that build safer homes rather than "smart" homes with "smart meters" and "smart appliances" all of which contribute to microwaving the inhabitants.

(6) **NGOs** that are actively trying to raise public awareness and are advocating for improved guidelines and standards. These groups include parents/teachers advocating for radiation-free schools; opt-out programs for smart meters with no financial penalty; safer distances from cell phone, radar and broadcast antennas near residential areas; elimination of ground current due to aging electric utility infrastructure and inappropriate measures to correct the problem; and ability to import low or no EMR emitting devices from Europe (like cordless phones and baby monitors that, in contrast to the devices available in North America, are not constantly emitting microwave radiation).

(7) **Foundations** for funding research in this area, which is virtually non-existent in the U.S. and Canada. Funding is also needed to educate the public and medical authorities.

(8) **Educational Institutions** that are installing Wi-Fi in schools across the country, including elementary schools where computer use is minimal. This is occurring when earlier-adopter

countries, like France, are now replacing Wi-Fi with fiber optics in schools as a more secure, faster, and healthier alternative.

(9) **Media** to provide information from non-biased sources about the latest developments within the scientific field and not being curtailed in documenting how harmful this radiation is;

(10) **Medical Professionals** who are working with people who have developed intolerance to this form of radiation (known as electrohypersensitivity (EHS) or idiopathic intolerance attributed to electromagnetic frequencies). These doctors and nurses need to be able to diagnose and treat people with this intolerance. In order to do this they require more information and some of this needs to be provided in medical schools.

(11) **Electric utilities** that are responsible for the transmission and distribution of electric power as some of the issues are relate to low frequency electromagnetic fields and intermediate frequencies associated with poor power quality and ground current problems;

(12) **Farming Associations** where ground current (also known as stray voltage) is interfering with the health and productivity of livestock and the health of farmers.

(13) **Manufacturers of electronic devices** to ensure these devices do not generate poor power quality (high voltage frequency transients, HVFT) along wiring by installing internal frequency filters. These HFVT are known to adversely affect electronic equipment and human health.

(14) **Producers of Renewable Energy**, especially wind and solar power, need to produce this energy without generating ground current or corrupting power lines with poor power quality (HVFT, as in 13 above). Both ground current and poor power quality have adverse biological effects.

2. **What role would you like to see the National Academies serve in the public landscape of environmental health?**

Some group needs to take responsibility for this nation-wide problem and provide much needed leadership with no interference by politicians or industries financially benefitting from this technology. This needs to be an interdisciplinary group and all of the National Academies (**Medicine**, **Engineering**, **Sciences**) have a role to play regarding this issue as it relates to the various divisions that include **Behavioral and Social Sciences and Education** (need for radiation-free schools, changes in social behavior & problems with addiction); **Earth and Life Studies** (effects on migrating species, bee populations, plants); **Engineering and Physical Sciences** (designing safer technology and using best practices); **Medicine Division** (radiation-free hospitals and health clinics, education of medical professionals about electrical sensitivity and other biological effects); **Global Affairs** (this is a global problem and needs some global solutions); **Transportation** (cars today have built-in electronic and wireless technology and driver-less cars of the future will use radar and are going to expose drivers and passengers to higher levels of electromagnetic pollution. Those who are sensitive will experience adverse effects while driving, making driving much more hazards for everyone on the road).

3. **What do you or your organization need from National Academies leadership in environmental health** (e.g., scientific analysis, engagement with multiple sectors, communication)?

   While I believe that we have sufficient scientific information related to the adverse biological effects of electromagnetic pollution to act (i.e. develop safer guidelines, establish white zones and recommend safer use of the technology, etc.), there are a few areas that need more research and most of these areas relate to biological mechanisms and exposure metrics. Research in this area is not being funded in North America and most of publications come from Europe and Asia. Consequently, funding research at universities, training graduate students, and supporting postdoctoral fellows is desparately needed. Research on exposures under realistic conditions and how these exposures are changing with time and with the broadening of the electromagnetic spectrum for 5G technologies is needed. In other word, we need to answer the questions … what is our electrosmog exposure in urban/rural areas, schools, hosptials, public transit, etc., how is it changing, and how can our exposure be minimized?

4. **How do you suggest that we engage with your organization and others to reach new audiences, to increase the impact of National Academies work?**

   Establishing an Advisory Group with members from the various divisions within the National Academies and from academia and other sectors is needed to move this issue ahead. However, it is critically important that this advisory group have some clout so the advice doesn't evaporate into the cosmos. I would be willing to provide names of people who could play a very important role on this Advisory Group, should one be established.

   I will provide just one name here and that is Dr. Joel Moskowitz at University of California, Berkeley. He is Director of Center for Family and Community Health, School of Public Health and has a very informative and up-to-date website: www.saferemr.com

5. **What are some other organizations or activities that are interested in engagement on environmental health that you think we should know about?**

   There are many NGOs around the country dealing with various issues from smart meters, to Wi-Fi in schools, to cell phone antennas, to 5G rollout that need to be consulted and ideally funded and then listen to. They represent people who feel disempowered by the political/industrial/military complex and feel they no longer have a voice in the health of their own environment. At the very least, a home should be a sanctuary and the home-owner/occupant should be able to determine what they are or are not exposed to. We don't tolerate excess noise and chemical pollutants in residential settings so why do we accept electromagnetic pollutants in our homes?

   One NGO that is worth investigating is Environmental Health Trust (www.ehtrust.org).

6. **Is there any other input you would like to provide?**

I am part of the group that initiated the International EMF Scientist Appeal. This international group petitioned the WHO and the UN in 2015 with signatures from more than 200 scientists, engineers and medical doctors from 40 countries. Only those actively involved in electrosmog research were eligible to sign this appeal. The appeal and additional information about this group is available at www.emfscientist.org and I am providing the request from this group to support some of the answers to the questions above.

Collectively we request that:

1. children and pregnant women be protected;
2. guidelines and regulatory standards be strengthened;
3. manufacturers be encouraged to develop safer technology;
4. utilities responsible for the generation, transmission, distribution, and monitoring of electricity maintain adequate power quality and ensure proper electrical wiring to minimize harmful ground current;
5. the public be fully informed about the potential health risks from electromagnetic energy and taught harm reduction strategies;
6. medical professionals be educated about the biological effects of electromagnetic energy and be provided training on treatment of patients with electromagnetic sensitivity;
7. governments fund training and research on electromagnetic fields and health that is independent of industry and mandate industry cooperation with researchers;
8. media disclose experts' financial relationships with industry when citing their opinions regarding health and safety aspects of EMF-emitting technologies; and
9. white-zones (radiation-free areas) be established.

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Sector (e.g., agency, industry, professional society): Academia

Discipline you represent (e.g., public health, medicine, toxicology epidemiology, engineering, social science): Environmental Toxicology

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