From:	Means For Change
To:	DOH EPH RP Info
Subject:	Public comment-wi-fi in schools
Date:	Monday, February 03, 2014 6:46:33 PM
Attachments:	Wi-Fi Safety Draft Report Comments.pdf image001.png

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COMMENTS ON "Responding to Wi-Fi Safety Concerns in Our Schools, January 2014 Working Draft"

February 3, 2014

Karen Nold, Means For Change, Personal Informati..., Snoqualmie, WA 98065, Personal Information - Privacy - RCW 42.56...

Washington State Department of Health & Office of Superintendent of Public Instruction
EMAIL: RadiationInfo@doh.wa.gov

Thank you for your combined efforts and acknowledging you are "prepared to act quickly" if the health and safety of children are found to be compromised. The draft report has several 'loopholes' which discredit the state's assertion that wireless is safe. The state claims documents were reviewed from 9 national and 6 international health agencies, however close scrutiny reveals qualified documents from only 6 national and 2 international health agencies, due to the disqualification of 7 documents by reason of no supporting data, industry conflict, or simply a lack of meeting the state's own definition of a health agency – "an organization sponsored by a national government or an intergovernmental body such as the WHO or the European Union, and tasked, at least in part, with protecting the health of the public."

The state says document 1 measured the exposure to RF in school, and concluded that levels were far below the ICNIRP threshold. The state refers us to the Health Council of the Netherlands report; however it was Health England [document 4] that performed the study. Furthermore, the state concludes "if there is no evidence of risk associated with cell phone use, then there is also no evidence of risk from other RF devices." Conversely, if there is evidence of risk associated with cell phone use, then there is also evidence of risk from other RF devices. An analysis of each report from Appendix A exhibits this evidence of risk and raises concern about the validity, and intentions, of the state's draft report.

Document 1 – 2013 Netherlands. The state cites 'no clear and consistent evidence' for an increased risk of tumors in the head with up to ~ 13 years of mobile telephone use; however omits "a slightly increased risk can also not be excluded".

Document 2 – 2013 Sweden. The state cites 'no good evidence', however omits there is evidence: (p46) RF EMF seems to be able to induce oxidative stress in brain (p47) and other tissues; which (p9) may be induced at levels around the current exposure limits and may enhance risk of health effects; (p9) Repeatedly, human randomized double blind studies show association between acute mobile phone exposure and EEG; (p10) adverse effects have been observed in child development, reproductive health, MS, cognitive decline in elderly, auditory functions, bone mineralization and hypertension studies; (p10) study of young adults reported sleep disturbances and depression; (p44) repeated mobile phone exposures may change protein expression, calcium homeostasis, cerebral blood flow; (p50) the author previously concluded that RF EMF by itself has no carcinogenic effect, but some new studies indicate increased DNA damage; (p59) exposures of at least 30 min have shown local decrement of glucose metabolism or hemoglobin concentration.
Document 4 – 2012 England. The state cites 'no convincing evidence', however omits there is evidence: (p87) exposure could enhance the effect of other genotoxins, such as X-rays or chemical carcinogens; (p87) RF might act synergistically in combination with known mutagens or promoting agents; (p93) ~equal results – some show apoptosis, some don't; (p103) the majority of studies find effects on cell membranes after mobile phone exposures; (p105) most studies of changes in protein function/structure have found effects; (p219) increased glucose metabolism suggest effect of mobile phones on brain metabolism; (p226) EEG studies - most consistent body of

evidence for effect on brain function.
Document 5 – 2012 EU. The state cites 'inadequate evidence', however omits: (p17) some studies report effects on sleep and sleep EEG patterns; and (p48) long-term mobile phone use may induce migraine and vertigo.

Document 6 – 2012 Norway. **Must be disqualified** from the final report since it is a *summary* of the 2012 Norwegian Institute of Public Health report, and is devoid of any citations, references, or bibliography and can't be verified.

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Document 7 – 2011 Netherlands. The state cites 'no increased risk', however omits there is a risk: (p11) studies are limited for brain development/health in children, and focus on children over 10, so such effects cannot be ruled out; (p24) one study on supporting cells from brain tissue found an effect on an enzyme important to cell growth and differentiation at exposure slightly below the SAR limit; (p25) changes found in several cell types in animal brain tissue; (p26) study of 13-15 year olds testing memory tasks found signs for decreased precision; (p27) observed in young rats - effects on growth hormone levels, increased DNA damage, increases and decreases in various brain enzyme activities; (p27) decrease in skin electrical conductivity (male teens) after mobile phone exposure; (p28) after 24 hour exposure, in the most exposed group, youths aged 8-12 and 13-17 reported increase in behavioral problems; (p33) may affect brain development – may lead to negative effects; (p34) it is practically impossible to conduct long-term studies in children since they undergo many major physical changes in a short time. Casting further doubt about the findings in the draft report, on page 35, the author says ICNIRP standards around 2 GHz are not correct (Wi-Fi is 2.4 GHz):

> …around 2 GHz, the reference levels proposed by ICNIRP are not correct. For young children and small individuals the reference levels were found to correspond to an SAR value higher than the maximum allowable value. It was assumed that the reference levels were determined for the worst-case situations, but appears not to be the case. Therefore, the reference levels must be corrected downwards.

Document 8 – 2011 Spain. **Must be disqualified** from the final report since the author is funded by the Fundación General of the Complutense University of Madrid and does not meet the state's review criteria.

Document 9 – 2010 EU. **Must be disqualified** from the final report since it "is not to be perceived as the opinion of the European Commission." The state cites 'no observable effects', however omits (p7) health effects have been observed.

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Document 10 – 2010 EU. **Must be disqualified** from the final report since it has documented bias. One author, Professor Anders Ahlbom, was found to be the cofounder of Gunnar Ahlbom AB, a Brussels-based lobby firm aiming to assist the telecom industry on EU regulations, public affairs and corporate communications.[1]

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Document 11 – 2009 ICNIRP. **Must be disqualified** from the final report since ICNIRP sets safety limit standards used by the International Telecommunication Union and other wireless industry organizations, and therefore has potential for influence by the wireless industry. The state must seek impartial, non-industry influenced data.

Document 12 – 2007 Ireland. **Must be disqualified** from the final report since the author "has responsibility for the Telecommunications, Broadcasting and Energy sectors", not protecting the health of the public.

Document 13 – 2005 France. The state chose this report citing 'no definitive conclusions', although they were asked to acknowledge, from the same agency, the 2013 "**Update of the 'Radiofrequencies and health' expert appraisal**"[2] recommending limiting exposure to RF, especially for the most vulnerable populations. In an OSPI Freedom of Information Act request, the state admitted receipt, and that it "probably meets our criteria", however it was omitted. It is the state's duty to consider this qualified health agency's recommendation and it must be included in the final report.

Document 14 – 2003 USA. **Must be disqualified** from the final report since the author's Collaborating Organizations, having the opportunity to comment on draft reports, include the FCC and the IEEE – both influenced by the wireless industry; and Corporate Sponsors, providing valuable fiscal support, include 3M, a manufacturer of wireless products.

Document 15 – 2002 Australia. The state cites 'no adverse health effects', however omits a pertinent recommendation from the Forward - the Standard, nevertheless, states the principle of minimizing RF exposure which is unnecessary.

Document 16 – 2000 New Zealand. The state cites 'no adverse effects', however omits (p2) our understanding of how RF interacts with the body is incomplete; low- or no-cost measures should be applied to avoid or reduce exposures.

The state purports they 'reviewed every comprehensive scientific review' however omitted qualified, pertinent data they were presented, including:

1. 2013 ***Radiofrequency Toolkit for Environmental Health Practitioners***,[3] finding "decreased sperm motility associated with increased use of mobile phones", and recommends caution – "keeping mobile phones away from [male] genital area and limiting mobile phone use."

2. 2009 ***Reducing Environmental Cancer Risk, What We Can Do Now***[4] finding (pA-47) EMR/EMF may also have deleterious effects on human health with prolonged exposure; (vii) eliminating/minimizing exposures must be acted upon to protect especially children, at special risk due to smaller body mass and rapid physical development, both magnifying their vulnerability to known or suspected carcinogens, including radiation; (xi) a precautionary approach should replace current reactionary ones; (p59) reduce exposure to RF with fewer, shorter calls, texting, using cell phones only when landline unavailable, keep phone away from head, keep active phone off belt and out of pocket.

Also worth mentioning – in a document obtained from an OSPI Freedom of Information Act request, the state is seen in an earlier draft attempting to downplay the risks of wireless. It correctly cites the Health England document and ICNIRP, (incorrectly referenced in draft - see par. 2 above), then makes a note underlined below, to downplay the dangers:

> "One report (Health England) actually measured the exposure to RF in school settings, and concluded that as long as manufacturer's recommendations were being followed, the safety thresholds used in the ICNIRP were not exceeded. [*re-word so does not imply danger if recommendations are not followed*]". Emphasis added.

The earlier draft, implied biological effects of wireless radiation, but this sentence was omitted from the final draft:

> "ICNIRP standards focus on thermal effects as only likely danger…"

In fact thermal effects are not the only likely danger. The state concludes there is little uncertainty regarding non-thermal health effects; and Wi-Fi is unlikely to pose a health risk. This is not equivalent to the standards of safety we expect for our children in your care. We expect zero tolerance in our schools for guns, drugs, alcohol, bullying, and possible carcinogens like lead and DDT… and wireless radiation.

Numerous experts disagree with the state's conclusions, such as the American Academy of Environmental Medicine[5], American Academy of Pediatrics[6], International Doctors' Appeal[7], etc. As long ago as **1988**, the U.S Air Force produced "**Radiofrequency/Microwave Radiation Biological Effects and Safety Standards: A Review**"

[8] and concluded: "RF/MW radiation is known to have a biological effect on living organisms" and research ***over the past 30 years*** has shown that low intensity radiation can profoundly affect biological processes.

The state should not require conclusive, causal evidence of a potential health risk to children, just the evidence of risk documented above and elsewhere. The question is – when is the evidence sufficient to take action? Studies of the harmful effects of wireless radiation were silenced by the DOH/OSPI narrow review criteria, **and** qualified data with evidence of harm was excluded from the draft report. The school stands "in loco parentis" for our children and as such has a responsibility to provide a safe learning environment. There is no conclusive evidence that wireless is safe and the state has an obligation to immediately remove Wi-Fi and cordless phones until proven safe.

Respectfully,

Karen Nold, Means For Change

[1] http://www.monanilsson.se/document/AhlbomConflictsIARCMay23.pdf

2 http://www.anses.fr/sites/default/files/documents/PRES2013CPA18EN_0.pdf

3 http://www.bccdc.ca/NR/rdonlyres/9AE4404B-67FF-411E-81B1-4DB75846BF2F/0/RadiofrequencyToolkit_v4_06132013.pdf

4 http://deainfo.nci.nih.gov/advisory/pcp/annualReports/pcp08-09rpt/PCP_Report_08-09_508.pdf

5 http://aaemonline.org/images/WiFiUSA.pdf

6 http://apps.fcc.gov/ecfs/document/view?id=7520941318

7 http://freiburger-appell-2012.info/media/International_Doctors_Appeal_2012_Nov.pdf

8 http://www.stopthecrime.net/docs/RF-Microwave-Radiation-Biological-Effects%20Rome%20Labs.pdf

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[3] http://www.bccdc.ca/NR/rdonlyres/9AE4404B-67FF-411E-81B1-4DB75846BF2F/0/RadiofrequencyToolkit_v4_06132013.pdf

[4] http://deainfo.nci.nih.gov/advisory/pcp/annualReports/pcp08-09rpt/PCP_Report_08-09_508.pdf

[5] http://aaemonline.org/images/WiFiUSA.pdf

[6] http://apps.fcc.gov/ecfs/document/view?id=7520941318

[7] http://freiburger-appell-2012.info/media/International_Doctors_Appeal_2012_Nov.pdf

[8] http://www.stopthecrime.net/docs/RF-Microwave-Radiation-Biological-Effects%20Rome%20Labs.pdf

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This email is free from viruses and malware because avast! Antivirus protection is active.

From:	Means For Change
To:	DOH EPH RP Info
Subject:	Public comment-wi-fi in schools
Date:	Monday, February 10, 2014 8:05:30 PM
Attachments:	Wi-Fi Safety Draft Report Comments Addendum.pdf image002.png

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COMMENTS ON "Responding to Wi-Fi Safety Concerns in Our Schools, January 2014 Working Draft"
ADDENDUM to February 3 Submission

Karen Nold, Means For Change, Personal Informat... Snoqualmie, WA 98065, Personal Information - Privacy - RCW 42....

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Washington State Department of Health (DOH) & Office of Superintendent of Public Instruction (OSPI)
Public Comments EMAIL: RadiationInfo@doh.wa.gov

February 10, 2014

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Read the report here and the facts pointing to a suppression of international scientific findings below.

The draft report has several 'loopholes' **discrediting the state's assertion that wireless is safe**. Proclaiming to "maintain the highest standards of accountability and ethics" with a mission "to work to protect and improve the health of people in Washington State", it is appalling the **DOH has been caught hiding the risks** of wireless radiation, via Washington State Public Records Act documents. The state **blatantly ignored studies** indicating harmful effects of wireless radiation. The **report was diluted** with 13 documents which must be disqualified from the final report. The credibility of this report is in question; therefore an impartial, accurate, ethical, and accountable safety review must be addressed immediately.

The Washington State Department of Health has been caught hiding the documented risks of wireless radiation:

1. Document 7 (p35): for children/small individuals -ICNIRP standards around 2 GHz are not correct. (Wi-Fi: 2.4 GHz)

2. Document 13 – 2005 France was cited as 'no definitive conclusions'. The state was asked to acknowledge, from the same agency, the 2013 "**Update of the 'Radiofrequencies and health' expert appraisal**" [1] recommending limiting exposure to RF. In a November 07, 2013 email, DOH admitted receipt of this "Update", and that it "probably meets our criteria"; however it was omitted, further illustrating the authors of the DOH/OSPI report were biased and their conclusions that Wi-Fi is safe for children are false and not supported.

3. In a December 23, 2013 DOH/OSPI email containing an earlier version of the draft report [2], we find:

   a. The state correctly cites Health England, below, however in the same sentence in the final draft it is incorrectly cited as Health Council of Netherlands. A note in brackets attempts to downplay the dangers:

      > "One report (Health England) actually measured the exposure to RF in school settings, and concluded that as long as manufacturer's recommendations were being followed, the safety thresholds used in the ICNIRP were not exceeded. [re-word so does not imply danger if recommendations are not followed]".

   b. The earlier draft implied biological effects of wireless radiation, but it was omitted from the final draft:

      > "ICNIRP standards focus on thermal effects as only likely danger…"

c. In the earlier draft, we see the state prepared to reference the Precautionary Principle under 'Documents Review Process':

> "the working group summarized… c) the documents' position on how the precautionary principle applies, if given."

However, the Final Draft only mentions the Precautionary Principle in the Glossary and the following France 2005 Conclusion (document 13) was omitted:

> "Regarding cell phones: they recommend a precautionary approach to reduce cell phone RF exposure by using hands-free kits, buying phones with low SAR levels, etc."

The state **blatantly ignored** studies presented to them, indicating potential risk and exposure reduction, including the:

1. 2013 British Columbia Centre for Disease Control and National Collaborating Centre for Environmental Health, ***Radiofrequency Toolkit for Environmental Health Practitioners***, [3] finding decreased sperm motility with increased use of cell phones and recommends limiting cell phone use and keeping away from male genital area.

2. 2009 U.S. Department of Health and Human Services, National Institutes of Health, and National Cancer Institute, ***Reducing Environmental Cancer Risk, What We Can Do Now*** [4] finding prolonged RF exposure may have deleterious effects on health and to eliminate/minimize exposures to protect children.

In addition, the state **diluted their report**, observed in my February 3 submission [5] finding 7 of the 16 documents must be disqualified for review due to no supporting data, industry conflict, or simply a lack of meeting the state's own definition of a health agency - provided in an October 4, 2013 email.

Upon further review, one or more contributors from 9 of the 16 documents were found to hold ICNIRP membership at the time the report was prepared. According to the ICNIRP Charter, it "shall maintain a close liaison and working relation with the Executive Council of IRPA"; shall submit its formal recommendations for comment by the IRPA, prior to publication; and "shall receive from IRPA an annual grant to provide support" for ICNIRP's work.

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IRPA helps fund ICNIRP and IRPA's primary objective is the development of wireless radiation technology; therefore the following documents must be excluded from the final report due to potential industry conflict.

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Doc. 1 - Eric Van Rongen	Doc. 7 - Eric Van Rongen
Doc. 2 - Eric Van Rongen, Bernard Veyret	Doc. 10 - A. Ahlbom
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Doc. 5 - Zenon Sienkiewicz	Doc. 13 - Paolo Vecchia, Bernard Veyret
Doc. 6 - Maria Feychting	

Therefore, substantiated in my previous and current comments, documents 1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, and 14 must be excluded from the final report and the following must be recognized in the final draft: the WHO's determination of RF as possibly carcinogenic; the omitted precautionary measures from documents 15 and 16; and the

findings of the above omitted 2013 French Expert Appraisal, 2013 BCCDC, and 2009 U.S. DHHS documents.

Our children are not experiments. In the midst of this political debate, the state must err on the side of caution and discontinue Wi-Fi use immediately – it can't be proven safe. It is expected the final report display impartiality, accuracy, and better judgment.

Respectfully,

Karen Nold
Means For Change

[1] http://www.anses.fr/sites/default/files/documents/PRES2013CPA18EN_0.pdf

2 http://meansforchange.org/Portals/0/FILES/2013/12/DraftReport_Appendices-12-23-13a-DS-eo-DS.docx

3 http://meansforchange.org/Health-Effects/British-Columbia-CDC-Report

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From:	Means For Change
To:	DOH EPH RP Info
Subject:	Public comment-wi-fi in schools
Date:	Sunday, March 02, 2014 8:15:25 PM
Attachments:	Comments on WiFI in Schools_KarenFinalMar1.pdf

Dear DOH/OSPI,

Please find attached my final comments regarding Wi-Fi safety in schools.

Karen Nold
Personal Information ...
Snoqualmie, WA 98065

From: Means For Change
To: DOH EPH RP Info
Subject: Public comment-wi-fi in schools
Date: Monday, March 03, 2014 12:06:29 PM
Attachments: WiFi In Schools Washington State.pdf

Dear DOH/OSPI,

The attached document are comments I have retained from:

De Rodgers Fox
Executive Director
American Academy of Environmental Medicine

As a Washington State resident submitting these comments, I am requesting a reply as to the contents of this document.

Thank you,

Karen Nold
Means For Change
Personal Information - Priv...
Snoqualmie, WA 98065
Personal Information - Privacy - RCW 42.56.230(3)

From:	Means For Change
To:	DOH EPH RP Info
Subject:	Public comment-wi-fi in schools
Date:	Monday, March 03, 2014 12:41:51 PM
Attachments:	2014.DFSS.pdf DFSS_letterWiFi.pdf

Dear DOH/OSPI,

The attached two documents are comments I have retained from:

Kerry Crofton, PhD
Co-founder & Executive Director
Doctors for Safer Schools

Although one document is regarding WiFi in Toronto Parks and Public Spaces, it, and the supporting data, should be extrapolated to apply to Washington State schools.

As a Washington State resident submitting these comments, I am requesting a reply as to the contents of these documents.

Thank you,

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Personal Information ...
Snoqualmie, WA 98065
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Means For Change

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The state says document 1 measured the exposure to RF in school, and concluded that levels were far below the ICNIRP threshold. The state refers us to the Health Council of the Netherlands report; however it was Health England [document 4] that performed the study. Furthermore, the state concludes "if there is no evidence of risk associated with cell phone use, then there is also no evidence of risk from other RF devices." Conversely, if there is evidence of risk associated with cell phone use, then there is also evidence of risk from other RF devices. An analysis of each report from Appendix A exhibits this evidence of risk and raises concern about the validity, and intentions, of the state's draft report.

Document 1 – 2013 Netherlands. The state cites 'no clear and consistent evidence' for an increased risk of tumors in the head with up to ~ 13 years of mobile telephone use; however omits "a slightly increased risk can also not be excluded".

Document 2 – 2013 Sweden. The state cites 'no good evidence', however omits there is evidence: (p46) RF EMF seems to be able to induce oxidative stress in brain (p47) and other tissues; which (p9) may be induced at levels around the current exposure limits and may enhance risk of health effects; (p9) Repeatedly, human randomized double blind studies show association between acute mobile phone exposure and EEG; (p10) adverse effects have been observed in child development, reproductive health, MS, cognitive decline in elderly, auditory functions, bone mineralization and hypertension studies; (p10) study of young adults reported sleep disturbances and depression; (p44) repeated mobile phone exposures may change protein expression, calcium homeostasis, cerebral blood flow; (p50) the author previously concluded that RF EMF by itself has no carcinogenic effect, but some new studies indicate increased DNA damage; (p59) exposures of at least 30 min have shown local decrement of glucose metabolism or hemoglobin concentration.

Document 4 – 2012 England. The state cites 'no convincing evidence', however omits there is evidence: (p87) exposure could enhance the effect of other genotoxins, such as X-rays or chemical carcinogens; (p87) RF might act synergistically in combination with known mutagens or promoting agents; (p93) ~equal results – some show apoptosis, some don't; (p103) the majority of studies find effects on cell membranes after mobile phone exposures; (p105) most studies of changes in protein function/structure have found effects; (p219) increased glucose metabolism suggest effect of mobile phones on brain metabolism; (p226) EEG studies - most consistent body of evidence for effect on brain function.

Document 5 – 2012 EU. The state cites 'inadequate evidence', however omits: (p17) some studies report effects on sleep and sleep EEG patterns; and (p48) long-term mobile phone use may induce migraine and vertigo.

Document 6 – 2012 Norway. **Must be disqualified** from the final report since it is a *summary* of the 2012 Norwegian Institute of Public Health report, and is devoid of any citations, references, or bibliography and can't be verified.

Document 7 – 2011 Netherlands. The state cites 'no increased risk', however omits there is a risk: (p11) studies are limited for brain development/health in children, and focus on children over 10, so such effects cannot be ruled out; (p24) one study on supporting cells from brain tissue found an effect on an enzyme important to cell growth and

differentiation at exposure slightly below the SAR limit; (p25) changes found in several cell types in animal brain tissue; (p26) study of 13-15 year olds testing memory tasks found signs for decreased precision; (p27) observed in young rats - effects on growth hormone levels, increased DNA damage, increases and decreases in various brain enzyme activities; (p27) decrease in skin electrical conductivity (male teens) after mobile phone exposure; (p28) after 24 hour exposure, in the most exposed group, youths aged 8-12 and 13-17 reported increase in behavioral problems; (p33) may affect brain development – may lead to negative effects; (p34) it is practically impossible to conduct long-term studies in children since they undergo many major physical changes in a short time. Casting further doubt about the findings in the draft report, on page 35, the author says ICNIRP standards around 2 GHz are not correct (Wi-Fi is 2.4 GHz):

> …around 2 GHz, the reference levels proposed by ICNIRP are not correct. For young children and small individuals the reference levels were found to correspond to an SAR value higher than the maximum allowable value. It was assumed that the reference levels were determined for the worst-case situations, but appears not to be the case. Therefore, the reference levels must be corrected downwards.

Document 8 – 2011 Spain. **Must be disqualified** from the final report since the author is funded by the Fundación General of the Complutense University of Madrid and does not meet the state's review criteria.

Document 9 – 2010 EU. **Must be disqualified** from the final report since it "is not to be perceived as the opinion of the European Commission." The state cites 'no observable effects', however omits (p7) health effects have been observed.

Document 10 – 2010 EU. **Must be disqualified** from the final report since it has documented bias. One author, Professor Anders Ahlbom, was found to be the cofounder of Gunnar Ahlbom AB, a Brussels-based lobby firm aiming to assist the telecom industry on EU regulations, public affairs and corporate communications.[1]

Document 11 – 2009 ICNIRP. **Must be disqualified** from the final report since ICNIRP sets safety limit standards used by the International Telecommunication Union and other wireless industry organizations, and therefore has potential for influence by the wireless industry. The state must seek impartial, non-industry influenced data.

Document 12 – 2007 Ireland. **Must be disqualified** from the final report since the author "has responsibility for the Telecommunications, Broadcasting and Energy sectors", not protecting the health of the public.

Document 13 – 2005 France. The state chose this report citing 'no definitive conclusions', although they were asked to acknowledge, from the same agency, the 2013 "**Update of the 'Radiofrequencies and health' expert appraisal**" [2] recommending limiting exposure to RF, especially for the most vulnerable populations. In an OSPI Freedom of Information Act request, the state admitted receipt, and that it "probably meets our criteria", however it was omitted. It is the state's duty to consider this qualified health agency's recommendation and it must be included in the final report.

Document 14 – 2003 USA. **Must be disqualified** from the final report since the author's Collaborating Organizations, having the opportunity to comment on draft reports, include the FCC and the IEEE – both influenced by the wireless industry; and Corporate Sponsors, providing valuable fiscal support, include 3M, a manufacturer of wireless products.

Document 15 – 2002 Australia. The state cites 'no adverse health effects', however omits a pertinent recommendation from the Forward - the Standard, nevertheless, states the principle of minimizing RF exposure which is unnecessary.

Document 16 – 2000 New Zealand. The state cites 'no adverse effects', however omits (p2) our understanding of how RF interacts with the body is incomplete; low- or no-cost measures should be applied to avoid or reduce exposures.

The state purports they 'reviewed every comprehensive scientific review' however omitted qualified, pertinent data they were presented, including:

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[1] http://www.monanilsson.se/document/AhlbomConflictsIARCMay23.pdf

[2] http://www.anses.fr/sites/default/files/documents/PRES2013CPA18EN_0.pdf

1. 2013 ***Radiofrequency Toolkit for Environmental Health Practitioners***,[3] finding "decreased sperm motility associated with increased use of mobile phones", and recommends caution – "keeping mobile phones away from [male] genital area and limiting mobile phone use."

2. 2009 ***Reducing Environmental Cancer Risk, What We Can Do Now***[4] finding (pA-47) EMR/EMF may also have deleterious effects on human health with prolonged exposure; (vii) eliminating/minimizing exposures must be acted upon to protect especially children, at special risk due to smaller body mass and rapid physical development, both magnifying their vulnerability to known or suspected carcinogens, including radiation; (xi) a precautionary approach should replace current reactionary ones; (p59) reduce exposure to RF with fewer, shorter calls, texting, using cell phones only when landline unavailable, keep phone away from head, keep active phone off belt and out of pocket.

Also worth mentioning – in a document obtained from an OSPI Freedom of Information Act request, the state is seen in an earlier draft attempting to downplay the risks of wireless. It correctly cites the Health England document and ICNIRP, (incorrectly referenced in draft - see par. 2 above), then makes a note underlined below, to downplay the dangers:

> "One report (Health England) actually measured the exposure to RF in school settings, and concluded that as long as manufacturer's recommendations were being followed, the safety thresholds used in the ICNIRP were not exceeded. [*re-word so does not imply danger if recommendations are not followed*]". Emphasis added.

The earlier draft, implied biological effects of wireless radiation, but this sentence was omitted from the final draft:

> "ICNIRP standards focus on thermal effects as only likely danger…"

In fact thermal effects are not the only likely danger. The state concludes there is little uncertainty regarding non-thermal health effects; and Wi-Fi is unlikely to pose a health risk. This is not equivalent to the standards of safety we expect for our children in your care. We expect zero tolerance in our schools for guns, drugs, alcohol, bullying, and possible carcinogens like lead and DDT… and wireless radiation.

Numerous experts disagree with the state's conclusions, such as the American Academy of Environmental Medicine[5], American Academy of Pediatrics[6], International Doctors' Appeal[7], etc. As long ago as **1988**, the U.S Air Force produced "**Radiofrequency/Microwave Radiation Biological Effects and Safety Standards: A Review**"[8] and concluded: "RF/MW radiation is known to have a biological effect on living organisms" and research ***over the past 30 years*** has shown that low intensity radiation can profoundly affect biological processes.

The state should not require conclusive, causal evidence of a potential health risk to children, just the evidence of risk documented above and elsewhere. The question is – when is the evidence sufficient to take action? Studies of the harmful effects of wireless radiation were silenced by the DOH/OSPI narrow review criteria, **and** qualified data with evidence of harm was excluded from the draft report. The school stands "in loco parentis" for our children and as such has a responsibility to provide a safe learning environment. There is no conclusive evidence that wireless is safe and the state has an obligation to immediately remove Wi-Fi and cordless phones until proven safe.

Respectfully,

Karen Nold, Means For Change

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[3] http://www.bccdc.ca/NR/rdonlyres/9AE4404B-67FF-411E-81B1-4DB75846BF2F/0/RadiofrequencyToolkit_v4_06132013.pdf
[4] http://deainfo.nci.nih.gov/advisory/pcp/annualReports/pcp08-09rpt/PCP_Report_08-09_508.pdf
[5] http://aaemonline.org/images/WiFiUSA.pdf
[6] http://apps.fcc.gov/ecfs/document/view?id=7520941318
[7] http://freiburger-appell-2012.info/media/International_Doctors_Appeal_2012_Nov.pdf
[8] http://www.stopthecrime.net/docs/RF-Microwave-Radiation-Biological-Effects%20Rome%20Labs.pdf

COMMENTS ON "Responding to Wi-Fi Safety Concerns in Our Schools, January 2014 Working Draft"
ADDENDUM to February 3 Submission

Karen Nold, Means For Change, Personal Information ..., Snoqualmie, WA 98065, Personal Information - Privacy - RCW 42.56.230...

Washington State Department of Health (DOH) & Office of Superintendent of Public Instruction (OSPI)
Public Comments EMAIL: RadiationInfo@doh.wa.gov

February 10, 2014

The draft report has several 'loopholes' **discrediting the state's assertion that wireless is safe**. Proclaiming to "maintain the highest standards of accountability and ethics" with a mission "to work to protect and improve the health of people in Washington State", it is appalling the **DOH has been caught hiding the risks** of wireless radiation, via Washington State Public Records Act documents. The state **blatantly ignored studies** indicating harmful effects of wireless radiation. The **report was diluted** with 13 documents which must be disqualified from the final report. The credibility of this report is in question; therefore an impartial, accurate, ethical, and accountable safety review must be addressed immediately.

The Washington State Department of Health has been caught hiding the documented risks of wireless radiation:

1. Document 7 (p35): for children/small individuals -ICNIRP standards around 2 GHz are not correct. (Wi-Fi: 2.4 GHz)

2. Document 13 – 2005 France was cited as 'no definitive conclusions'. The state was asked to acknowledge, from the same agency, the 2013 "**Update of the 'Radiofrequencies and health' expert appraisal**" [1] recommending limiting exposure to RF. In a November 07, 2013 email, DOH admitted receipt of this "Update", and that it "probably meets our criteria"; however it was omitted, further illustrating the authors of the DOH/OSPI report were biased and their conclusions that Wi-Fi is safe for children are false and not supported.

3. In a December 23, 2013 DOH/OSPI email containing an earlier version of the draft report [2], we find:

   a. The state correctly cites Health England, below, however in the same sentence in the final draft it is incorrectly cited as Health Council of Netherlands. A note in brackets attempts to downplay the dangers:

      > "One report (Health England) actually measured the exposure to RF in school settings, and concluded that as long as manufacturer's recommendations were being followed, the safety thresholds used in the ICNIRP were not exceeded. [re-word so does not imply danger if recommendations are not followed]".

   b. The earlier draft implied biological effects of wireless radiation, but it was omitted from the final draft:

      > "ICNIRP standards focus on thermal effects as only likely danger…"

   c. In the earlier draft, we see the state prepared to reference the Precautionary Principle under 'Documents Review Process':

      > "the working group summarized… c) the documents' position on how the precautionary principle applies, if given."

      However, the Final Draft only mentions the Precautionary Principle in the Glossary and the following France 2005 Conclusion (document 13) was omitted:

[1] http://www.anses.fr/sites/default/files/documents/PRES2013CPA18EN_0.pdf
[2] http://meansforchange.org/Portals/0/FILES/2013/12/DraftReport_Appendices-12-23-13a-DS-eo-DS.docx

> "Regarding cell phones: they recommend a precautionary approach to reduce cell phone RF exposure by using hands-free kits, buying phones with low SAR levels, etc."

The state **blatantly ignored** studies presented to them, indicating potential risk and exposure reduction, including the:

1. 2013 British Columbia Centre for Disease Control and National Collaborating Centre for Environmental Health, ***Radiofrequency Toolkit for Environmental Health Practitioners***, [3] finding decreased sperm motility with increased use of cell phones and recommends limiting cell phone use and keeping away from male genital area.

2. 2009 U.S. Department of Health and Human Services, National Institutes of Health, and National Cancer Institute, ***Reducing Environmental Cancer Risk, What We Can Do Now*** [4] finding prolonged RF exposure may have deleterious effects on health and to eliminate/minimize exposures to protect children.

In addition, the state **diluted their report**, observed in my February 3 submission[5] finding 7 of the 16 documents must be disqualified for review due to no supporting data, industry conflict, or simply a lack of meeting the state's own definition of a health agency - provided in an October 4, 2013 email.

Upon further review, one or more contributors from 9 of the 16 documents were found to hold ICNIRP membership at the time the report was prepared. According to the ICNIRP Charter, it "shall maintain a close liaison and working relation with the Executive Council of IRPA"; shall submit its formal recommendations for comment by the IRPA, prior to publication; and "shall receive from IRPA an annual grant to provide support" for ICNIRP's work.

This is a conflict of interest. In the IRPA Constitution, Article II, it states the primary objective of IRPA:

> "is to provide a medium whereby international contacts and co operation may be promoted among those engaged in radiation protection work… in the effort to provide for the protection of people and the environment from the hazards caused by ionizing and non ionizing radiation and thereby to facilitate in fact the exploitation of radiation and nuclear energy for the benefit of mankind."

IRPA helps fund ICNIRP and IRPA's primary objective is the development of wireless radiation technology; therefore the following documents must be excluded from the final report due to potential industry conflict.

Documents with Known ICNIRP Member Contributors

Doc. 1 - Eric Van Rongen	Doc. 7 - Eric Van Rongen
Doc. 2 - Eric Van Rongen, Bernard Veyret	Doc. 10 - A. Ahlbom
Doc. 4 - A.J Swerdlow, M. Feychting	Doc. 12 - Michael Repacholi, Eric Van Rongen, A. Ahlbom
Doc. 5 - Zenon Sienkiewicz	Doc. 13 - Paolo Vecchia, Bernard Veyret
Doc. 6 - Maria Feychting	

Therefore, substantiated in my previous and current comments, documents 1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, and 14 must be excluded from the final report and the following must be recognized in the final draft: the WHO's determination of RF as possibly carcinogenic; the omitted precautionary measures from documents 15 and 16; and the findings of the above omitted 2013 French Expert Appraisal, 2013 BCCDC, and 2009 U.S. DHHS documents.

Our children are not experiments. In the midst of this political debate, the state must err on the side of caution and discontinue Wi-Fi use immediately – it can't be proven safe. It is expected the final report display impartiality, accuracy, and better judgment.

Respectfully,

Karen Nold
Means For Change

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[3] http://meansforchange.org/Health-Effects/British-Columbia-CDC-Report
[4] http://meansforchange.org/Health-Effects/2009-US-Presidents-Cancer-Panel-Report
[5] http://meansforchange.org/Portals/0/FILES/2014/02/Wi-Fi%20Safety%20Draft%20Report%20Comments.pdf

COMMENTS ON "Responding to Wi-Fi Safety Concerns in Our Schools, January 2014 Working Draft"
FINAL ADDENDUM, March 1 Submission

Karen Nold, Means For Change, Personal Information ..., Snoqualmie, WA 98065, Personal Information - Privacy - RCW 42.56.230...

Washington State Department of Health (DOH) & Office of Superintendent of Public Instruction (OSPI)
Public Comments EMAIL: RadiationInfo@doh.wa.gov

President Obama's ConnectED initiative - to connect 99 percent of America's students, within five years, to broadband and high-speed wireless in their schools and libraries[1] - was announced on June 6, 2013 with little or no regard to the fact that the radiofrequency (RF) radiation utilized in ConnectED wireless technology was, and is, being considered for safety standard revisions according to FCC Dockets 13-84 and 03-137, March 27, 2013, which was recommended by the U.S. GAO in 2012.[2]

The President has pushed for RF wireless technology while safety standards are under review; has ignored the 2011 WHO classification of RF as possibly carcinogenic; and ignored the 2009 President's Cancer Panel report which recommended eliminating or minimizing RF exposures to protect children. With the ball under way, the FCC head, a former cable and wireless industry lobbyist, announced an initial payment of $2 billion, and Apple, Sprint, AT&T and Verizon are donating hundreds of millions of dollars' in products and services to promote ConnectED.

The President appears to be pursuing economic growth at the expense of our children's health.

On October 7, 2013, by certified mail, numerous Washington State government officials received the *Smart Meter and Personal Wireless Services Facilities Notice of Liability and Inaction*[3] and were officially notified of the documented health risks of wireless radiation:

> … the hazards and abatement of non-ionizing radiation belongs in WSBOH, DOH and 37 LBOH programs and publications; lack thereof may be considered a violation of, but not limited to, RCW 43.20.050(2)(d)(f); RCW 43.70.130(2); RCW 70.05.060(3)...
>
> … a person with full knowledge of a potential harm, whether caused directly by the person or not, and that person is endowed the ability and or duty to act upon the said knowledge in a way to avoid or otherwise mitigate the potential harm, and fails to do said actions, is liable for the inevitable harm caused, and or may be considered negligent at law.

While some oncologists find RF from wireless phones should be classified as "**carcinogenic to humans**,"[4] Washington State legislators, health officials and OSPI, another agency with public health responsibility, should be reminded they serve the interests and welfare of the people, first and foremost, not those of industry. The above mentioned 'Notice of Liability' was delivered to, among others, the public officials in Appendix A who now have documented full knowledge of the potential harm caused by wireless radiation, and are endowed the ability and duty to act upon said knowledge.

Respectfully, govern yourself accordingly.

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[1] http://www.whitehouse.gov/the-press-office/2014/02/04/remarks-president-connected
[2] http://www.gao.gov/products/GAO-12-771
[3] http://meansforchange.org/Portals/0/FILES/2013/10/Notice_of_Liability_and_Inaction_Oct2013.pdf
[4] http://www.ncbi.nlm.nih.gov/pubmed/24192496

APPENDIX A

The Smart Meter and Personal Wireless Services Facilities Notice of Liability and Inaction was delivered to, among others, the below public officials who now have documented full knowledge of the potential harm caused by wireless radiation, and are endowed the ability and duty to act upon said knowledge.

Office of Superintendent of Public Instruction, Randy Dorn

Washington Department of Health, Secretary of Health, John Wiesman

Washington State Board of Health

Keith Grellner	Stephen Kutz	Donald L. Oliver
Dr. Thomas Pendergrass	James Sledge	Fran Bessermin
The Honorable Donna Wright	The Honorable John Austin	Diana T. Yu

Washington State Senate Health Care Committee

Senator Randi Becker	Senator Jamie Pedersen	Senator Annette Cleveland
Senator Bruce Dammeier	Senator Jan Angel	Senator Karen Keiser
Senator Barbara Bailey	Senator Linda Evans Parlette	

Washington State Senate Early Learning & K-12 Education Committee

Senator Steve Litzow	Senator Bruce Dammeier	Senator Rosemary McAuliffe
Senator Christine Rolfes	Senator Andy Billig	Senator Sharon Brown
Senator Annette Cleveland	Senator Joe Fain	Senator Andy Hill
Senator Mark Mullet	Senator Ann Rivers	

Washington State House Committee on Appropriations Subcommittee on Education

Rep. Kathy Haigh	Rep. Susan Fagan	Rep. Reuven Carlyle
Rep. Cathy Dahlquist	Rep. Larry Haler	Rep. Kristine Lytton
Rep. Eric Pettigrew	Rep. Larry Seaquist	Rep. Pat Sullivan
Rep. J.T. Wilcox		

Washington State House Committee on Education

Rep. Sharon Tomiko Santos	Rep. Monica Stonier	Rep. Dick Muri
Rep. Cathy Dahlquist	Rep. Chad Magendanz	Rep. Kevin Parker
Rep. Steve Bergquist	Rep. Jake Fey	Rep. Larry Seaquist
Rep. Kathy Haigh	Rep. Mark Hargrove	Rep. Kristine Lytton
Rep. Brad Hawkins	Rep. Dave Hayes	Rep. Tina Orwall
Rep. Sam Hunt	Rep. Brad Klippert	Rep. Gerry Pollet
Rep. Judy Warnick		

Washington State House Committee on Early Learning & Human Services

Rep. Ruth Kagi
Rep. Maureen Walsh
Rep. Susan Fagan
Rep. David Sawyer
Rep. Roger Freeman
Rep. Elizabeth Scott
Rep. Roger Goodman
Rep. Hans Zeiger
Rep. Mary Helen Roberts
Rep. Tana Senn
Rep. Drew MacEwen

Washington State House Committee On Health Care & Wellness

Rep. Eileen Cody
Rep. Paul Harris
Rep. Tami Green
Rep. Jim Moeller
Rep. Charles Ross
Rep. Kevin Van De Wege
Rep. Marcus Riccelli
Rep. Judy Clibborn
Rep. Laurie Jinkins
Rep. Dawn Morrell
Rep. Shelly Short
Rep. Joe Schmick
Rep. Richard DeBolt
Rep. Matt Manweller
Rep. Jay Rodne
Rep. Steve Tharinger

Washington State Legislature Joint Comprehensive School Health Reform

Rep. Eileen Cody

Washington State Legislature Joint Select Committee on Education Accountability

Senator Andy Hill
Senator Rosemary McAuliffe
Rep. Cathy Dahlquist
Senator Steve Litzow
Senator Christine Rolfes
Rep. Susan Fagan
Rep. Sharon Tomiko Santos
Rep. Kristine Lytton

Washington State Legislature Joint Select Committee on Health Care Oversight

Senator Randi Becker
Rep. Paul Harris
Rep. Dawn Morrell
Rep. Eileen Cody
Rep. Laurie Jinkins
Senator Linda Evans Parlette
Senator Steve Conway
Senator Karen Keiser
Rep. Joe Schmick

Washington State House Committee on Government Accountability & Oversight

Rep. Christopher Hurst
Rep. Brian Blake
Rep. Luis Moscoso
Rep. Sharon Wylie
Rep. Steve Kirby
Rep. Cary Condotta
Rep. Jeff Holy
Rep. Brandon Vick
Rep. Matt Shea

EMR$_X$

Research & recommendations on electro-magnetic radiation and wireless technology

Doctors For Safer Schools

DFSS is an international non-profit Advisory Board working to protect children's health, and the health of all people in the Digital Age

UNKNOWINGLY AND UNNECESSARILY AT RISK

Co-founder, Medical Director
Stephen Sinatra MD, FACC
American College of Cardiologists

Co-founder, Executive Director
Kerry Crofton PhD

Medical Advisor
Brendan Montano MD

Advisory Board Members

Scientific Advisor
Devra Lee Davis PhD, MPH
Fellow American College of Epidemiology

Priyanka Bandara PhD

John Barnhill MD, FRCSC
Royal College of Surgeons

Martin Blank PhD

Lee Cowden MD

Carolyn Dean MD, ND

Magda Havas PhD

Dietrich Klinghardt MD, PhD

Heather E. McKinney PhD

Hans Scheiner MD

Drew S. Sinatra ND, LAc.

www.DoctorsForSaferSchools.org

Wireless Microwave Radiation (Wi-Fi) Health Hazards

Our doctors caution this is the greatest medical threat of our time and ask: with sound scientific evidence of harm, why not choose safer technology and adopt the pre-cautionary principle? (Safety standards are not accurate, not protecting us.)

With safer-tech solutions, students can be tech-savvy, Internet connected *and* healthy.

Technical expert Katharina Gustavs: "Any of the Wi-Fi transmitters tucked inside an iPad exposes children to high levels of RF radiation—similar to the transmitters in a smartphone and enough to harm them."

Nobel co-laureate and DFSS Scientific Advisor, Dr. Devra Davis PhD: "If the cell phone were a drug, it would be banned. And iPads are even worse in terms of radiation exposure. Growing numbers of young people are immersed in levels that are without precedence in human history. The case for taking simple precautions to reduce exposures is becoming stronger every day, as a number of governments around the world are advising."

WiFi-enabled devices: Fun, educational and harmful, especially to children

International health authorities have issued health alerts:

- **The World Health Organization**: After examining the scientific evidence, 31 scientists determined wireless (radio-frequency-RF) radiation to be a class 2B carcinogen – in the same category as lead, automotive exhaust, and DDT.

- **American Academy of Pediatricians**: "Children are disproportionately impacted by all environmental exposures, including cell phone radiation. It is essential that any new standard be based on protecting the most vulnerable populations to ensure they are safeguarded throughout their lifetimes."

- **American Academy of Environmental Medicine**: "Adverse health effects from RF radiation – learning disabilities, altered immune responses, and headaches – are well documented in the scientific literature. It is better to exercise caution and substitute with a safe wired connection."

We are also concerned about other social and behavioural issues and what has been called 'nature-deficit disorder.'

DFSS Board Member, CDN surgeon Dr John Barnhill MD, FRCSC:

"The medical, psychological and social effects of wireless (RF) radiation are theoretically quite concerning. Some evidence that exists in medical literature is quite concerning and in keeping with our understanding of the physiology and carcinogenic capability of radiation. Further public consultation, dissemination of risks and research is warranted for this new public health concern. And this radiation exposure is against any consent."

DFSS Co-founder and Medical Director Board-Certified Cardiologist Dr Stephen Sinatra MD, FACC
"The wireless microwave radiation from WiFi and mobile phones is the **greatest medical threat of our time**. The heart is vulnerable; cardiac symptoms may be connected. Electro-sensitivity is a medical condition that most physicians do not recognize."

Associate Professor of Physiology and Cellular Biophysics, Columbia University Dr Martin Blank, PhD:
"This is not only the new tobacco; this is **the new asbestos**. It took governments 100 years to take action regarding asbestos. And Canada's safety standards are inaccurate and totally irrelevant." Dr Blank has published over 200 papers on his research in this field.

DFSS Co-founder and Executive Director, author of *A Wellness Guide For The Digital Age* Dr Kerry Crofton PhD:
"Yes, we want students to succeed. When there is even a suggestion that this microwave radiation exposure is harmful, why wouldn't we adopt the precautionary principle and choose the safer options available to us?"

We can be tech-savvy, connected *and* healthy.

What you can do in your school, library, clinic, office, home, vehicle (buses, trains and aircraft)

1. Test levels of exposure – a professional assessment recommended – and learn to recognize related symptoms

2. Reduce exposures from wired and wireless sources with safer options: www.SaferTechSolutions.org

3. Retest levels of exposure - address related symptoms with integrative medicine protocols more details: www.DoctorsForSaferSchools.org

4. Motivate and educate people to use hard-wired Internet connections instead of wireless, and to disconnect whenever possible to reconnect with themselves, each other and the natural world.

EMR$_X$

Research & recommendations: on electro-magnetic radiation and wireless technology

Doctors For Safer Schools

DFSS is an international non-profit Advisory Board working to protect children's health, and our health, in this Digital Age

A GENERATION UNKNOWINGLY AND UNNECESSARILY AT RISK

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Heather E. McKinney PhD

Hans Scheiner MD

Drew S. Sinatra ND, LAc.

Wireless Microwave Radiation (WiFi) 'is possibly carcinogenic'
- WORLD HEALTH ORGANIZATION, 2011

American Academy of Environmental Medicine: "Adverse health effects from wireless radiation – learning disabilities, altered immune responses, and headaches – are well documented in the scientific literature."

American Academy of Pediatricians: "It is essential that a new standard (of wireless radiation exposure) be based on protecting the most vulnerable populations to ensure they are safeguarded throughout their lifetimes."

I am writing to ask you to weigh the risks against the benefits and vote against installing WiFi in Toronto Parks and Public Spaces.

I represent an international group of doctors who have been researching, and publishing on, this issue for many years and have concluded: While the levels of wireless microwave radiation used in WiFi are within Canada's safety standards, they have been proven harmful to human health. And these standards are not relevant, not protecting us, and must be updated.

One of our Board Members, Canadian surgeon Dr John Barnhill MD, FRCSC, CCFPC warns: "This radiation exposure is against any consent. The medical, psychological and social effects of EMR are theoretically quite concerning."

Also on our Board, Nobel Co-Laureate Dr Devra Davis PhD, cautions that "We are engaged in an uncontrolled global experiment with the widespread exposure of cell phone and WiFi radiation. Children and pregnant are most at risk."

The scientific evidence shows that the general population is also adversely affected. Attached please find some key resources.

I hope you will refer to them as you make your decision on this important matter and ask yourselves:

"If there is a significant concern that WiFi poses a public health hazard, is it wise to broadcast this microwave radiation across our city, when we already have a proliferation of massive cell tower antennas, and some of our citizens are already reporting electro-sensitivity?"

Dr Kerry Crofton, PhD
Co-founder, Executive Director

This is a brief summary of the evidence of harm from electro-magnetic radiation (EMR) exposure, specifically wireless radiation, an excerpt from our book, *A Wellness Guide For The Digital Age*

A Partial Summary of EMR Biological Effects

"No clear evidence of harm," some claim. However, even at low exposures (a fraction of government-sanctioned levels) EMR is bio-active, every part of the body is affected and published evidence includes:

- DNA damage and disruption of DNA repair (Lai, Singh, Philips)

- Suppression of the immune system (Johansson, Nakamura, Litovitz, Veyret, Hocking, Draper)

- Disruption to normal functioning of neurological, cardiovascular and endocrine systems (Lai, Salford, Becker, Cherry, Hurtado, Johansson, Karasek, Schilowsky)

- Leakage of the brain's protective blood-brain barrier (Salford, Persson)

- Impaired cognitive functions, including reaction time (Mosgoeller, Scheiner, Lai, Becker, Cherry, Luria, Eliyahu, Hareuveny, Margaliot, Meiran)

- Increased agitation, sleep disruptions and food, chemical and electro-sensitivities (Becker, Holt, Rea)

- Stress protein synthesis (body's reaction when stressed at the cellular level) (Blank, Goodman, Mosgoeller)

- Inter- and intra-cellular functions (cell membrane permeability and the cells ability to communicate with each other) (Cherry, Adey, Blackman)

Papers finding adverse biological effects or damage to health from Wi-Fi signals, Wi-Fi-enabled devices or Wi-Fi frequencies (2.4 or 5 GHz).

Papers listed are only those where exposures were 16V/m or below. Someone using a Wi-Fi-enabled tablet computer can be exposed to electromagnetic fields up to 16V/m. Papers are in alphabetical order.

Wi-Fi:

Atasoy H.I. et al., 2013. Immunohistopathologic demonstration of deleterious effects on growing rat testes of radiofrequency waves emitted from conventional Wi-Fi devices. Journal of Pediatric Urology 9(2): 223-229.http://www.ncbi.nlm.nih.gov/pubmed/22465825

Avendaño C. et al., 2012. Use of laptop computers connected to internet through Wi-Fi decreases human sperm motility and increases sperm DNA fragmentation. Fertility and Sterility 97(1): 39-45.http://www.ncbi.nlm.nih.gov/pubmed/22112647

Avendaño C. et al., 2010. Laptop expositions affect motility and induce DNA fragmentation in human spermatozoa in vitro by a non-thermal effect: a preliminary report. American Society for Reproductive Medicine 66th Annual Meeting: O-249 http://wifiinschools.org.uk/resources/laptops+and+sperm.pdf)

Aynali G. et al., 2013. Modulation of wireless (2.45 GHz)-induced oxidative toxicity in laryngotracheal mucosa of rat by melatonin. Eur Arch Otorhinolaryngol 270(5): 1695-1700.http://www.ncbi.nlm.nih.gov/pubmed/23479077

Gumral N. et al., 2009. Effects of selenium and L-carnitine on oxidative stress in blood of rat induced by 2.45-GHz radiation from wireless devices. Biol Trace Elem Res. 132(1-3): 153-163. http://www.ncbi.nlm.nih.gov/pubmed/19396408

Havas M. et al., 2010. Provocation study using heart rate variability shows microwave radiation from 2.4GHz cordless phone affects autonomic nervous system. European Journal of Oncology Library Vol. 5: 273-300.http://www.icems.eu/papers.htm?f=/c/a/2009/12/15/MNHJ1B49KH.DTL part 2.

Havas M. and Marrongelle J. 2013. Replication of heart rate variability provocation study with 2.45GHz cordless phone confirms original findings. Electromagn Biol Med 32(2): 253-266.https://www.ncbi.nlm.nih.gov/pubmed/23675629

Maganioti A. E. et al., 2010. Wi-Fi electromagnetic fields exert gender related alterations on EEG. 6th International Workshop on Biological Effects of Electromagnetic fields.http://www.istanbul.edu.tr/6internatwshopbioeffemf/cd/pdf/poster/WI-FI%20ELECTROMAGNETIC%20FIELDS%20EXERT%20GENDER.pdf

Margaritis L.H. et al., 2013. Drosophila oogenesis as a bio-marker responding to EMF sources. Electromagn Biol Med., Epub ahead of print.http://www.ncbi.nlm.nih.gov/pubmed/23915130

Naziroğlu M. and Gumral 2009. Modulator effects of L-carnitine and selenium on wireless devices (2.45 GHz)-induced oxidative stress and electroencephalography records in brain of rat. Int J Radiat Biol. 85(8): 680-689. http://www.ncbi.nlm.nih.gov/pubmed/19637079

Nazıroğlu M. et al., 2012. 2.45-Gz wireless devices induce oxidative stress and proliferation through cytosolic Ca2+ influx in human leukemia cancer cells. International Journal of Radiation Biology 88(6): 449–456.http://www.ncbi.nlm.nih.gov/pubmed/22489926

Nazıroğlu M. et al., 2012b. Melatonin modulates wireless (2.45 GHz)-induced oxidative injury through TRPM2 and voltage gated Ca(2+) channels in brain and dorsal root ganglion in rat. Physiol Behav. 105(3): 683-92.http://www.ncbi.nlm.nih.gov/pubmed/22019785

Oksay T. et al., 2012. Protective effects of melatonin against oxidative injury in rat testis induced by wireless (2.45 GHz) devices. Andrologia doi: 10.1111/and.12044, Epub ahead of print.http://www.ncbi.nlm.nih.gov/pubmed/23145464

Papageorgiou C. C. et al., 2011. Effects of Wi-Fi signals on the p300 component of event-related potentials during an auditory hayling task. Journal of Integrative Neuroscience 10(2): 189-202. http://www.ncbi.nlm.nih.gov/pubmed/21714138

(Wi-Fi alters brain activity in young adults:http://wifiinschools.org.uk/resources/wifi+brain+July+2011.pdf)

Shahin S. et al., 2013. 2.45 GHz Microwave Irradiation-Induced Oxidative Stress Affects Implantation or Pregnancy in Mice, Mus musculus. Appl Biochem Biotechnol 169: 1727–1751. http://www.ncbi.nlm.nih.gov/pubmed/23334843

Türker Y. et al., 2011. Selenium and L-carnitine reduce oxidative stress in the heart of rat induced by 2.45-GHz radiation from wireless devices. Biol Trace Elem Res. 143(3): 1640-1650. http://www.ncbi.nlm.nih.gov/pubmed/21360060

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(Not comprehensive)

Balmori A. 2010. Mobile phone mast effects on common frog (Rana temporaria) tadpoles: the city turned into a laboratory. Electromagn. Biol. Med. 29(1-2):31-35. http://www.ncbi.nlm.nih.gov/pubmed/20560769

Erdinc O. O. et al., 2003. Electromagnetic waves of 900MHz in acute pentylenetetrazole model in ontogenesis in mice. Neurol. Sci. 24:111-116.http://www.ncbi.nlm.nih.gov/pubmed/14600821
Fesenko E. E. et al., 1999. Stimulation of murine natural killer cells by weak electromagnetic waves in the centimeter range. Biofizika 44:737–741.http://www.ncbi.nlm.nih.gov/pubmed/10544828
Fesenko E. E. et al., 1999. Microwaves and cellular immunity. I. Effect of whole body microwave irradiation on tumor necrosis factor production in mouse cells, Bioelectrochem. Bioenerg. 49:29–35.http://www.ncbi.nlm.nih.gov/pubmed/10619445

Havas M. et al., 2010. Provocation study using heart rate variability shows microwave radiation from 2.4GHz cordless phone affects autonomic nervous system. European Journal of Oncology Library Vol. 5: 273-300.http://www.icems.eu/papers.htm?f=/c/a/2009/12/15/MNHJ1B49KH.DTL part 2.

Kesari K. K. and Behari J., 2009. Microwave exposure affecting reproductive system in male rats. Appl. Biochem. Biotechnol. 162(2):416-428.http://www.ncbi.nlm.nih.gov/pubmed/19768389
Kesari K. K. and Behari J., 2009. Fifty-gigahertz microwave exposure effect of radiations on rat brain. Appl. Biochem. Biotechnol. 158:126-139.http://www.ncbi.nlm.nih.gov/pubmed/19089649
Khurana V. G. et al., 2010. Epidemiological Evidence for a Health Risk from Mobile Phone Base Stations. Int. J. Occup. Environ. Health 16:263–267.http://www.ncbi.nlm.nih.gov/pubmed/20662418

Maier R. et al., 2004. Effects of pulsed electromagnetic fields on cognitive processes – a pilot study on pulsed field interference with cognitive regeneration. Acta Neurologica Scandinavica 110: 46-52.http://www.ncbi.nlm.nih.gov/pubmed/15180806
Nittby H. et al., 2008. Cognitive impairment in rats after long-term exposure to GSM-900 mobile phone radiation. Bioelectromagnetics 29: 219-232.http://www.ncbi.nlm.nih.gov/pubmed/18044737
Novoselova E. G. et al., 1998. Stimulation of production of tumor necrosis factor by murine macrophages when exposed in vivo and in vitro to weak electromagnetic waves in the centimeter range Bofizika 43:1132–1333.

Novoselova E. G. et al., 1999. Microwaves and cellular immunity. II. Immunostimulating effects of microwaves and naturally occurring antioxidant nutrients. Bioelectrochem. Bioenerg. 49:37–41.http://www.ncbi.nlm.nih.gov/pubmed/10619446
Otitoloju A. A. et al., 2010. Preliminary study on the induction of sperm head abnormalities in mice, Mus musculus, exposed to radiofrequency radiations from Global System for Mobile Communication Base Stations. Bull. Environ. Contam. Toxicol. 84(1):51-4. http://www.ncbi.nlm.nih.gov/pubmed/19816647

Panagopoulos D. J.et al., 2010. Bioeffects of mobile telephony radiation in relation to its intensity or distance from the antenna. Int. J. Radiat. Biol. Vol 86(5):345-357. http://www.ncbi.nlm.nih.gov/pubmed/20397839

Persson B. R. R. et al., 1997. Blood-brain barrier permeability in rats exposed to electromagnetic fields used in wireless communication. Wireless Networks 3: 455-461.
Pyrpasopoulou A. et al., 2004. Bone morphogenic protein expression in newborn kidneys after prenatal exposure to radiofrequency radiation. Bioelectromagnetics 25:216-27.http://www.ncbi.nlm.nih.gov/pubmed/15042631

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