

Appello di Reykjavik sull'uso delle tecnologie senza fili nelle scuole

Traduzione in italiano di Francesca Romana Orlando ([AMICA](#)) dalla versione originaria in inglese: <http://www.stralskyddsstiftelsen.se/wp-content/uploads/2017/03/Reykjavik-Appeal-170224-2.pdf>

Noi sottoscritti siamo preoccupati per lo sviluppo e per la salute dei nostri figli nelle scuole dove si insegna tramite delle tecnologie di comunicazione senza fili. Numerosi studi scientifici hanno dimostrato quali notevoli rischi per la salute ci siano con l'esposizione a lungo termine a radiazioni di radiofrequenza emesse dai dispositivi e dalle reti wireless anche al di sotto degli attuali limiti di riferimento raccomandati dalla Commissione Internazionale sulla Protezione dalle Radiazioni Non-Ionizzanti (ICNIRP). Chiediamo alle autorità di assumersi le proprie responsabilità per la salute e per il benessere futuro dei nostri figli. Nel maggio 2011 l'Agenzia Internazionale per la Ricerca sul Cancro (IARC) dell'OMS ha classificato la radiofrequenza come cancerogeno del gruppo 2B, ovvero come "possibile cancerogeno per l'Uomo". Da allora ulteriori studi scientifici basati sull'esposizione degli esseri umani, degli animali e del materiale biologico a radiofrequenza hanno confermato un aumento del rischio di cancro, soprattutto di tumori cerebrali. Diversi studi di laboratorio hanno dimostrato i meccanismi degli effetti cancerogeni della radiofrequenza, come lo stress ossidativo, una sotto regolazione del mRNA e danni al DNA con rotture dei filamenti singoli. **La classificazione del rischio cancerogeno dello IARC comprende tutte le fonti di radiofrequenza.** L'esposizione a lungo termine ai ripetitori della telefonia mobile, ai punti Wi-Fi, agli smart phone, ai computer portatili e ai tablet può avvenire talvolta per tutto il giorno, sia a casa che a scuola. Per i bambini questo rischio può essere accentuato a causa dell'effetto cumulativo nel corso della vita. Sviluppando delle cellule immature possono essere anche più sensibili all'esposizione a radiofrequenza. Sulla base degli studi scientifici non sono stati stabiliti dei livelli di esposizioni a queste radiazioni privi di rischi e, perciò, non ci sono garanzie di sicurezza. Oltre al rischio di cancro, la radiofrequenza può influenzare anche **l'apertura della barriera emato-encefalica** e favorire il passaggio di tossine nel cervello, danneggiando i neuroni dell'ippocampo (il centro cerebrale deputato alla memoria), alterare la regolazione in difetto o in eccesso delle proteine essenziali nel cervello impegnate nel metabolismo cerebrale, porre sotto stress la risposta della neuro-protezione e influenzare i neurotrasmettitori. E' stato osservato che gli spermatozoi esposti al Wi-Fi hanno più difetti nella testa e più danni al DNA. La radiofrequenza può aumentare lo stress ossidativo cellulare, può produrre un aumento di citochine pro-infiammatorie e può abbassare la capacità di riparare la rottura del singolo o doppio filamento del DNA. Sono stati riscontrati anche dei disturbi cognitivi nell'apprendimento e nella memoria. I risultati dei sondaggi sulle prestazioni nella lettura e nella matematica del PISA (programma per la valutazione internazionale dell'allievo) dell'OCSE mostrano risultati scadenti nei paesi che hanno investito di più nell'introduzione dei computer a scuola. Il lavoro in multitasking, le eccessive ore davanti ad uno schermo, il minore tempo dedicato ai contatti sociali e

all'attività fisica, con il conseguente rischio di dolori al collo e alla schiena, di problemi di sonno, di sovrappeso, e la dipendenza da informatica sono alcuni dei rischi e degli effetti collaterali conosciuti dell'impiego delle tecnologie informatiche. Questi rappresentano un netto contrasto rispetto a quanto affermato dei possibili benefici che sono in gran parte non dimostrati. Chiediamo alle autorità scolastiche di tutti i paesi di acquisire le conoscenze riguardanti i rischi potenziali della radiofrequenza per la crescita e per lo sviluppo dei bambini. Una soluzione più sicura rispetto alle esposizioni potenzialmente pericolose delle radiazioni delle tecnologie senza fili è la connessione via cavo. Vi chiediamo di seguire il principio ALARA (livello più basso ragionevolmente ottenibile) e di tenere conto della Risoluzione 1815 del Consiglio d'Europa che fa appello di adottare tutte le misure ragionevoli per ridurre l'esposizione alla radiofrequenza.

Regole pratiche per le scuole sui bambini e sulle tecnologie senza fili:

- assenza di reti wireless nelle scuole materne e negli asili nido;
- si raccomanda la presenza in ogni classe di una connessione via cavo per l'uso da parte dell'insegnante durante le lezioni;
- preferire i telefoni collegati via cavo per il personale nelle scuole materne e negli asili nido;
- preferire la connessione via cavo ad Internet e alle stampanti nelle scuole e tenere tutte le apparecchiature con il Wi-Fi spento;
- preferire i computer portatili e i tablet che possono essere collegati via cavo a Internet;
- gli studenti non dovrebbero essere autorizzati a utilizzare i cellulari a scuola, gli studenti possono o lasciarli a casa o all'insegnante che li raccoglie prima dell'inizio delle lezioni, tenendoli in modalità aereo.

Questo appello è stato realizzato in occasione della conferenza internazionale "Bambini, tecnologia e radiazioni wireless" che si è tenuta a Reykjavik (Islanda) il 24 febbraio 2017 (Children, Screen time and Wireless Radiation – International Conference Reykjavik).
[\[https://ehtrust.org/science/key-scientific-lectures/2017-reykjavik-conference-technology-wireless-radiation-childrens-health/ \]](https://ehtrust.org/science/key-scientific-lectures/2017-reykjavik-conference-technology-wireless-radiation-childrens-health/)

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Akdag MZ, Dasdag S, Canturk F, Karabulut D, Caner Y and Adalier N: Does prolonged radiofrequency radiation emitted from Wi-Fi devices induce DNA damage in various tissues of rats? *J Chem Neuroanat* 2016, doi: 10.1016/j.jchemneu.2016.01.003.

BioInitiative Working Group: BioInitiative 2012. A Rationale for a Biologically-based Public Exposure Standard for Electromagnetic Fields (ELF and RF). Sage C and Carpenter DO (eds.). Bioinitiative, 2012. Available online: <http://www.bioinitiative.org/table-of-contents/>

Buchner K and Eger H: Changes of clinically important neurotransmitters under the influence of modulated RF fields—A long-term study under real-life conditions [Original study in German]. *Umwelt-Medizin-Gesellschaft*. 2011;24:44-57.

Calvente I, Pérez-Lobato R, Núñez MI, Ramos R, Guxens M, Villalba J et al. Does exposure to environmental electromagnetic fields cause cognitive and behavioral effects in 10-year-old boys? *Bioelectromagnetics*. 2016;37:25-36.

Council of Europe (2011). Résolution 1815 (2011): The potential dangers of electromagnetic fields and their effect on the environment. <http://assembly.coe.int/nw/xml/XRef/Xref-XML2HTML-en.asp?fileid=17994&>

Coureau G, Bouvier G, Lebaillly P, Fabbro-Peray P, Gruber A, Leffondre K, et al. Mobile phone use and brain tumours in the CERENAT case-control study. *Occup Environ Med*. 2014;71:514-522.

Dasdag S, Akdag MZ, Erdal ME, Erdal N, Ay OI, Ay ME, Yilmaz SG, Tasdelen B and Yegin K: Effects of 2.4 GHz radiofrequency radiation emitted from Wi-Fi equipment on microRNA expression in brain tissue. *Int J Radiat Biol*. 2015;91:555-61.

Deshmukh PS, Nasare N, Megha K, Banerjee BD, Ahmed RS, Singh D, Abegaonkar MP, Tripathi AK and Mediratta PK: Cognitive impairment and neurogenotoxic effects in rats exposed to low-intensity microwave radiation. *Int J Toxicol*. 2015;34:284-90.

Hardell L, Carlberg M. Using the Hill viewpoints from 1965 for evaluating strengths of evidence of the risk for brain tumors associated with use of mobile and cordless phones. *Rev Environ Health*. 2013;28:97-106.

Hardell L, Carlberg M. Mobile phone and cordless phone use and the risk for glioma – Analysis of pooled case-control studies in Sweden, 1997-2003 and 2007-2009. *Pathophysiology*. 2015;22:1-13.

Hedendahl L, Carlberg M, Hardell L. Electromagnetic hypersensitivity - an increasing challenge to the medical profession. *Rev Environ Health*. 2015;30:209-315.

Hensinger P. Big data: a paradigm shift in education from personal autonomy to conditioning toward excessive consumerism. *Umwelt-Medizin-Gesellschaft*. 2015;28;206-13.

Fragopoulou A, Samara A, Antonelou MH, Xanthopoulou A, Papadopoulou A, Vougas K, Koutsogiannopoulou E, Anastasiadou E, Stravopodis DJ, Tsangaris GT, et al: Brain proteome response following whole body exposure of mice to mobile phone or wireless DECT base radiation. *Electromagn Biol Med*. 2012;31:250-74.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Volume 102. Non-Ionizing Radiation, Part 2: Radiofrequency Electromagnetic Fields. International Agency for Research on Cancer: Lyon, France, 2013. Available online: <http://monographs.iarc.fr/ENG/Monographs/vol102/mono102.pdf>

ICNIRP. Guidelines for limiting exposure to time-varying electric, magnetic, and electromagnetic fields (up to 300 GHz). International commission on non-ionizing radiation protection. *Health Phys*. 1998;74(4):494-522.

Markovà E, Malmgren LO and Belyaev IY: Microwaves from mobile phones inhibit 53BP1 focus formation in human stem cells more strongly than in differentiated cells: Possible mechanistic link to cancer risk. *Environ Health Perspect*. 2010;118:394-9.

Megha K, Deshmukh PS, Banerjee BD, Tripathi AK, Ahmed R, Abegaonkar MP. Low intensity microwave radiation induced oxidative stress, inflammatory response and DNA damage in rat brain. *Neurotoxicology*. 2015;51:158-65.

Nittby H, Brun A, Eberhardt J, Malmgren L, Persson BR and Salford LG: Increased blood-brain barrier permeability in mammalian brain 7 days after exposure to the radiation from a GSM-900 mobile phone. *Pathophysiology*. 2009;16:103-12.

OECD (2015). Students, Computers and Learning: Making the Connection, PISA, OECD Publishing. Available at: <http://dx.doi.org/10.1787/9789264239555-en>

Sangün Ö, Dündar B, Çömlekçi S, Büyükgebiz A. The effects of electromagnetic field on the endocrine system in children and adolescents. *Pediatr Endocrinol Rev*. 2015;13(2):531-45.

Spitzer M. Information technology in education: Risks and side effects. *Trends in Neuroscience and Education* 2014;3:81-5.

Wyde M, Cesta M, Blystone C, Elmore S, Foster P, Hooth M, Kissling G, Malarkey D, Sills R, Stout M, et al: Report of Partial Findings from the National Toxicology Program Carcinogenesis Studies of Cell Phone Radiofrequency Radiation in Hsd: Sprague Dawley® SD rats (Whole Body Exposures). Draft 5-19-2016. US National Toxicology Program (NTP), 2016. doi: <http://dx.doi.org/10.1101/055699>. Available online: <http://biorxiv.org/content/biorxiv/early/2016/05/26/055699.full.pdf>

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