



Electromagnetic hypersensitivity and occupational exposure to electromagnetic fields (EMF)

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BBEMG and the University of Liège

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- **Declaration of interest**

Isabelle Demaret is a researcher in the unit and works for the **Belgian BioElectroMagnetics Group (BBEMG)**.

ELIA (a Belgian Electrical company) funds the BBEMG composed of researchers from three universities (Liège, Gent, Brussels) and a federal health research institute (Brussels). Researchers are employed by the universities and the universities have a contract with ELIA that guarantees researchers' scientific freedom.

First complaints in scientific literature about hypersensitivity to electromagnetic fields (EMF)

- At least since the early 80'
- First related to video display terminals
- Epidemic in Sweden
- No evidence of physiological causes (*Liden, 1996*)

More heterogeneous complaints now

Example: Questions received between 07/2013 and 03/2014

Spontaneous contacts	23	100%
- via email	16	70%
- via phone	7	30%
Electrosensitivity		
- Say he/she has symptoms linked to EMF or hypersensitivity	20	87%
- No information	2	9%
- No, only question about potential effect on health	1	4%
Origins of symptoms		
- EMF in general ("les ondes", "electromagnetic fields")	8	35%
- Mobile phone	5	22%
- Mobile phone mast	5	22%
- WIFI	5	22%
- Computer	5	22%
- 50 Hz	3	13%
- TV (flat screen)	2	9%
- Overhead power line	2	9%
- Neuroweapons	1	4%

World Health Organisation reactions

- Complaints were frequent enough to alert WHO
- Reviews of studies but no physiological causes or evidence:
“scientific evidence does not support a link between these symptoms and exposure to electromagnetic fields” (WHO 2005-2014)
- Since 1996, WHO defined hypersensitivity to EMF as
**Idiopathic Environmental Intolerance
attributed to ElectroMagnetic Fields (IEI-EMF)**
- No change in the definition since 1996

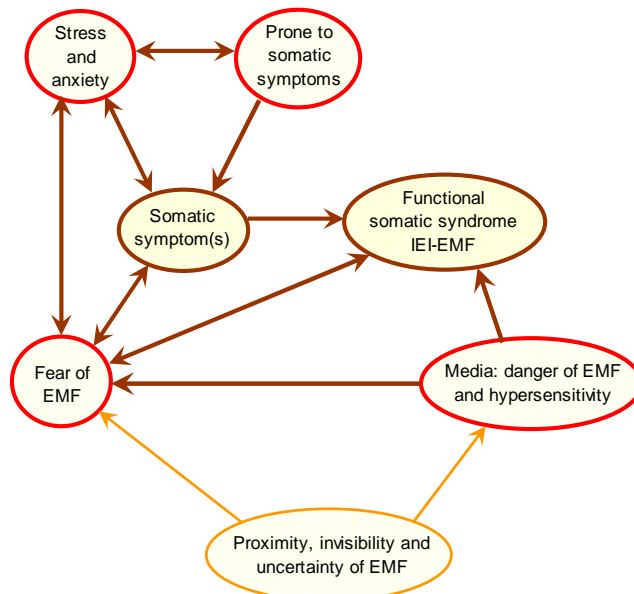
Idiopathic Environmental Intolerance to ElectroMagnetic Fields (IEI-EMF)

- **Characteristics**
 - a variety of non-specific symptoms
 - differ from individual to individual
 - symptoms are real
 - no medical diagnostic
- **Treatment is difficult**
 - Cognitive behavioural therapy can reduce:
 - subjective suffering
 - severity of symptoms
 - number of persons saying that they are hypersensitive
(Rubin et al., 2006)

Functional somatic syndromes

- **IEI-EMF is classified among the functional somatic syndromes**
(Barsky et al., 1999)
- **As other syndromes with no physiological basis**
 - irritable bowel syndrome
 - globus syndrome (“lump in one's throat”),
 - multiple chemical sensitivity (hypersensitivity to chemicals)
- **In these syndromes**
 - symptoms are non specific and common in general population
 - heterogeneous
 - symptoms and pains are real
 - can be invalidating and prevent some persons of going to work.
- **In general population**
 - 26% have at least one functional somatic symptom (Kingma et al., 2013)

From functional somatic symptoms to syndrome



IEI-EMF and work

- **Fear of EMF at home but also at work**
- **Attribution of health complaints to environmental factors**
 - if more fatigue after work and difficulties to recover
 - more if lower satisfaction at work (*Osterberg et al., 2007*)
- **Health complaints and video terminal display**
 - more if lack of social support at work (*Eriksson et al., 1997*)

Directive 2013/35/EU and IEI-EMF

- **Can the new directive increase fears of workers with IEI-EMF?**
 - shows less severity than in 2004
 - does not cover long-term effects
 - temporary overexposures are allowed
- **But**
 - information on overexposure has to be given to workers
 - appropriate medical examination must be provided if undesirable health effects are reported

Example of the consequences of overexposure

(Moen et al., 2013)

- **Accidental exposure to EMF from a radar on a Norwegian naval ship**
 - an American destroyer passed at 100 m with radar turned ON (by mistake)
 - 7 members of the crew standing outside had heat sensations (face and arm)
 - electronic instruments were disturbed (fire alarm started)
- **Official reaction**
 - no formal communication, medical examination by inexperienced physician
- **Reaction of the crew**
 - members of the crew were anxious and developed different symptoms
 - 6 months later 22 persons were examined:
 - all in very good physical and mental health (better than general population)
 - health problems disappeared after examination by experienced physicians

Guidelines when overexposure

- **Guidelines from the US navy concerning overexposure to radiofrequency (radars)** *(Moen et al., 2013)*
 - Quick intervention among exposed personnel
 - Confirmation of the exposure
 - Medical examination to verify presence or lack of effects from heating (by experienced physician)
 - Reassurance to reduce anxiety
 - Information about high risk of anxiety and somatisation after such incident

=> quick reaction and information

Thank you for your attention