

Health surveillance of workers exposed to EMF

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Directive 2004/40/EC Electromagnetic fields

Article 8, Health Surveillance: (in brief)

1. Appropriate health surveillance shall be carried out in accordance with Article 14 of Directive 89/391/EEC.
2. Where exposure ***above the limit values*** is detected a ***medical examination*** shall be made available to the workers in accordance with national law and practice.

”Above the limit values”

- Complicated to determine whether the limit values have been exceeded.
- Should a medical examination be performed after a single short ”overexposure”?
- Should it be performed every time overexposure happens?
- Time interval between exposure and medical examination. Immediately or later?

Medical examination and worker protection

General principles for worker protection:

Health hazards shall always be remedied primarily through preventive work environment measures.

Hazards from EMF exposure should preferably be handled through limitations of the fields.

Medical examination should be performed when it can be anticipated that work environment measures have not been sufficient to prevent health hazards.

Medical examination, indications

- The examination makes it possible to detect negative health influence early and thus to prevent serious health effects.
- The examination makes it possible to detect damage to the health early, resulting in better prognosis for recovery and/or preventing further damage.

Medical examination, general principles regarding contents

Medical examinations should be focused on the health effects caused by the hazard

or be focused on medical factors that might make the workers more vulnerable to the hazard .

A non specific health examination is not to be recommended.
The results may be completely irrelevant.

Medical examinations due to acute overexposure to EMF

What can be expected to find at the examinations?

Overexposure from high frequency fields about 10 times the limit values will give a transient increase in body temperature by 1°C. This may happen also after a brief physical exercise. It is not possible to detect when the temperature has been normalized.

Overexposure from low frequency fields give rise to transient nerve stimulations which are also impossible to detect after exposure has ended.

Medical examinations due to extreme overexposure to EMF

- Excessive overexposure from high frequency fields might give rise to heating and tissue damage.
 - It is likely that the worker often will notice this exposure through subjective symptoms – sensation of heat. This can justify a medical examination.
 - Persistent symptoms from the nervous system might occur.
 - MRI can reveal deep burns. Creatine Kinase can be elevated due to damage to muscular tissue.
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Medical examination due to suspected long term effects from EMF

- Certain tumors and dementia are some effects that might be of concern.
- These effects happens (if it is true) as a result of long term exposure levels far below the limit values.
- Directive, 2004/40/EC, does not regulate long term effects.

Medical examination, practical aspects

- There is no consensus regarding what health effects we should be looking for.
- The majority of medical professionals most likely have not been educated to handle potential health problems resulting from EMF.
- Acute exposure that occur in the work environment cannot, in most cases, be expected to be detected through medical examination once the exposure is over.

Suggestions for health surveillance due to acute overexposure to EMF

- Indications for a medical examination should be a risk assessment based on knowledge about the hazards.
 - The risk assessment can preferably include frequency and length of exposure, individual risk factors and possible reported subjective effects among other things.
 - The suggested limit values are not useful as a gate to medical examination.
 - Guidelines for medical examinations should be developed.
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Final conclusion and recommendation:

Paragraf 1 under Article 8, Health surveillance, should be restricted to the first piece of text:

”With the objective of prevention and early diagnosis of any adverse health effects due to exposure to electromagnetic fields, appropriate health surveillance shall be carried out in accordance with Article 14 of Directive 89/391/EEC.”

Thus health surveillance of better relevance can be performed and useless medical examinations can be avoided.
