

## **Environmental Issue**

# **ELECTRIC & MAGNETIC FIELDS**

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Electric and magnetic fields (EMF) are a natural result of the use of electricity and occur wherever there is electricity, including in home appliances, electrical wiring, office equipment, industrial machinery and electric transmission lines.

Research on whether EMF causes adverse health effects has been conducted for more than 35 years. The United Nations' World Health Organization (WHO) published its review of EMF research in June 2007. This report, which presents the findings of the latest scientific research on EMF, concludes that EMF has not been established as a cause of any disease or illness; that statistically based epidemiology studies provide "limited" evidence of an association between EMF and childhood leukemia; but that controlled laboratory studies do not provide any support for that association.

**DEFINITION:** *Electric fields are created by voltage; magnetic fields are created by the flow of electric currents – the higher the current, the greater the magnetic field. Magnetic fields are measured in units called gauss (G) or milligauss (mG).*

## **Key Conclusions of the WHO Report**

1. "[T]here are no substantive health issues related to ELF\* electric fields at levels generally encountered by members of the public."
2. "Virtually all of the laboratory evidence and the mechanistic evidence fail to support a relationship between extremely low-level (ELF\*) magnetic field exposure and changes in biological function or disease status."
3. Present EMF exposure guidelines (800 mG for magnetic fields) provide adequate public health protection from all known adverse effects from EMF. (Fields from transmission lines are typically only a very small fraction of the guideline levels).
4. "[E]lectric power brings obvious health, social and economic benefits, and precautionary approaches should not compromise these benefits."

## **What Is PHI Doing about EMF?**

PHI follows EMF scientific research developments and evaluates appropriate precautionary measures for possible use to reduce EMF around its transmission facilities, where they can be employed at low cost and are appropriate and technically feasible in the circumstances. Some of these include:

### **REVERSE PHASING**

When two sets of wires are run side-by-side on a transmission line, the phases of each set of wires sometimes can be installed in reverse (opposing) order; the magnetic fields from the wires of each phase will then partially cancel each other out. This measure can be utilized when designing a transmission line with two sets of wires/phases, and sometimes when an additional set of wires is added to an existing line.

### **COMPACT WIRE SPACING**

This design method brings the wires closer together either on a pole or in an underground duct. This may result in the magnetic fields of each individual wire partially canceling out the magnetic field of the adjacent wires.

### **RIGHT-OF-WAY UTILIZATION**

In some circumstances, it may be possible to place a new facility within an existing right-of-way, which may limit new field exposures.

## What Does PHI Say about EMF?

- Safety for all is PHI's number one value. It is a constant consideration as we design, operate and maintain our power delivery systems.
- PHI actively works with relevant government bodies, scientific research organizations and industry standards bodies to keep up to date on current scientific information about all health aspects of transmission design, siting and construction.
- PHI evaluates the use of reasonable and appropriate cost-effective precautionary measures to reduce EMF from its transmission facilities and employs them where practicable.
- As the scientific community continues to study EMF, we will continue to evaluate relevant recommendations from credible sources and will incorporate them into our operations as warranted.
- PHI respects the fact that some members of the public may have concerns about possible health effects of EMF, and we will share with them the information published by WHO, the National Institute of Environmental Health Studies (NIEHS), the Centers for Disease Control (CDC) and others. PHI will respond promptly and openly to questions regarding EMF and our transmission facilities; when appropriate, we will provide respected scientific experts to answer detailed questions about biological and health matters related to EMF.

### More Information

- For more information on the United Nations-World Health Organization (WHO) June 2007 survey of current EMF research, contact the WHO Media Center:

[mediainquiries@who.int](mailto:mediainquiries@who.int) or (Tel) 41-22-791-2222

- For more detailed information and technical data on EMF and power lines, visit the National Institute of Environmental Health Sciences (NIEHS) online at:

<http://www.niehs.nih.gov/health/topics/agents/emf/>

- You can read or download the National Institute of Environmental Health Sciences (NIEHS) booklet, "Electric and Magnetic Fields Associated with the Use of Electric Power: Questions and Answers," at:

<http://www.niehs.nih.gov/health/topics/agents/emf/docs/emf2002.pdf>

- If you would like to speak to a PHI representative or request more information about electric transmission facilities and EMF, please send an e-mail to:

[enviroinfo@pepco.com](mailto:enviroinfo@pepco.com)

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\* **ELF**: The term **ELF** is commonly used to describe the **extremely low frequency electric and magnetic fields (EMF)** associated with the generation, transmission and use of electric power, and to distinguish these fields from those produced by other frequencies, such as radio frequency fields from cellular phones and other sources.