



Loss Control Department
Technical Information Paper Series

Electromagnetic Fields

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Electromagnetic Fields

Every one is exposed to the electric and magnetic fields (EMFs), the invisible lines of force that surround all electric wires and devices whenever electric current flows. (In fact, electrical fields exist around electrical devices connected to the power source even when they are turned *off*.)

Workers in some occupations, such as radio technicians, have exposure to electromagnetic fields that present reasonably well understood hazards; extensive safeguards must be employed to prevent adverse health effects. Similar exposures may also exist for individuals who work near communication antennae found on many buildings. Extensive regulations and recommendations are published by the Federal Communications Commission, and are available through their website (www.fcc.gov). Although OSHA does not have specific regulations covering radio frequency exposure, the FCC regulation may be used as the basis of a “general duty” citation.

Sub-radio frequency EMFs, including those associated with power lines, are known as Extremely Low Frequency Electromagnetic Fields (ELF-EMFs). Workers may be exposed to high magnetic fields if they work near electrical systems that use large amounts of electric power (for example, large electric motors, generators, transformers, etc.) The strength of the magnetic field is dependent on the equipment design and current flow, *not simply the size or voltage used*.

Recently, some studies have raised questions about possible health effects of ELF-EMFs. While the majority of studies conclude that there is insufficient evidence to suspect adverse health effects from ELF-EMFs, there is still considerable scientific debate and research is still proceeding.

Two variables can be measured for all types of EMFs: the *frequency* and the *field strength*. The American Conference of Governmental Industrial Hygienists has published exposure limits for ELF-EMFs. Because of the continued scientific uncertainty of harmful effects, these values approximate background levels

Articles in the public press and concern among the working population spurs employers to develop policies on ELF-EMFs. NIOSH recommends the following simple, inexpensive measures for reducing exposures:

- Inform workers about the *possible* hazards of electromagnetic fields.
- Increase workers’ distance from EMF sources. Since magnetic fields drop off dramatically within about three feet of the source, workers can stand back from electrical equipment, and workstations can be moved out of the three-foot range of stronger EMF sources.
- Use low EMF designs where possible.
- Reduce EMF exposure times.

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