Electromagnetic Field Litigation: A Growing Issue for Real Estate and Building Concerns

Bill S. Forcade

There is a growing public concern that electromagnetic fields cause personal injury or property damage. That concern is expressed in toxic tort litigation, commercial property transactions, and insurance considerations. Because the number and variety of conflicts is increasing, it is important for prudent property managers to understand what this conflict is about, what kind of situations prompt EMF conflicts, what the courts have done, and what to do to reduce the risks of an EMF conflict.

Wherever there is electric power, electric and magnetic fields are produced by that power. As a general rule, where the power source is direct current, such as industrial electroplating or batteries, the electric and magnetic fields are independent. However, the electric current in electric generating plants, electric transmission lines, industry, businesses and homes is alternating current: current that varies with a frequency of 60 cycles per second (60 Hz.). As the frequency of the electric power variation increases, the electric and magnetic fields become more coupled, and are more properly described as an electromagnetic field. Commonly, EMF are defined as electromagnetic fields with frequencies from 0 to 300 GHz. This includes:

- Static fields (0 Hz): Magnetic levitation trains for public transportation, magnetic resonance imaging devices used in medicine, batteries, and electrolytic devices using direct electric currents for materials processing in industry,
- Extremely low frequency (ELF) fields (0 to 300 Hz): Trains for public transport, any device involved in the generation, distribution or use of (60hz) electric power,
- Intermediate frequency (IF) fields (300 Hz to 10

Bill S. Forcade is a partner in the Chicago office of Jenner & Block. He may be reached at bforcade@jenner.com.

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MHZ): Anti-theft and security devices, induction heaters and video display units, and

- Radio-frequency (RF) fields (10 MHZ to 300 GHz): Mobile telephones or telecommunications transmitters, radars, video display units and diathermy units.

Electric fields are typically measured in Volts per meter ("V/m"), and typical exposures at the home and workplace are from 5 to 10 V/m. Electric fields at ground level under a power transmission line may be 10,000 V/m, which is sufficiently high to cause fluorescent tubes to glow. Transmission line workers may have mean exposure values from 50 to 5,000 V/m. Magnetic fields are measured as magnetic flux density, typically expressed in microtesla ("μT") or milligauss ("mG"), where 1 μT = 10 mG. Typical magnetic field exposures at the home and office range from 0.01 to 0.08 μT.

Concerns About EMF

Generally, people will take some concrete action regarding EMF only if they have a significant perception of risk, and there is a triggering event. Clearly, a large number of people perceive EMF as a potential risk. In 1999, USA Today conducted a survey of 4,567 readers and reported that EMF are the number one environmental concern in America. On August 25, 2000, ZD Net, a popular electronic technology news magazine had an article, "Is Your Cell Phone Frying Your Brain?" ZD Net users were asked, "Do you think cell-phone use is hazardous to your health?" Of the 11,000 people responding, 54% said yes, 24% said no, and 23% said they would wait for completion of the government studies before deciding. Nearly every month some major newspaper or periodical has a significant article on possible links between EMF and an adverse health impact.

Individual perception of risk may vary widely depending on age, gender, background and other factors. People are more likely to accept a perceived risk if they know about it in advance and if they find some personal benefit from the activity. They are less likely to accept the risk if they are not informed in advance, lack personal control over the risk, or derive little personal benefit from the exposure, such as may be the case with installation of new power lines or EMF discovered in schools.

The second factor prompting EMF action is a triggering event. That may be someone developing a serious health effect such as cancer, or the announcement of construction of a nearby high voltage power line. But the triggering event might have a less obvious connection with EMF, such as a business transaction to purchase property or their child starting in a new school.

Once people become concerned about EMF around a triggering event they want to take some action. This may involve only investigating the issue or complaining to responsible parties. However, several factors can exacerbate their fears and prompt vigorous action. Obviously anyone who perceives that they are not receiving accurate, complete or candid information is more likely to take additional action. Second, people may become alarmed if they discover that their exposure levels exceed typical values.

One issue has only marginal impact on the decision to take action: a strong scientific basis for concluding that EMF cause harm. There is a strong scientific connection between exposure to asbestos and specific health consequences. Presently no such data exists for EMF. Any future strong scientific connection between EMF and specific health consequences would greatly increase the likelihood of personal action. But the absence of a strong scientific connection between cause and effect may not preclude such action.

Legal Conflicts

Most people are aware that there has been a great deal of litigation by homeowners against adjacent high power electric lines or cell phone towers and some litigation by cell phone users against manufacturers. But the EMF conflict has a broader scope, including litigation, property transactions, and insurance coverage issues.

EMF litigation typically includes personal injury claims or claims of property damage or devaluation. This toxic tort litigation may be founded in trespass, nuisance, products liability, inverse condemnation, eminent domain or other theories.

Personal injury claims based on EMF exposure have not fared well in the courts, because no one has presented persuasive scientific evidence that EMF cause particular adverse health effects. Property claims have been much more successful in the courts. Most of the property claims have asserted that EMF have diminished the value of the property, because the public fears regarding EMF reduce the amount buyers will pay for property subject to such exposure. These claims are usually brought under theories of trespass, inverse condemnation or eminent domain. Courts have applied four general theories to awarding diminished valuation damages related to public fears: the liberal (majority) view, the intermediate view, the conservative (minority) view, and the preemption view.

The majority, or liberal, view holds that landowners can be compensated for decreased valuation of their property due to public fears, whether that fear is reasonable or not. The leading majority view case, San Diego Gas & Elec. Co. v. Daley,[1] involved a condemnation proceeding for construction of overhead power lines. The jury awarded the property owner $190,000 for the condemned property and $1,035,000 for the diminished value to the remaining property due to public fears from EMF. The Court of Appeals affirmed that the issue before the court was not whether EMF cause health hazards, but whether the fear of danger from the

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power lines affected the property's market value. Daley was also awarded $486,066.68 in interest and in litigation expenses. Similarly, in Florida Power & Light Co. v. Jennings,[2] the court held that "all evidence relevant to the issue of full compensation is admissible in eminent domain proceedings. The public's 'fear' as a factor which may be relevant to the issue of just compensation may be utilized as a basis for an expert's valuation opinion regardless of whether or not this fear is objectively reasonable."

The intermediate view is exemplified by Dunlap v. Loup River Public Power District,[3] involving construction of an overhead power line on a farm. The Nebraska Supreme Court affirmed the award of damages, stating that while general fears should not be compensable, if there is a basis in experience for the fears, and the fears are reasonable and affect the price a purchaser of land is willing to pay, the loss should be compensable. Similarly, in Willsey v. Kansas City Power & Light,[4] the court affirmed a three part test for the intermediate view, originally employed in Texas, ruling that "fear in the minds of the buying public on the date of taking is relevant to the proof of damages when the following elements appear: (1) that there is a basis in reason or experience for the fear; (2) that such fear enters into the calculations of persons who deal in the buying and selling of similar property; and (3) depreciation of market value because of the existence of such fear." Nearly all recent intermediate view case law has allowed diminished valuation damages for public fear of EMF from power lines. Thus the intermediate view provides the same result as the liberal view for such cases.

The minority (conservative) view holds that compensation for loss of value due to public fears is never compensable.[5] Most of the conservative view cases were decided before the current publicity and scientific studies regarding EMS, and the clear direction of recent court decisions is toward the majority view.

A more recent judicial development is the California Supreme court decision that judicial evaluation of property devaluation claims from EMS is preempted. The Covalts owned a single-family residence in San Clemente. They sued San Diego Gas & Electric, which ran electric currents through power lines on adjacent property. The court assumed that the Covalts could establish that EMF radiation substantially and unreasonably interfered with use of their property. However, permitting such a cause of action would interfere with the Public Utility Commission's policy on powerline EMF, which would violate Public Utility Code section 1759. Therefore, judicial evaluation of property value impacts from EMF is preempted by the utility code.[6]

The recovery theories for property devaluation due to EMF are important because of the significant potential impacts nationwide. The July 1992 issue of Science magazine concluded that "over one million homes and 10 million acres of land in the United States are sufficiently close to high-voltage transmission lines that levels of EMF exceed what is considered normal." A one percent loss in property value could result in $1 billion in damages.[7] Some property valuation experts have estimated the property devaluation from EMF and power lines averages 20%.[8] Susan Coveny, president of RE/MAX Prestige, a realty agency in Long Grove, Ill., says a home near a power line can sell for 30 to 35 percent less than a comparable house at some distance away.[9]

Even without a claim of personal injury, damage awards can be quite high. In 1996 a New Jersey jury awarded a couple $762,524 for negligent infliction of emotional distress, trespass, inverse condemnation and nuisance resulting from the utilities construction and operation of an underground power line outside of the right of way. The jury unanimously rejected the plaintiffs' theory that EMF caused his leukemia.[10]

Although most of the EMF litigation is filed against those operating overhead power transmission lines, there are other areas of growing litigation concern. Real estate developers could be subject to litigation by disgruntled purchasers claiming failure to disclose nearby power lines. And, as discussed below, residential and commercial building owners and managers can be subject to suit from tenants based on potentially faulty building wiring that causes high EMF levels.

There are two important unrecognized aspects to past EMF litigation. First, nearly all prior cases have been filed against a public utility, or product manufacturers that are large, well funded entities where EMF are a central aspect of their products or activities. Realistically, these entities cannot settle a case claiming adverse health effects from EMF, or leave an adverse judgment unappealed, for fear that such action would prompt a flood of additional litigation. They must provide a maximum defense against any and all such claims, even if legal and scientific expert costs are quite high. If plaintiffs commence actions against less well funded companies or against entities where EMF are only incidental to their operations, the results may be quite different.

Many large industrial facilities have substantial electrical distribution equipment within their facility that produce EMF. Commercial and residential property owners are responsible for the internal electrical systems, and the EMF, within their premises. There are many small companies that manufacturer products, such as electric blankets, that produce EMF. Schools, in particular, may find it politically difficult to present an aggressive legal defense if they are charged with having high EMF levels in the classroom. If plaintiffs begin to focus on these entities, the defendants may not present as spirited and well funded a defense, or they may settle, or they may accept adverse lower court rulings. This could significantly change the character of the EMF case law.

Second, EMF litigation is profoundly dependent upon the character of the most recent scientific studies on the health effects of EMF. Even a single reputable scientific study showing that EMF are a direct cause of

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an adverse health effect could lead to an explosion in litigation.

Non-Litigation Conflicts

Litigation is not the only area with significant conflicts relating to EMF. Public concerns, including concerns from home owners, businesses, tenants and inside contractors have changed the way we address EMF. Some have added EMF contingency clauses to purchase or lease contracts. Similar concerns are arising in the representations and warranties section of documents for industrial and commercial property transactions.

These concerns have not been lost on the insurance industry. Most commercial general liability insurance policies cover all contingencies that are not specifically excluded. As a result, EMF claims are likely to be covered under the policy. That position may be changing. Some insurers have recently expanded the pollution exclusions to include electric, magnetic, and electromagnetic contaminants and radiation. Some commentators have suggested that now is the time for insurers to act proactively, as with the Y2K problem, and amend insurance coverage forms so as to specifically exclude or limit coverage on claims arising from EMF exposure.[11]

Some states preclude general exclusion of EMF claims in insurance policies. The Maine Department of Professional and Financial Regulation, Bureau of Insurance has policies that preclude a general EMF exclusion for Commercial General Liability and Non-Medical Professional Liability insurance. For programs filed to cover risks associated with a high EMF exposure, any exclusions must be supported by claims data.

Parties Involved In EMF Conflicts

Clearly the public has targeted electricity power lines and cell phone manufacturers as likely EMF targets. But the available data shows that for many individuals these sources may not be the most likely source of high EMF exposure. One frequently overlooked area of significant potential exposure is the buildings in which people live or work.

It is very common for magnetic field interference problems to emerge following a building remodel or upgrade, but these problems can be anticipated and avoided. In one instance measurements, combined with computer projections confirmed that substantial levels -- in the tens of milligauss (mG) -- of magnetic fields would exist in tenant areas adjacent to the new facility, including the second-floor law offices. Corrective action kept actual EMF levels near typical office levels.[12]

Improper wiring can also lead to EMF problems. If a four-wire three-phase circuit (service feeder/riser busway) is unbalanced by more than 15% or the neutral has excessive net, ground, or plumbing currents, then the magnetic field levels become highly elevated and a serious EMF threat. Stray grounding currents in the building steel, HVAC ducts, and metal conduits plus plumbing currents on the water pipes also generate highly elevated levels. Significant ground currents not only produce very high magnetic fields, but are also indicative of electrical wiring problems.

This problem is not unique to the industrial and commercial workspace. In 1994, a faculty member at the Community College in New York City, found very high magnetic field levels between 35-150 mG (waist height) in the college fitness center and two adjoining areas (wrestling room and offices) located above four transformers, four network protectors, and the main electrical room. A subsequent ELF EMF contour survey study found, at the peak spot in the fitness center, the estimated worst case school-in-session floor levels were 850-mG.[13]

Information on EMF levels is becoming widely available. The EMF Measurements Database is a project sponsored by the U.S. Department of Energy through the EMF Research and Public Information Dissemination (EMF RAPID) Program. The purpose of the project is to make measurements of electric and magnetic fields publicly available. Its Web site, http://www.emf-data.org/, allows the public to download a substantial amount of information on EMF levels in a variety of settings.

Reducing Risk

There are several steps for prudent companies to take to minimize exposure to adverse publicity, vexatious litigation, and possible financial awards regarding EMF. First, they should check their general liability and other insurance policies for coverage. If they have transferred property to or from others, the transactional documents or lease may have provisions that might shift the risk to other operations. If companies remain unsatified with insurance coverage or liabilities, they should find acceptable coverage before proceeding with other evaluations (and give serious consideration to a "claims made" policy coverage).

If companies are satisfied that they have appropriate coverage for any potential claims, they may wish to investigate the nature of any EMF associated with their location, their business activities or their product. There are many competent consultants that can give an in-depth EMF report. But, businesses also can purchase simple EMF meters for under $200. Keep in mind that this helps to develop information that may be subject to discovery in any future litigation. Therefore, it may be appropriate to contact legal counsel about having investigative studies conducted under the protections of attorney-client privilege. Because small handheld EMF meters are so inexpensive, it is not unreasonable to assume that employees, tenants, customers or others may measure EMF values, too. In addition to present activities, companies should keep EMF risk management in mind as they acquire or divest properties.

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Investigating the EMF values of business locations, activities or products may help avoid some nasty surprises. In a May 29, 2001 Complaint, in Arthur R. Slater, et al. v. City of Albuquerque,[14] county employees allege that they developed breast cancer because of exposure to electromagnetic field radiation and toxins while working in the basement of the county courthouse. The complaint states that, "The statistical probability that three men working in the same office will get breast cancer by chance alone is less that one in a trillion." The complaint also alleges that the county was aware that EMF exposure, "has been excessively high, at times in excess of 450 milliGaus . The industry standard for EMF strength is 3 milliGaus or less." As mentioned earlier, typical home and office exposures are about 0.01 to 0.08 μT. No one wants the adverse publicity, litigation exposure or surprise of learning their EMF levels are far above average, whether or not those EMF values will cause adverse health effects.

If a company's evaluation shows levels above average, the company could consult an expert on ways to reduce those values. Many high EMF readings are the result of improper wiring or faulty equipment and can be corrected easily and inexpensively. If the problem turns out to be more complex, at least the company can make an intelligent decision on how to proceed.

In addition to evaluating EMF levels, companies may wish to acquire more information about EMF exposure or to distribute appropriate information to employees, tenants, or customers. Be very careful in any such effort. Even a properly conducted educational program intended to reduce public fears can substantially increase the pubic fear of EMF. Efforts to reduce public fears may only make them worse.

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[1] 253 Cal.Rptr. 144 (Cal.Ct.App.1988).

[2] 518 So.2d 895, 897 (Fla.1987).

[3] 284 N.W. 742 (Neb. 1939).

[4] 631 P.2d 268 (1981).

[5] See, Alabama Power Co. v. Keystone Lime Co., 67 So. 833 (Ala. 1914), Central Ill. Light Co. v. Nierstheimer, 185 N.E.2d 841 (Ill. 1962), and Chesapeake & Potomac Tel. Co. v. Red Jacket Consol. Coal & Coke Co., 121 S.E. 278 (W. Va. Ct. App. 1924).

[6] San Diego Gas & Electric Co. v. Superior Court, 13 Cal.4th 893, 55 Cal.Rptr.2d 724, 920 P.2d 669 (Cal Sup. Ct. Aug. 22, 1996).

[7] Roy W. Krieger, On the Line, A.B.A. Journal, Jan. 1994, at 40, note 7 at 45.

[8] The Philadelphia Inquirer, Friday June 3, 1994, Section E, pg. 1.

[9] Gary Stix, "Are power-line fields a dead issue?" Scientific American, March 1998.

[10] John R. and Sandra H. Altoonian v. Atlantic City Electric Company, No. CPM-L-1342-91; N.J Super., Cape May Co.

[11] David Thamann, "EMF Claims Could Still Overwhelm Insurers, 45 National Underwriter Property & Casualty-Risk & Benefits Management Vol 103, pg. 6 November 8, 1999.

[12] Jon Munderloh, "Unseen, but not Unforeseeable - Tips abound on managing electro-magnetic interference" Buildings, Vol. 93, no. 3, March 1999.

[13] http://www.vitatech.net/pub6.html.

[14] No. 2001-3644, N.M. Dist., Bernillo Co.