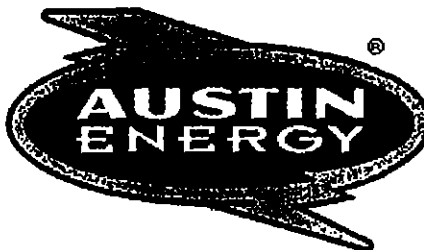


55
10/28/04



TO: Mayor and Council Members
Toby Hammett Futrell, City Manager

FROM: Juan Garza, General Manager

A handwritten signature in black ink, appearing to read "Juan Garza".

DATE: October 28, 2004

SUBJECT: Item 55 - Consider action on an appeal by Irma Arrieta of the Zoning and Platting Commission's decision to deny a conditional use permit for day care services (General Use) at 308 W. William Cannon.

This memo provides responses to questions Council posed at the October 21 meeting at the conclusion of the public hearing. There is no scientifically proven cause-and-effect relationship between EMF generated from transmission lines and human health. There has been some statistical association between exposure to electricity and human health, but this association does not mean nor is synonymous for cause, it merely means co-relation.

The magnetic field level around a transmission and distribution line is far below the level of studied or observed cases of human physiological changes. An attached file explains some of the health issues relating to EMF including detailed studies and measurements of magnetic field levels inside and outside of a residential house, office environment, and power lines. The sources of the information in this file are: the Los Angeles Department of Water and Power (<http://www.ladwp.com/aboutdwp/enviro/emf/emf.htm>) and the CDC's National Institution for Occupational Safety and Health (<http://www.cdc.gov/niosh/emfpg.html>, <http://www.cdc.gov/niosh/emf2.html>, <http://www.niehs.nih.gov/emfrapid/html/Q&A-Workplace.html>).

In addition, we have not received any complaints from individual schools or AISD administration regarding health of schoolchildren and power lines. We are aware that some citizens, for example in the Holly Neighborhood, have expressed concerns in the past about human health and electric power facilities.

Please let me know if you have any additional questions.

Understanding EMF

Electric and Magnetic Fields

Can EMF Harm Your Health?

Electric and magnetic fields (EMF) are present wherever electricity flows - around appliances, power lines, in offices, schools and homes. Many researchers believe that if there is a risk of adverse health effects from EMF, it is probably low but warrants further investigation. Most, but not all, childhood studies have reported a weak association between estimates, but not direct measures, of residential magnetic field exposure and certain types of childhood cancer. Worker studies have shown mixed results. Laboratory experiments have shown that magnetic fields can cause changes in living cells. It is not clear whether these changes suggest any risk to human health.

Given the uncertainty of the issue, the medical and scientific communities have been unable to determine that EMF causes health effects or to establish any standard or level of exposure that is known to be either safe or harmful.

What Is Being Done About EMF ?

As a result of a 1993 decision by the California Public Utilities Commission, an EMF research and information program has been established. This program is managed by the California Department of Health Services (CDHS) and funded by utility rate payers. The purpose of the program is to perform research and policy analysis, and provide education and technical assistance to benefit Californians. Input to the CDHS is provided by a Stakeholders Advisory Consultant Group (SAC), consisting of representatives of the public, consumer groups, health and scientific experts, and labor and utility representatives. Additional input can be provided by state agencies, consultants, and special interest groups during the open forum discussion periods at the SAC meetings. These meetings are open to the general public. Financial support by utilities of the \$65-million federal program is continuing.

What You Can Do?

Studies of EMF have not shown that people need to change the way they use electric appliances or equipment. But if you feel reducing your exposure would be beneficial, you can increase your distance from electric appliances and/or limit the amount of time you use appliances at home or at work.

For instance:

- You can place telephone answering machines and electric clocks away from the head of your bed.
- You can increase your distance from appliances such as televisions, computer monitors and microwave ovens.
- You can also reduce your EMF exposure by limiting the time you spend using personal appliances such as hair dryers, electric razors, heating pads and electric blankets.
- You can limit the time you spend using electric cooking appliances.
- You can locate sources of EMF in your work environment and spend break time in lower-field areas.

It is not known whether such actions will have any impact on your health.

"To Summarize..."

- EMF exists wherever there is electricity: in homes, in workplaces and near power lines. Electric fields exist whenever equipment is plugged in, but magnetic fields exist only when equipment is turned on. Both types of fields get weaker with distance from their source.

The Two Types of Fields

60-HERTZ MAGNETIC FIELDS	60-HERTZ ELECTRIC FIELDS
Can pass through most objects.	Can be blocked or partially shielded.
Get weaker with distance.	Get weaker with distance.
Are created by the current - or flow of electricity - through a wire, such as when an appliance is turned on.	Are produced by the voltage - or electrical "pressure" - in a wire, such as when an appliance is plugged in (but not turned on).

Magnetic Field Measurements

Magnetic Fields in the Home

Measurements are in milligauss (mG)

Home Appliances at	1.2" away	12" away	39" away
<i>Microwave Oven</i>	750 to 4,000 mG	40 to 80 mG	3 to 8 mG
<i>Clothes Washer</i>	8 to 400 mG	2 to 30 mG	0.1 to 2 mG
<i>Electric Range</i>	60 to 2,000 mG	4 to 40 mG	0.1 to 1 mG
<i>Fluorescent Lamp</i>	400 to 4,000 mG	5 to 20 mG	0.1 to 0.3 mG
<i>Hair Dryer</i>	60 to 20,000 mG	1 to 70 mG	0.1 to 3 mG
<i>Television</i>	25 to 500 mG	0.4 to 20 mG	0.1 to 2 mG

Source: Adapted from Gauger 1985

Magnetic Fields Outside

Distribution Lines	1 to 80 milligauss under the line
Transmission Lines	1 to 300 milligauss edge of right-of-way

Research Is Ongoing

A number of research studies are now under way to determine if magnetic fields do pose any health risk and, if so, what aspect of the fields might be harmful. For example, at this time, no one knows

What *DO* studies show about the health effects of EMFs in workers?

Many studies report small increases in the rate of leukemia or brain cancer in groups of people living or working in high magnetic fields. Other studies have found no such increases. The most important data come from six recent studies of workers wearing EMF monitors to measure magnetic fields. All but one study found significantly higher cancer rates for men with average workday exposures above 4 milligauss. However, the results of these studies disagree in important ways such as the type of cancer associated with EMF exposures. So scientists cannot be sure whether the increased risks are caused by EMFs or by other factors. A few preliminary studies have also associated workplace EMFs with breast cancer, and one study has reported a possible link between occupational EMF exposure and Alzheimer's disease.

The data from all of these studies are too limited for scientists to draw conclusions. However, a national research effort is under way, and more study results are expected in a few years.

Have limits been set for worker exposures to EMFs?

Because of the scientific uncertainty, no federal limits for worker exposures to EMFs have been recommended or established in the United States. Two private organizations have developed guidelines to protect workers from the known effects of extremely high exposures (that is, those more than 1,000 times the exposures typically found in occupational environments). However, these guidelines do not address the possible health effects of the low EMF exposures usually found on the job.

Should workers and employers try to reduce exposures to EMFs?

The National Institute for Occupational Safety and Health (NIOSH) and other government agencies do not consider EMFs a proven health hazard. Because some studies have associated high magnetic field exposures with increased cancer risks, the government will continue studying EMFs. While research continues, concerned workers and employers might consider the following simple, inexpensive measures for reducing EMF exposures:

- Inform workers and employers about possible hazards of magnetic fields.
- Increase the worker's distance from the EMF source. Since magnetic fields often drop off dramatically within about 3 feet of the source, workers can stand back from electrical equipment, and work stations can

Lowest	1	-	-	-
Median	300	1	-	-
Highest	700	70	10	1
Electric Shavers				
Lowest	4	-	-	-
Median	100	20	-	-
Highest	600	100	10	1

Magnetic field measurements in units of milligauss (mG).

Source: *EMF In Your Environment*, EPA 1992.

KITCHEN SOURCES

Distance From Source	6"	1'	2'	4'
Blenders				
Lowest	30	5	-	-
Median	70	10	2	-
Highest	100	20	3	-
Can Openers				
Lowest	500	40	3	-
Median	600	150	20	2
Highest	1500	300	30	4
Coffee Makers				
Lowest	4	-	-	-
Median	7	-	-	-
Highest	10	1	-	-
Electric Slow Cookers				
Lowest	3	-	-	-
Median	6	1	-	-
Highest	9	1	-	-
Dishwashers				
Lowest	10	6	2	-
Median	20	10	4	-
Highest	100	30	7	1
Food Processors				
Lowest	20	5	-	-
Median	30	6	2	-
Highest	130	20	3	-
Garbage Disposals				
Lowest	60	8	1	-
Median	80	10	2	-
Highest	100	20	3	-
Microwave Ovens				
Lowest	100	1	1	-

Highest	3	1	-	-
Color TV's				
Lowest	-	-	-	-
Median	-	7	2	-
Highest	-	20	8	4
Black and White TV's				
Lowest	-	1	-	-
Median	-	3	-	-
Highest	-	10	2	1

Magnetic field measurements in units of milligauss (mG).

Source: *EMF In Your Environment*, EPA 1992.

LAUNDRY/UTILITY ROOM SOURCES

Distance From Source	6"	1'	2'	4'
Electric Clothes Dryers				
Lowest	2	-	-	-
Median	3	2	-	-
Highest	10	3	-	-
Washing Machines				
Lowest	4	1	-	-
Median	20	7	1	-
Highest	100	30	6	-
Irons				
Lowest	6	1	-	-
Median	8	1	-	-
Highest	20	3	-	-
Portable Heaters				
Lowest	5	1	-	-
Median	100	20	4	-
Highest	150	40	8	1
Vacuum Cleaners				
Lowest	100	20	4	-
Median	300	60	10	1
Highest	700	200	50	10

Magnetic field measurements in units of milligauss (mG).

Source: *EMF In Your Environment*, EPA 1992.

Sewing machines: Home sewing machines can produce magnetic fields of 12 mG at chest level and 5 mG at head level. Magnetic fields as high as 35 mG at chest level and 215 mG at knee level have been measured from industrial sewing machine models (Sobel 1994).

BEDROOM SOURCES

Distance From Source	6"	1'	2'	4'
Digital Clock				
Lowest	-	-	-	-

Distance From Source	6"	1'	2'	4'
Air Cleaners				
Lowest	110	20	3	-
Median	180	35	5	1
Highest	260	50	8	2
Copy Machines				
Lowest	4	2	1	-
Median	90	20	7	1
Highest	200	40	13	4
Fax Machines				
Lowest	4	-	-	-
Median	6	-	-	-
Highest	9	2	-	-
Fluorescent Lights				
Lowest	20	-	-	-
Median	40	6	2	-
Highest	100	30	8	4
Electric Pencil Sharpeners				
Lowest	20	8	5	-
Median	200	70	20	2
Highest	300	90	30	30
Video Display Terminal (PCs With Color Monitors) (See note following)				
Lowest	7	2	1	-
Median	14	5	2	-
Highest	20	6	3	-

Magnetic field measurements in units of milligauss (mG).

Source: *EMF In Your Environment*, EPA 1992.

Note: The United States has set no standards for magnetic fields from video display terminals (VDTs). The Swedish government issued guidelines recommending that VDTs purchased by the government produce magnetic fields of no more than 2.5 mG at a distance of 50 cm (approximately 1 ft, 8 in.) from the VDT surface. This government procurement standard has become a de facto standard in the VDT industry worldwide.

Typical EMF levels for transmission lines at a distance of about 350 ft, at time of average demand, the magnetic field from many lines can be similar to typical background EMF levels found in most homes. As the chart shows, the distance at which the magnetic field from the line becomes indistinguishable from typical background EMFs differs for different types of lines. Neighborhood distribution lines can also sometimes produce significant magnetic fields, depending on the amount of current they carry.