

Nov. 10, 2000
Minutes
Lightning Data Center
St. Anthony Hospital

Quote of the Month:

"Air must be stable to convey sound far. An exploding bomb can be heard across the English Channel on a still day, but nobody in England has ever heard a French Thunderstorm. The reason is that there would have been no thunderstorm if the air were stable enough to hear sound that far."

T. Morris Longstreth, *Knowing the Weather*, 1943

1. Meeting began at 11:30 am and adjourned at 1:15 pm.

2. Members present: Anderson, Arendt, Bauling, Chambers, Cherington, Cohen, Collier, Gibbs, Kummerfeldt M, Kummerfeldt P, Langford, Lines, Minzer, McDonough, Schomburg, Sellon, Smith, Wachtel, Wallace, Zajac

3. I brought the following articles from the literature (abstracted in part here):

a. Anderson LE, Morris JE, Sasser LB, Loscher W. Effects of 50- or 60-Hertz, 100 uT Magnetic Field Exposure in the DMBA Mammary Cancer Model in Sprague-Dawley Rats: Possible Explanations for Different Results from two Laboratories. *Environ Health Perspect* 2000;108:797-802.

"Electric and magnetic fields (MF) associated with the production, transmission, and use of electricity are ubiquitous in industrialized societies. There is an ongoing controversy about whether exposure to power-line frequency (50- or 60-Hz) MF is a risk factor for cancer...In line with the possible relationship between electric power and breast cancer risk and the underlying melatonin hypothesis, 50-Hz magnetic field (MF) exposure at microtesla flux densities for either 13 or 27 weeks significantly increased the development and growth of mammary tumors in a series of experiments from Loscher's group in Germany...The finding could not be replicated when a similar experimental protocol was used in a study conducted by Battelle in the United States. In the present paper, investigators from the two groups discuss differences between their studies that might explain the apparent discrepancies between the results... different substrains of Sprague-Dawley rats..different sources for diet..differences in environmental conditions, and differences in MF exposure metrics."

b. Auer J. Cardiac Involvement in Lightning Strike Injury. *Clin Cardiol* 2000;23:386.

"The 29 year old coach of a soccer team...Lightning struck the man, knocking him to the ground...Typical patterns of spiker-like cutaneous burns were present at the abdominal skin and chest wall. The electrocardiogram revealed marked disorder on repolarization..The patient recovered..within two days."

4. Peter Kummerfeldt brought the following articles (abstracted in part):

a. Kummerfeldt P. Lightning Incident. *The Backcast*. 2000;26:4-5.

Peter interviewed a fishing guide who was struck. "A fishing guide had been hit by lightning..that afternoon {Sept 1} while drifting the Snake River..Guide and two 60 year old clients from Pennsylvania had stopped fishing and were rowing to the takeout point...The storm cell looked more severe than the average thunderstorms...There was no avoiding this cell. I made the choice to go ahead and push through it. It turned out to be the wrong move...A guide in another nearby boat witnessed the strike and called 911 using a cell phone..A Flight-for-Life helicopter was on scene within ten minutes and airlifted the guide and one client to Idaho Falls...What would you do different if faced with a similar weather situation in the future? Get off the water: take shelter wherever that may be...In this instance the guide and the client regained consciousness spontaneously and neither were seriously injured...Moving from an area of greater risk to one of lesser risk is often all that can be done if those involved waited too long...Be proactive not reactive."

b. Ricks LB. Lightning strike downs Sabreliner. *International Aviation* 2000.

"Two pilots were killed, but their two passengers survived the crash of their company's Sabreliner near Ironwood, Mich., on August 14 after the 25-year-old midsize business jet flew through a thunderstorms and was struck by

lightning...The corporate jet...was cruising at 33,000 ft. when it encountered the thunderstorm and was subsequently struck by lightning, damaging its electrical system. Both engines also failed."

c.Pope D. The flash that kills. Utah Outdoors August 2000;pp11-12.

"On May 28, a freak thunderstorm blew up over the Oquirrh Mountains..as several school children were leaving Midvalley Elementary School. No significant thunder had been noticed, nor had any flashes of lightning been seen...The 10 year old who took a direct hit from the lightning strike did not survive."

5. We were fortunate to hear Howard Wachtel's brilliant presentation on Powerlines, Electromagnetic Fields and Childhood Leukemia.

I cannot do justice here in summarizing Howard's talk. I shall copy some of the notes I took during the presentation. For those interested, I would refer the readers to some articles written by Howard Wachtel and his colleagues. These articles are listed below.

a. Low voltage lines carry as much current as some high voltage lines. People are more likely to live near low voltage lines. Researchers have been interested in the possible link between childhood cancers and exposure to 60 Hertz magnetic fields. Researches used a wire code paradigm to study the relationship between magnetic fields and cancer.

b. Howard and his colleagues observed that vehicular traffic and "electron" traffic often overlap on maps of Denver/Boulder. High traffic and automobile exhaust produce carcinogens including benzene.

c. There are at least two factors involved in the development of cancer:
High risk groups have had exposure to both factors. Agents that damage genes, DNA --- e.g. Benzene, X-rays, etc. (EMF exposure is not an initiator). Promotional exposure. Electromagnetic Field exposure may play a role here. It is very likely the EMF exposure is greater from appliances in the house than from powerlines.

These scattered, incomplete, and inexact notes were taken during Howard's talk. They may give the reader who did not attend some idea of the topics covered. To obtain accurate and in depth information, I suggest those interested to contact Howard directly and read the articles listed here:

a. Savitz DA, Wachtel H, Barnes FA, et al. Case-control study of childhood cancer and exposure to 60-Hz magnetic fields. Am J Epidemiol 1988;128:1-38.

b. Savitz DA, Kaune WT. Childhood cancer in relation to a modified residential wire code. Environ Health Perspect 1993;101:76-80.

c. Ebi KL, Kheifets LZ, Pearson R, Wachtel H. Description of new computer wire coding method and its application to evaluate potential control selection bias in the Savitz et al. childhood cancer study. Bioelectromagnetic 2000;21:346-53.

6. These minutes reflect the comments of members present and do not represent official positions of LDC.

7. Next meeting: Friday, December 8, 2000 at 11:30 am in the Main Auditorium

of St. Anthony Central Hospital

Happy Thanksgiving.

Michael Cherington, MD
Chair, Scientific Committee, LDC