Minutes November 8, 1996 Lightning Data Center St. Anthony Hospital

Quote of the Month:

The rain to the wind said,
"You push and I'll pelt."
They so smote the garden bed
That the flowers actually knelt,
And lay lodged -- though not dead.
I know how the flowers felt.

Robert Frost --- 'Lodged'

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

2 Members present: Boyson, Cherington, Collier, Foley, Glancy, Hedegaard, Kamin, Keen, Kimberling, Larson, Rossie, Siemon, Simmons, Toler, Wachtel, Yarnell.

3 Introductions: Barry Kamin, Director of CME Department of St. Anthony Hospital; Ralph Wikke of Unsolved Mysteries.

4 a. The possible relationship between exposure to low frequency EMFs and health issues (including cancer) has been discussed here on many occasions in the past. Our member, Howard Wachtel, has contributed to the literature on this matter. Howard points out that the link between childhood cancers and power lines may not be second to EMF forces, but to other factors such as traffic density in the vicinity of power lines.
I brought a copy of Denver Post article having to do with the report of the National Research Council, an arm of the National Academy of Sciences. The panel concluded that there is no convincing evidence that exposure to electromagnetic fields from power lines presents a health hazard. Included in the article was a table of magnetic field strengths in microteslas that surround people.

Earth's magnetic background	50	microtesla
Within 50 feet of large transmission lines	2.9	
Within 6 inches of:		
Microwave oven	10-30	
Electric can opener	50-150	
Video display terminal	0.7-2	
Copy machine	0.4-20	
Power saw	5-100	

Howard asked the question: If power lines were buried underground, would the risk of childhood leukemia be reduced? His answer: No. Burying the lines might have no effect on other factors such as traffic flow, etc. I wondered if the relationship between leukemia and power lines is real. The numbers are small, at a time when the society is requiring more electrical power. Howard stated that there are about 300 cases of childhood leukemia per 1 million population.

b. I recently read an article by William Wehrmacher of Loyola University at Chicago (Compr Ther 1995) and I brought it to the meeting. He discusses the arcing or sparking of currents: "The electrical potential difference between the source supplying the electricity and the sink to which it runs off is measured in voltage. Ordinarily, in the case of electrical injury, the patient and the sink is at null potential, grounded. usually a direct contact occurs between two surface of the

victim, on with the source and the other with ground. Currents can arc, jump, or spark through short distances between the source and the victim; but these distances are much shorter that conventionally appreciated....With less than 1000 volts, the spark can jump less than 1 to 1.5 millimeters, so close...that the victim will ordinarily assume that the source was actually touched...Only a little more that a centimeter at 10,000 volts and does not reach 24 cm until the source reaches 100,000 volts. The fear that high-voltage sources other than lightning somehow reach out to grab a victim across the room is pure fiction."

c. I brought an article by S. VanDenburg et al. in Southern Med J Sept 1996 entitled "Investigation of Deaths Related to Electrical Injury. The authors list a series of questions for investigator and rescue personnel regarding electrical injuries. These questions are:

Was a safety mechanism bypassed?
Has anyone else been shocked with this apparatus?
Was the apparatus approved by Underwriters Laboratories?
Was the apparatus grounded?
What type of current was used -- AC or DC?
Were there any uninsulated points in the electrical system?
Was the injured person seen holding the apparatus? If so, in what hand?
Was there a ground fault current interruptor (GCFI), and was it functional?

The authors warn that rescue personnel and investigators should avoid needlessly placing themselves in danger.

5 The group discussed the unusual history of five members of one family who were struck by lightning over a period of several decades. The patient was struck in 1965. Her grandfather was struck and killed in 1921 in a hog house on his farm; his brother was killed by lightning in 1925. The patient's cousin was struck while holding an umbrella in the 1970s. Anton Seimen said these cases were tied together by "coincidence." He believes that in the random occurrence of things, eventually there may be a history such as this one. Rich Keen asked the important "statistical question:" How many family members resided in their state? Ron Larson suggested that a statistician be consulted to evaluate the odds and probability that 5 cases of lightning injuries could occur over several decades in one family. Ralph Wikke will ask a statistician about this and report back to us.

I discussed this family history before this meeting with several colleagues and we felt that three possible logical explanations could be considered: a. random occurrence - most likely; b. the members of this family had a physiological abnormality that made them more susceptible to lightning strikes --unlikely; and c. a metaphysical explanation. At an earlier meeting Rich Kithil reminded us that in matters of scientific inquiry, some things are unknowable.

6 Howard Wachtel stated that he will give a poster presentation in San Antonio on the subject of magnetically induced currents and their effects on the body. Howard suggests a serious sequelae such as ventricular fibrillation of the heart could be precipated by induced currents as well as by direct strikes. His data shows that the most dangerous time for injury secondary to induced currents is the beginning of the cardiac cycle (Q-RS complex).

7 Phil Yarnell presented a case of multiple sclerosis. The patient suffered electrical shocks from home outlets as a child. When she was 20 years old, her house was struck by lightning.

He presented another case of a fatal lightning strike in a women who was standing alongside a metal picnic table. Lightning struck a nearby lake and possibly a cottonwood tree. The patient said: "my legs are numb" and then collapsed. She fern like skin lesions on her thorax. Mike Foley and Ron Larson both commented they have seen 'ferning" in inanimate objects. They believe the fern pattern represents the brancing of surface currents. Ron believes photons are emitted along the skin.

8 Julie Kimberling reported on a recent meeting at which Michael Boyson, Julie and I discussed collecting data for the years 1993 to 1995 from inpatient records, ER records, and also death certificates.

9 Holly Hedegaard had already obtained the death certificate data. There were 10 fatalities during that time period. Eight were men; two were women. Bob Glancy will obtain the Storm Data figures for that same period. In the near future, we should be able to draw some conclusions with that data.

10 George Rossie reports that he is pursuing efforts to set up a Lightning Casualty Support group. He has been in touch with LS/ESI, International. He will give us an update at our next meeting.

11 Ralph Wikke reported a case of multiple sclerosis. The first symptoms began at age 18 years. The patient, now in her 40s, was struck in her bathroom when she had her hand on the bathtub. She has had a remission (1.5 years duration) since then. The members of the group discussed matters such as spontaneous remissions and other anecdotal cases of remission of disease after lightning strikes.

12 Cheryl Toler brought to the group the follow-up material pertaining to the Lightning Safety Seminar held at the hospital in August under the direction of Rich Kithil. The comments were positive. We shall discuss this report next week when Peggy Gustafson is here.

13 I distributed the "News from NLSI - Nov. 1996" that Rich Kithil sent to me via fax. That newsletter is included in this mailing.

14 Michael Foley reported on an electrocution that occurred in another state. A boy was killed after leaving a swimming pool and touched a soft beverage vending machine that was improperly grounded.

15 Richard Keen recently gave 2 lightning safety talks: a. at Fort Lewis College in Durango, and b. at the Colorado Mountain School in Boulder.
Richard provided the year end report on thunderstorm days from the Coal Creek Canyon Observatory Station. There were 80 thunderstorm days for the year 1996. The annual average = 86 days. There are rare storms in the month of November - only 3 in the past 15 years.

16 Anton Seimon provided us with a video show of a lightning strike taken by photographer, Dean Cosgrove. The large, long, continuous positive strike was captured on videotape in Oklahoma. Anton mentionned that positive strikes are more dangerous than negative flashes which are characterized by several flashes.

17 Warren Simmons reported that the U.S. Golf Association has set aside about $300,000 to purchase lightning detection equipment and computer equipment for

Colorado golf courses. We suggested he contact Global Atmospherics Inc. regarding detectors.

18 Ron Larson just returned from a two month stay in Zimbabwe. I pointed out that in the enclosed 'News from NLSI' there is a request from a college in Masvingo, Zimbabwe for articles and books relating to lightning safety. This is a worthy project. Please contact Rich Kithil for more details.

19 Next meeting: Friday the thirteenth of December, 1996 in the Main Auditorium of St. Anthony Central Hospital.

Happy Thanksgiving everyone,

M. C.

Michael Cherington, MD

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NEWS FROM NLSI, November 1996

1. The National Oceanic and Atmospheric Administration (NOAA) Next Generation Radar site at Lajes, Terceira, Azores, Portugal was investigated by NLSI. A three day site analysis and review of "best available technology" for lightning mitigation focused on grounding issues. This NEXRAD- Azores operation provides critical weather information to the nearby US Air Force aviation facility.

2. NLSI was retained by Voyager Outward Bound, Ely MN to investigate a lightning fatality which occured this past summer. NLSI used *StrikeFax* and *Faultfinder* data provided by Global Atmospherics Inc. in its consulting work.

3. The National Renewable Energy Laboratory (NREL), a part of US DOE, in Golden CO. has asked NLSI to prepare a Scope of Work proposal for Lightning Safety Guidelines for USA wind turbine designs and siting. In Europe, where the the industry is mature, lightning is a major problem. The German industry, for example, reports that 80% of insurance claims filed by wind farms are lightning-related. Are there "lessons learned" elsewhere that can be transferred to the USA wind industry?

4. NLSI has received a request from a small impoverished educational college in Masvingo, Zimbabwe (Africa) for articles, books, and other publications relating to lightning and lightning safety. We ask all readers to send any such lightning data surplus to their needs to us for onward shipment to our friends in Zimabawe. This is a worthy project. Let us know is you wish to receive a receipt for tax purposes.

5. NLSI has been invited to present a paper "*Lightning Safety: A Risk Management Approach*" at the Dec. 3-5 Natural Disaster Reduction Conference. This meeting is sponsored by the American Society of Civil Engineers.

6. NLSI will conduct a two day *Certified Lightning Safety Professional* training program in Washington DC on Nov. 19-20. Attendees includ USEPA, NOAA, Sasktel, Norfolk Southern Corp., US Navy, and Cinergy. The intent of the course is to develop in-house lightning safety expertise for organizations. This is NLSI's second such training program offered since July.

7. NLSI's WWW page (***http://www.lightningsafety.com***) soon will feature the first-ever unattended Lightning Bulletin Board, where readers may conduct monologs/dialogs on lightning subjects of their interest. In addition short technical papers by Board of Advisor members, with a direct e-mail link to them is planned. New members have been added to NLSI's Board of Advisors. They include:

a. Dick Setchell, Wisconsin Electric Power, Milwaukee, WI.
b. Rajeev Thottappilli, High Voltage Lab., Uppsala University, Sweden
c. Stan Grzybowski, High Voltage Laboratory, U. Miss., MS.

Members of the lightning study community interested in affiliation with NLSI should contact us by email at: ***rklthll@ix.netcom.com***