

Dec. 12, 1997 Minutes **Lightning Data Center Centura Health St. Anthony Hospital**

Quote of the Month:

"The trouble isn't that there are too many fools, but that the lightning isn't distributed right."

Mark Twain (*The Wit and Wisdom of Mark Twain* by A Ayres)

1. Meeting began at 11:30 am and adjourned at 1:30 pm.
2. Members present: Blanke, Breed, Cherington, Clark, Fischer, Glancy, Hodge, Kamin, Keen, Kithil, Langford, Roehl, Smith, Swanson, Toler, Walker, Yarnell.
3. I brought the following articles from the literature:

a. Curran EB, Holle RL, Lopez RE: Lightning fatalities, injuries and damage reports in the United States, 1959-1994. *NOAA Technical Memorandum NWS SR - 193*, October 1997. Ron had sent copies of these very useful booklets to me and I distributed them to members present.

b. Hermann DM, Hossmann KA. Neurologic effects of microwave exposure related to mobile communication. *J Neurolo Sci* 1997;152:1-14.

"Digital mobile telephones are working with carrier frequencies in the near Gigahertz range....The carrier signal is pulsed at the extremely low frequency (ELF) of 217 Hz with bursts of 577 microseconds pulsewidth...Due to the close proximity of the mobile telephone device to the head, the brain is exposed to relatively high specific absorption rates (SAR)...To date, there are no conclusive epidemiological studies available revealing an association between microwave exposure and the occurrence of malignant tumour diseases...only slightly elevated relative risks for {glial brain tumours and leukemia} found among electrical workers....At the present state of knowledge there is no positive evidence that pulsed or continuous microwave exposure in the non-thermal range confers elevated risk to the health of the brain."

c. Saha SP, Das SK, Gangopadhyay PK, Roy TN, Maiti B. Pattern of motor neurone disease in eastern India. *Acta Neurol Scand* 1997;96:14-21.

"A total of 110 cases were studied...Trauma was the commonest antecedent event in the amyotrophic lateral sclerosis (ALS) and monomelic amyotrophy (MMA) followed by electrocution in the same two groups."

d. Lee RC: Injury by electrical forces: pathophysiology, manifestations and therapy. *Curr Probl Surg* 1997;34:671-764.

"The relative contributions of thermal and pure electrical damage depend on the duration of electric current passage, the orientation of the cells in the current path, their location, and other factors. If the contact time is brief, nonthermal mechanisms of cell damage will be most important and the damage is relatively restricted to the cell membrane. When contact time is much longer, heat damage predominates and the whole cell is affected directly...."

e. Ray CC. Infrared spectroscopy. *New York Times* Dec 2 1997.

Infrared spectroscopy is a powerful tool for identifying an unknown substance... Infrared radiation has wavelengths between those of visible red light and microwaves; it is heat radiation... Infrared spectroscopy reads the "fingerprint" of each chemical component of an unknown substance by bombarding it with this radiation and determining how much it absorbs and at which wavelengths. The resulting pattern is unique to that molecule or combination of molecules. The substance absorbs radiation at wavelengths that correspond to the energies of vibration of various chemical bonds in the substance.

4. Mike Foley could not be here today because he is on the western slope of Colorado. He did submit an updated draft proposal of the Mission Statement of the Lightning Data Center for our consideration, suggestions, etc. We shall proceed with this important project at our January meeting. Hopefully we shall be able to adopt an updated Mission Statement by February 1998, the 6th anniversary of LDC.

5. Phil Yarnell brought us up to date on 2 patients that we had previously discussed:

- a. The college football player who suffered a lightning injury when lightning struck the goal post. MRI of his brain was normal. His symptoms (mental depression, lack of concentration, etc.) have abated somewhat.

- b. Twenty-three year old man who was struck while standing on his mountain condominium patio about 2 years ago. He was subsequently transferred to Craig Hospital. According to a letter from his mother, he has entirely recovered. Rick Smith, who cared for the patient during his acute hospitalization, stated that the patient had suffered a cardiac arrest at the time of the lightning strike followed by a major motor seizure. He has recovered neurologically and now participates in previous activities including writing poetry.

Phil told us about a patient that contacted him recently. This is a 51 year old woman who was inside a two story building when lightning struck. She was holding a microphone and was knocked down. Since then she has many symptoms that fit the posttraumatic syndrome. Among her symptoms is "unquenchable thirst."

6. Rick Kithil reported that he recently held a seminar on lightning safety at the Hill Air Force Base in Ogden, Utah. Participants in the seminar included personnel from the Army, Navy, and Air Force.

Rich also reported that a Canadian manufacturer has produced a new type of wire that may prove effective in reducing damage to appliances by canceling out transients.

7. George Hodge said that this past lightning season was one of the most active and dramatic. He investigated 9 lightning related fires to structures. George believes that the structure with the most blast damage result from positive lightning strikes. George wondered if the most damaging lightning injuries in humans are correlated with positive strikes. He has observed that blast effects are absent or small with negative strikes.

Some of his incidents were not registered by NLDN. George believes that NLDN misses about 20% of strikes. He speculated that possible explanations for these misses include: reset time; strokes less than 10 Kamps. Rich Keen wondered if the number of misses may be greater in the mountains and valleys of our state.

8. Rick Smith told us about a curious event. One of his patient's home was struck by lightning. The patient was not injured, but all the gold fish in her garden pond were killed.
9. Barry Kamin reported that he spoke with the Foundation Office about a possible grant to promote a Lightning Safety Education Package. The following members will work with Barry in making a grant application: Breed, Glancy, Keen, Kithil.
10. Steve Clark has been in contact with people at GAI in Tucson, AZ. He will try to arrange a visit by one of their staff to the March 1998 LDC meeting.
11. Dan Breed will be participating in a NCAR research project in northeast Colorado on technology developed by the French to study chemical properties of lightning.
12. Bob Glancy reported on an accident that involved a school teacher who was driving her car on highway I-25. She heard a loud "bang." Her car suddenly "died." A side window broke and fell. She apparently was not seriously hurt.
13. Carl Swanson will be giving a lecture on "Understanding Lightning" at the Denver Natural History Museum on February 2, 1998. He will also be contributing to their quarterly journal (March/April issue) on the same subject.
14. Gunnar Blanke contributed remarkable videotape footage for the recently aired program on the Discovery Channel. The program, Raging Planet, also contained interviews with Dr. Mary Ann Cooper. Gunnar will bring the tape to our next meeting for those who did not see it on television. Gunnar informed us that comments on the production can be sent via email to Pioneer Productions on their web page.
15. Ken Langford reported on his recent visit to Tucson, AZ. He met there with Phil Krider, others from the University of Arizona, and with lightning photographers. Phil Krider spoke to him of a new detection system utilizing acoustic mapping of thunderstorms. Ken also visited Kitt Peak.
16. Rich Keen, along with television meteorologist Larry Green, were featured on Channel 6 (Public Television Station) speaking about El Nino. Rich commented that during most El Nino years the Rocky Mountains experience wet weather. The last big El Nino year was 1982 (the big blizzard year). According to Rich, the weather north of Colorado is often "warm and dry" whereas south of Colorado, the weather may be "cold and wet." Rich's Coal Creek Canyon data were quoted on national television. He reported that 53 inches of snow accumulated during the blizzard of October 1997.  
  
Rich and Nancy Keen invite our members to their home for a New Year's Eve party starting at 5 pm. Last year, we all had a great time and were able to see the clear New Year ski from Rich's observatory deck.
17. Just a reminder, that these minutes are a record of the happenings at our monthly meeting. The minutes reflect the comments made by those in attendance. They do not represent any official positions of the LDC. I hope those who read the minutes enjoy them as much as we who are present for the meeting.
18. Next meeting: 11:30 am on Friday, January 9, 1998 in the Main Auditorium of Centura Health, St. Anthony Central Hospital.

Happy Holidays, everyone.



Michael Cherington, MD  
Chair, Scientific Committee