

STATE OF INDIANA)	IN THE KOSCIUSKO SUPERIOR COURT	I
)SS.		
COUNTY OF KOSCIUSKO)	CAUSE NO. 43D01-9812-CP-733	
RONALD GOREWIT)		
Plaintiff,)		
)		
v.)		
)		
MICHAEL BEHR)		
Defendant.)		

AFFIDAVIT OF MICHAEL R. BEHR, Ph.D.

I, Michael R. Behr, being first duly sworn, state that I am competent to testify to the matters contained in this affidavit, and that I am making the statements in this affidavit of my own personal knowledge. I further state and testify as follows:

1. I am the defendant in *Gorewit v. Behr*. My curriculum vitae is attached and included herein as Exhibit 1.
2. Since mid-1983 I have been a full-time self-employed forensic economist. In the course of this work I have been involved in 316 lawsuits, or potential lawsuits, for electrical damage to livestock. These matters resulted in 128 depositions and 46 trials, the record of which is attached and included herein as Exhibit 2.
3. In the course of this work, I have concluded that the research [hereafter Cornell Research] underlying "Effects of Voltages on Cows over a Complete Lactation. 1. Milk Yield and Composition" by R. C. Gorewit, D. J. Aneshansley and L. R. Price and the report of it in the Journal of Dairy Science 75:2719-2725 (1992) [hereafter JDS] is a fraud. The JDS Article is attached and included herein as Exhibit 3.

4. My conclusion of fraud is based on my analysis of this research as set forth in Stray Voltage Research Fraud (1997) [hereafter SVRF] attached and included herein as Exhibit 4.
5. Additional data provided by Gorewit/Aneshansley/Price after 1997 do not change my conclusion of fraud.
6. My definition of fraud is that commonly used by the scientific community which requires misrepresentation, intended reliance and damages. The economic definition of fraud also includes motivation by personal economic gain or professional enhancement.

"The point is made in the proposed regulations of the Department of Health and Human Services that, to establish common law fraud, we must prove that a defendant knowingly made a misrepresentation to induce a plaintiff to rely on it, and that the plaintiff was damaged by justifiably relying on that misrepresentation." [Drummond Rennie, Deputy Editor (West), Journal of the American Medical Association in Ethics and Policy in Scientific Publication p. 155. (Council of Biology Editors, Inc. Chicago 1990)]

"Misconduct as defined by NIH (or NSF) depends solely on the intentions of the investigator and does not require that damages result from the misconduct, whereas the legal definition of fraud implies actual damages." [The Scientific Attitude (2nd ed.) by Frederick Grinnell, Professor of Cell Biology, University of Texas Southwestern Medical Center at Dallas. p. 105. (The Guilford Press, New York and London 1992)]

"As with replication failure, fraud in science can be understood as an economic phenomenon. Although there may be other productive and insightful disciplinary approaches to fraud, an economic one needs to be developed as well. Fraud in this context is the deliberate violation of scientific principle for personal material gain and professional advancement. Fraud consists of intentional misreporting of results, falsification of data, complete fabrication of unperformed experiments, deception of colleagues, and threats of retaliation and revenge directed at whistle-blowers." [The Economics of Science; Methodology and Epistemology as if Economics Really Mattered. by James R. Wible, Whittemore School of Business and Economics University of New Hampshire, Durham. p. 44. (Routledge, New York and London 1998)]

7. Dr. Gorewit has alleged in *Gorewit v. Behr* that my analysis and publication of the Cornell Research and JDS Article in SVRF is defamatory.
8. The relevant events in *Gorewit v. Behr* began in 1994-95, two or three years after publication of the Cornell Research as the JDS Article, when I was an expert witness in 16 lawsuits in which four attorneys of the Sommers Schwartz law firm in Southfield, Michigan were representing (mostly) dairy farmers in their claims against Consumers Power Company (now Consumers Energy) of Michigan for electrical damage to livestock.
9. In deposition in two of those lawsuits, I had occasion to testify that it was my opinion that some of the research on which Consumers Power Company (CPC) in particular, and the electric utilities in general, relied on could be shown to be fraudulent. There were no follow-up questions either time.
10. At my instigation, the Sommers Schwartz attorneys attempted to acquire, through discovery, the underlying data of the Cornell Research from Dr. Gorewit who was an expert witness for CPC in many, and perhaps most if not all, of these 16 lawsuits. The involvement of the Court in discovery requests for this data resulted in an affidavit from Dr. Gorewit asserting that the data were proprietary and could be produced only at considerable cost in time and money. [Gorewit Affidavit in *Weir v. Consumers Power Company* referenced in Gorewit deposition, Exhibit 5 attached and incorporated herein, pp. 12-13) These lawsuits were settled before any data were produced.
11. Partial data for the Cornell Research were later provided by Dr. Gorewit in *Fischer v. Tipmont Electric* and supplied secondarily to me, from which the analysis in SVRF was performed. Although I was not involved in *Fischer v. Tipmont Electric*, subsequent data provided by Dr. Gorewit in *Gorewit v. Behr* somewhat overlap

the earlier data provided in *Fischer v. Tipmont Electric*, indicating that the data from which I performed my analysis in SVRF are indeed data from the Cornell Research.

12. Attempts from 1994-95 to the present to acquire the data from the Cornell Research through discovery, in this and other litigation, have been only minimally successful. After three motions to compel in *Gorewit v. Behr*, essentially complete daily milk weights have been supplied by Dr. Gorewit for about 13 months of the 18-month experimental period. This is far short of the complete data requested. Most notably, Dr. Gorewit has not produced the Dairy Herd Improvement records which provide information on the individual cows in the experiment, which based on data provided to date, are probably material.
13. It was not until Dr. Gorewit's response to the Second Motion to Compel in this litigation in the summer of 2002 that Dr. Gorewit identified the 40 cows from the Cornell herd that were actually in the experiment.
14. Most recently, in *Allen v. Wisconsin Public Service Company* Dr. Aneshansley was named as an expert witness by Wisconsin Public Service Company, and was withdrawn by WPS when he was pressed in discovery for the data used in the research supporting his testimony. (Murray Affidavit) This research included the Cornell Research at issue in *Gorewit v. Behr*.
15. The secretion of this data is contrary to predominant scientific thought on the availability of data, particularly where public policy issues are at stake. The prevailing position of the scientific community is that data under the circumstances of the Cornell Research are public information. Openness is a basic scientific requirement without regard to academic discipline or institutional affiliation, if any.

"Increasingly, journals are requiring detailed information and the data to accompany a submitted research paper to facilitate replication with details. With adequate details and sufficient resources, one would hope that the results of scientific research could be directly replicated by a sufficiently motivated, specialized, and intellectually endowed researcher." [The Economics of Science. p.28.]

"It is noteworthy that an increasing number of the most prestigious journals, such as Nature, American Economic Review, and Science, now require data availability to editors and members of the scientific community as a condition for publication. Other journals, such as Cell require that data be made available for scientific scrutiny when there are disputes." ["A Solution to Concerns Over Public Access to Scientific Data," Science Vol 285. pp.535-36. (American Association for the Advancement of Science) July 23,1999.]

"It is the policy of the American Economic Review to publish papers only if the data used in the analysis are clearly and precisely documented and are readily available to any researcher for purposes of replication. Details of the computations sufficient to permit replication must be provided. The Editor should be notified at the time of submission if the data used in a paper are proprietary, or if, for some other reasons, the above requirements cannot be met." (<http://www.aeaweb.org/aer/submissions.html>)

"The principle of openness promotes the advancement of knowledge by allowing scientists to review and criticize each other's work; science's peer review system depends on openness (Munthe and Welin 1996). Openness prevents science from becoming dogmatic, uncritical, and biased. Openness also contributes to the advancement of science by helping to build an atmosphere of cooperation and trust in science and by enabling scientists to use resources effectively (Bird and Houseman 1995). [The Ethics of Science by David B Resnick, Associate Professor of Philosophy and the Director of the Center for the Advancement of Ethics at the University of Wyoming. p. 44. (Routledge, New York and London 1998.)]

"A court, for example, can order scientists to produce their research data, even when they are not parties to a suit. (*Andres v. Eli Lilly & Co., Inc.* 97 F.R.D. 494 (1983) (*Farnsworth v. Procter & Gamble Co.*, 101 F.R.D. 355 (1984) (*Richards of Rockford, Inc. v. Pacific Gas & Electric*, 71 R.F.D. 388 (1976) The principle that the public is entitled to every man's evidence was enunciated by the Supreme Court more than 50 years ago." [Miron L. Straf, National Research Council and recent past president of the American Statistical Association in

"Who Owns What in Research Data?" Ethics and Policy in Scientific Publication p. 132. (Council of Biology Editors, Inc. Chicago 1990)]

"One such duty (to society) is to avoid paternalistic treatment of the public and therefore to disseminate research results to interested laypersons as well as to professionals"

"The AAAS [American Association for the Advancement of Science] gives two basic reasons that researchers must neither behave paternalistically toward the lay public nor fail to release information to society. One reason is that the research scientists have no right to make decisions that affect the welfare of others. The second reason is that they are often biased." [Ethics of Scientific Research by Kristin Shrader-Frechette, Distinguished Research Professor Environmental Sciences and Policy Program and Department of Philosophy, University of South Florida. pp. 72-73. (Rowman & Littlefield Publishers, Inc. London 1994)]

16. The purpose of my attempts to acquire this research data was to determine why the results of the Cornell Research were so greatly different from expected results based on field experience. (See Paragraphs 26 and 27.) The data would allow investigation through replication.

"For an economics of science, this literature suggests three useful categories of replication:

Direct replication

Design replication

Conceptual "replication"

Direct replication is the idea that scientific investigations can be repeated by almost anyone of modest intelligence and experimental competence (Muma 1993)

Design replication involves the use of an alternative experimental design which in theory might yield results similar to those reported in a previous study.

Conceptual "replication" does not involve the actual repetition of previous experimental or empirical results. Rather a scientist takes a previous experiment or empirical study as a stepping stone for another investigation. The use of the word "replication" in the term "conceptual replication" is justified by the belief that the derived results of a new project likely would not hold if an earlier project was invalid and unreplicable. [The Economics of Science. pp. 27-29.]

17. Peer review will not necessarily reveal research deficiencies. The electric utilities and their experts, including Dr. Gorewit,

use "peer review" as a cornerstone of their defense, posturing that if research results have been published in a peer-reviewed journal, they are indisputable. The nature of peer review is usually explicitly or implicitly mischaracterized in stray voltage litigation by failing to distinguish between editorial peer review and true peer review. The failure to distinguish between the meritorious theory underlying peer review and peer review as it is frequently, if not usually, practiced is misleading at best. Editorial peer review establishes an article as worthy of being added to the literature for consideration. True peer review continues indefinitely after publication in an ongoing determination of validity.

Dr. Gorewit defines editorial review as spelling, grammar (sentence structure) and conformance to the journal's style. He defines peer review as editorial peer review. He makes no mention of true, ongoing peer review. He thereby elevates published research to a level for which it does not qualify based only on publication. [Plaintiff's Answers to Second Set of Interrogatories attached and incorporated herein as Exhibit 6]

See Exhibit 7 attached and incorporated herein for many references and much discussion of editorial peer review and true peer review and related matters in "The Brave New World of Daubert: True Peer Review, Editorial Peer Review, and Scientific Validity" by Effie J. Chan. [New York University Law Review, Volume 70, Number 1. pp. 100-134. April 1995.]

"We [Science] have been asked, for example, whether if there were a finding of misconduct, it would raise questions about the quality and reliability of the peer review process applied to the Schon papers. It wouldn't, because peer review has never provided immunity against clever fraud. Last year, an author had to retract a paper because of data manipulation by a participant in the experiment. In an accompanying editorial, I wrote: ' . . . many years ago, George Price. . . pointed out that although science had developed robust ways of controlling chance, it had invented scant protection against fraud. A clever laboratory cook can invent data that are immune to vigilant reviewers and to any diagnostic test save repetition,

the only proven scientific remedy." [Donald Kennedy, Editor. Science Vol. 297, No.5578. p. 13.]

"Because so many in the field do not fully understand the limitations of the peer-review system, a misleading impression exists that the appearance of a paper in a peer-reviewed journal is something equivalent to its being stamped with the *Good Housekeeping* seal of approval. This has created the myth of "passing peer review"--a myth that misleads many into believing that peer review by supposedly unbiased reviewers alone determines the fate of a manuscript. It tends to reinforce the misimpression that peer review is a scientific process, when, as noted, it is largely a tool used in editing."

"Arnold Relman, when he answers the question, 'What kind of protection against fraud does peer review offer?' says it best: 'The Darsee affair gives a clear answer: Little or none. Most of Darsee's fraudulent work was published in peer-reviewed journals, some with very exacting standards, and yet in none of the reviews was there enough suspicion to warrant rejection.'"

"It is often said that peer review should not and does not end with publication of an article--that readers provide the ultimate peer review. If so, claims of the accuracy and benefits of peer review imply that authors and editors will responsibly follow up their original reports. However, neither authors nor peer-reviewed journals have an exemplary record in that regard. For example, some journal editors have been known to refuse to publish letters of retraction from authors of peer reviewed papers that they themselves had published."

Lawrence K. Altman, MD, New York Times, in Ethics and Policy in Scientific Publication pp. 157, 262, 265.

18. It is not possible to directly replicate the simplest element of the Cornell Research reported in the JDS Article. The JDS Article states that the milk production data are for a 305-day lactation. The average lactation from the data provided by Dr. Gorewit in this litigation is 270 days. (Exhibit 8 attached and incorporated herein) Moreover, the cows were milked more than a month beyond the expected production at dry-off based on typical field conditions. Something was severely depressing the production of this herd across all experimental treatment groups, including the 0 volt group. Accordingly the milk weights are below those reported in the JDS Article. Other characteristics of the results of the Cornell Research indicate

underlying conditions in this herd that predispose it to fail to show response to electrical exposure. (Olson Affidavit. Steevens Affidavit)

19. Dr. Roger Mellenberger, a retired Michigan State University Professor who is a frequent witness for defendant utilities on management and dairy science issues in stray voltage litigation, was strongly critical of the feeding regimen of the cows in the Cornell Research. (Murray Affidavit) I supplied Mr. Murray with the lactation curves as attached to the Olson Affidavit, which Mr. Murray offered to Dr. Mellenberger for comment in his deposition in *Allen v. Wisconsin Public Service Company*. The lactation curves supplied to Dr. Olson, Dr. Steevens and Mr. Murray were calculated by me, or at my direction, from the data supplied by Dr. Gorewit in discovery in *Gorewit v. Behr*.
20. The experimental design with small samples and high dispersion among cows in the sample virtually assured that the experiment would be unable to detect any effect from electrical exposure. Although efforts to get all the data on all these cows began in 1994-95, the dispersion in these cows' milk production did not come to light until the summer of 2002 when Dr. Gorewit's expert in *Gorewit v. Behr*, Dr. Linda Erdreich, was also an expert for Consumers Energy in *Michigan Attorney General v. Consumers Energy* where I was an expert for the Attorney General. It should be obvious by inspection (without calculations) to even a relatively inexperienced researcher that the small sample size and high dispersion would produce so little power that the experiment would be incapable of showing whether the lack of statistically significant results from the effect of electrical exposure was because there was no effect, or because the samples were too small to be able to detect it. (Martin Affidavit) The JDS Article did not report power conditions.

"'Negative' conclusions of low statistical power--that is, reporting that no effect was found when there was little chance of detecting the effect--can also distort inference, especially when investigators do not report on statistical power." [Ethics and Policy in Scientific Publication p. 69.]

"One common example [of erroneous interpretation of research results] is the acceptance of a null hypothesis despite the fact that a test has low power, i.e., that the data and procedures have little chance of detecting an effect even if it is present." [The Ethical Dimensions of the Biological and Health Sciences by Ruth Ellen Bulger of the United States Department of Defense and Uniformed Services University of the Health Sciences, and Elizabeth Heitman and Stanley Joel Reiser of the University of Texas Health Science Center at Houston. p. 209. (Cambridge University Press, Cambridge, UK. 2002.)

21. Dr. Gorewit maintains that the sample size of the Cornell Research was 40. (Exhibit 6 and Exhibit 5, p. 83) The work of his own expert, Dr. Linda Erdreich, shows that she uses a sample size of 10. A sample size of 40 would reduce the obvious cause for skepticism of the validity of the Cornell Research, although upon analysis would show the sample size of 40 still to be much too low to produce adequate power.
22. Because Dr. Gorewit did not provide complete data for my analysis in SVRF, I estimated approximately half the daily milk weights from typical lactation curves. Dr. Gorewit testified that this estimation was ridiculous and erroneous. (Exhibit 5, P. 24) The daily milk weights he has since provided show my error to be from approximately 1/3 of 1% to 3% depending on how it is measured. (Exhibit 9 attached and incorporated herein) The more complete data change no important conclusion set forth in SVRF.
23. Dr. Gorewit may have relied on the name of Cornell University to dissuade challenge of his research.

"Researchers' institutional affiliations (academic or commercial, general university or academic medical center, private or public institution), positions within these institutions (full professor or postdoctoral fellow), and status

in scientific professional organizations have implications for presumed quality of their research. Professional standing often confers authority on ideas and data that might be dismissed as unimportant if they came from other sources. Conversely, brilliant insights may be discounted if their author is unknown." [The Ethical Dimensions of the Biological and Health Sciences. p. 27]

24. Dr. Gorewit provided the following information on payments for consulting services from 1990 through 1998 from income tax returns, most of it from public utilities while a full professor at Cornell University. He acknowledges what appears to be a short leave without pay.

	<u>Gross</u>	<u>Net</u>
1990	\$ 42,040	\$ 28,845
1991	\$ 82,343	\$ 45,418
1992	\$ 100,935	\$ 88,370
1993	\$ 101,357	\$ 86,829
1994	\$ 232,177	\$ 169,835
1995	\$ 516,896	\$ 446,814
1996	\$ 184,495	\$ 163,261
1997	\$ 83,777	\$ 63,835
1998	\$ 70,416	\$ 55,728
Total	\$1,414,436	\$1,148,935

(Exhibit 10 attached and incorporated herein.)

"The rewards for publishing a first-class inference can include income, position and power, professional status, and the respect of colleagues. Such rewards may sometimes count for more than self-respect and the joy of discovery. We must therefore be attentive to scientific norms and activities that may distort the processes of inference." [The Ethical Dimensions of the Biological and Health Sciences p. 68]

"A few perverse individuals may take advantage of the inherent complexity of science, and fabricate or alter results for personal material or reputational gain. Such individuals must have a history of producing good if not high-quality science. Past research success is a vital ingredient of any strategy for violating the fundamental principles of scientific integrity. Fraud can be interpreted as a deliberate, calculated risk to gain a competitive advantage in science." [The Economics of Science. p. 56]

25. The Cornell research was funded in part by the Empire State Electric Energy Research Corporation. (Exhibit 3) The stakes in stray voltage run to many billions of dollars given damages to livestock and possibly humans, and given the cost of remediation.

"When \$600 million is at stake, there is at least a scintilla of doubt about a corporation's commitment to basic science." ["A Cautionary Tale" by Dorothy S. Zinberg of the John F. Kennedy School of Government, Center for Science and International Affairs of Harvard University. Science (July 26, 1996)]

"A 1988 report indicated that, merely by reading the names of titles, authors, and financial supporters of certain scholarship, it was possible to predict the conclusions in 81 percent of the scientific investigations. This finding suggests that scientists often have special responsibilities to protect public welfare, in part because of powerful vested interests." [Ethics of Science and Research. p. 65]

26. Dr. Gorewit's first responsibility is to the public interest. As a graduate of the University of California and Michigan State University, and now as an employee of Cornell University, all land-grant institutions, Dr. Gorewit received substantial public support in the cost of his education, and in the support of his ability to earn upon completion of that education. More specifically, Dr. Gorewit has testified that there were Hatch Act funds in the Cornell Research. (Exhibit 5, p. 37) Market economics is based on an alignment of costs and benefits. The public has a right to expect "repayment" of the public cost of his education and employment environment in the form of truthful revelations delivered through Cornell University from which the public has a right to expect truthfulness. Lack of truthfulness leads to suboptimal public policy, i.e., waste of resources.

"Society also has ultimate ownership of research because-- as we argued in chapter two--researchers' abilities have been created and enhanced in part through societal interdependences and professional contracts. In other words, their abilities exist and can be put to use, at least in part, because of

societal opportunities and controls. Because researchers (including professionals such as historians, medical doctors, and lawyers) are not wholly self-made persons, their obligations are not completely self-generated. Researchers depend upon society, and society relies upon researchers. Because of this interdependence, research scientists have a responsibility to society through complicity. Researchers not only use powerful tools and machines developed in part through societal resources, but they often live on grants and contracts that come either through taxpayer support or through industrial networks that could not exist without societal interdependence. Because they benefit from their interdependence and interaction with the rest of society, researchers owe the public something in return, something more than merely refraining from wrongdoing.

[Ethics of Science and Research. p. 70]

"Objectivity, accuracy, and acknowledgment of uncertainties in research work do not impose merely the negative requirement that research scientists avoid deliberate bias in their own work. Objectivity also requires that they attempt to meet a positive demand: to present results in such a way as to avoid their misuse and misapplication by others and to speak out when others appear to misuse or misinterpret them. An appropriate prima facie principle in this regard might be: always present research results in such a way as to avoid their possible misuse and misapplication, and always speak out against apparent bias in their presentation." [Ethics of Science and Research. pp. 55-56.]

27. The Cornell Research results are strongly contradicted by field experience. Exhibit 11 attached and incorporated herein is the composite of 138 stray voltage complaints that have come to my attention as a forensic economist. They represent more than 6,000 cows. All complaints are included in the total irrespective of any determination of whether the stray voltage complaint was determined to be valid. There has been no selection. 52 of these farms have had stray voltage remediated and remained in business to the present. The usual amount of stray voltage from which remediation was effected was in the 0.5 to 2.0 range, well below the 4.0 volts the Cornell Research concluded would not affect milk production or herd health. In addition, increased milk production was usually accompanied by

increased milk quality, improved cow behavior, improved herd health and improved reproduction.

28. Exhibit 12 attached and included herein is a similar composite of all 47 Michigan complaints of stray voltage involving Consumers Power, of which 9 were remediated and remain in business. The pattern is strongly similar to the Wisconsin experience.
29. Dr. Gorewit, and others employed and financed by the utilities, dismiss the Wisconsin/Michigan evidence as uncontrolled, anecdotal and invalid. This is a hollow complaint. Moving from controlled to uncontrolled conditions would be expected to produce weaker results as the other variables create a larger pool of unexplained variance from which it is more difficult to see the effects of the electrical exposure variable. However, in this instance the "uncontrolled conditions" produce profoundly stronger results. The explanation that recommends itself is that stray voltage is a strong enough influence to override the influence of the other uncontrolled variables potentially affecting production, in which case the Cornell Research must have been designed and executed so as to render it fatally flawed as outlined above. [The extent to which the Cornell Research and the Wisconsin/Michigan research are or are not controlled is worthy of discussion which is not necessary here. It is not at all clear that the Cornell Research includes controls superior to those of the Wisconsin/Michigan research.]
30. The Cornell Research has damaged individual dairy farmers in stray voltage litigation to the extent the jury relied on it and found a lesser proportion of full compensation for stray voltage damages than would have been found without this influence.
31. The Cornell Research has damaged the public by influencing public policy by handing the public utilities levers in

litigation to establish that there can be no damage below 4.0 volts, which is clearly beyond the message delivered by the cows involved. (Exhibits 11 and 12) The Wisconsin Public Service Commission (WPSC) has established a "level of concern" of 1.0 volt and 2mA [milliamps], doubling it from a previous 0.5 volts and 1mA. (Exhibit 13 attached and incorporated herein. p. 32) This increase in the "level of concern" was based largely on the testimony of Dr. Aneshansley reporting results of the Cornell Research showing no effects from electrical exposure below 4.0 volts and his assurance that other scientists, many of whom cite the Cornell Research in support of their position, are in agreement. The public utilities usually try to argue in stray voltage litigation that the WPSC Order 115 is controlling at 1.0 volt and 2.0 mA.

32. The WPSC gave even more credence to the Cornell Research and related research than its 1.0 volt and 2.0mA level of concern would indicate because Wisconsin is "a dairy state." (Exhibit 13, p. 32) [In 1950 milk per cow in Wisconsin was approximately 129% of the national average. It is now approximately 92% of the national average.]

"Reasonable regulation for Wisconsin, a dairy state, is to set a stray voltage level of concern at a conservative, preventive level that is below the point where moderate avoidance behavior is likely to occur."
[WPSC Order 05-EI-115 p. 32.]

33. Drs. Gorewit and Aneshansley are the editors of Chapter 3 of the United States Department of Agriculture Handbook 696, commonly called the Redbook. Chapter 3 contains preliminary conclusions of the Cornell Research. Handbook 696 has been a nearly universal cornerstone of the public utilities' stray voltage defense in litigation for several years.

"The Commission [WPSC] finds the USDA Handbook an insightful and useful compendium of research. Because research following the publication of the USDA Handbook confirms its

conclusions, the Handbook remains valuable today. As of 1991, only preliminary results of long-term studies were available, but Cornell University has since completed additional research on long-term exposure to stray voltage. Professor Aneshansley reported that Cornell's full-lactation study, lasting for 305 days, showed no significant differences in milk production, milk fat, protein, somatic cell count or reproduction between groups of cows exposed to no voltage, 1.0 volt, 2.0 volts, or 4.0 volts. He also described similar findings from a long-term study performed at New Liskeard College in Ontario, Canada. These findings agree with the short-term and intermediate-term studies upon which the USDA Handbook based its conclusions. [Findings of Fact, Conclusion of Law, and Order 05-EI-115 pp. 5-6. (Wisconsin Public Service Commission July 11, 1996.)

"He [Professor Aneshansley] affirmed that the conclusions in the USDA Handbook are still shared today by all of the authors." [WPSC Order 05-EI-115 p. 4.]

34. Dr. Aneshansley misled the WPSC by misrepresenting, through nondisclosure, the Cornell Research in his testimony as revealed in WPSC Order 05-EI-115.

(1) It is general knowledge, to which Dr. Gorewit has subscribed in testimony, that young cows (1st lactation) are much more sensitive to stray voltage than older cows. At least 30% of cows will be 1st lactation animals in most herds. Similarly at least 30% of the Wisconsin herd for which the WPSC was establishing policy would be 1st lactation animals. The Cornell Research as reported in the JDS Article included no 1st lactation animals. There is no indication, nor reason to believe, the WPSC had knowledge that it was looking at research on cows that were materially less sensitive to stray voltage than the cows for which they were making policy.

(2) The WPSC "level of concern" was at 0.5 volts. The issue before the WPSC was whether to raise it, and if so, how far. The statistical tests used in the Cornell Research only produced a generalized conclusion as to lack of effect from stray voltage. (Martin Affidavit) Even if the Cornell Research had had adequate statistical power, the research did not report the

differences in moving from one voltage level to another. Most specifically, in a valid decision to raise the "level of concern" from 0.5 volt to 1.0 volt it would be most critical to know, that if there were a response to stray voltage, whether most of that response occurred between 0.0 and 0.5 volts, or between 0.5 and 1.0 volt. The Cornell research was incapable of answering this question because there was no 0.5 volt group of cows. It appears that the WPSC simply concluded broadly that "if there is no difference, there is no difference" unaware of the lack of power of the research they relied on, and unaware of the inability of the research to answer important questions before them even if the research had had adequate power.

"Research scientists also have duties to the public and its interests because they, as professionals with economic, political, and intellectual power, control much of what happens in society. Their special knowledge and the dependence of society on them are two of the main sources of their power. Given our highly sophisticated and technocratic society, and given researchers special knowledge of 'the multiple and complex consequences of the actions that we take,' therefore 'the responsibility of scientists [and researchers] is obviously much greater than that of the nonscientists [and nonresearchers]'". ([] in original) [Ethics of Science and Research. p. 55.]

FURTHER YOUR AFFIANT SAYETH NOT.

Michael R. Behr, Ph. D.

Subscribed and sworn to before me

on this _____ day of July, 2003.

Notary Public

My commission expires: _____