Assessing Health Risks of Cell Towers

Andrew A. Marino, Ph.D., J.D.

Department of Orthopaedic Surgery
LSU Health Sciences Center
Shreveport, LA

amarino@lsuhsc.edu
Safe?  Risk?
Summary

• Risk?/Safe? Is not purely or even mostly a scientific question

• It is impossible to get an answer from science, and it is unwise to accept any answer from scientists
Scientific

Animal Studies
Epidemiology
$kT$

Legal
Zoning
$S^2_0$
Evidentiary
Burden
Tort

Societal
Quantum of evidence?
What standard?
Who decides?
Suppose

Q1: What would it look like?
Q2: How would we get it?
Orthodox Answer to Q1
OK - Then What's a Fact?

Discovery

Measurement

*Deduction

*Canonical inferential fact in the physics thought-style
*Risk?/Safe? = Nonquestion in Physics

*Don’t confuse this question with the relatively trivial kind of question that can be answered by a measurement.
*Abduction
(the other kind of inferential fact)

“The evidence suggests that the beans came from the bag.”

*The canonical reasoning form in biology and medicine
Subjectivity in Abductive Facts

Effect of EMF on Body Weight in Mice

First Experiment

- E First
- E Second
- E Third

* P < 0.05
Abductive Generalizations are More Subjective

Risk

Safe

Rat Study

Monkey Study

Cell Study

Epidemiology Study

Dog Study

Mouse Study
Why Biomedical Facts Are Subjective to the Extent That They Are
The Blue-Ribbon Panel Process Doesn’t Work

- Safe
- Safe
- Safe

- I dunno
- Gonna wait and see what they think
- Safe
Man-Made Linear Systems

Simple Linear Systems
Man-Made Linear Systems

Complex Linear Systems
Man-Made Nonlinear System
Natural Nonlinear System
Sensitivity to Initial Conditions

Initial Temperature = 30.000000°C
Sensitivity to Initial Conditions

Initial Temperature = 30.000001°C
Sensitivity to Initial Conditions

At 2.5 seconds: 28.5°C 31.5°C
Chaos is
Sensitivity to Initial Conditions

Butterfly Effect
Nonlinear Model

Hypothetical Data

Mouse No. 1
Mouse No. 2
Mouse No. 3
Mouse No. 4
Mouse No. 5
Cell Phones Cause Nonlinear Change in EEG
Legal Aspects of Risk?/Safe?

SAFE

- Burden is on companies, not the zoning board, despite §704
It is essential to understand what particular words mean.
All Industry Research is Dubious

- Unless you know what goes on inside the factory, you can’t trust the product
Scientists Are Only People

- Only driven to church on Sundays by an old lady
- All industry spokesmen (especially M.D.’s and Ph.D.’s) should be regarded as compensated endorsers
Examination of Witness

- Effective cross-examination is as rare as it is important

"May I remind the witness that he is under oath."
"It doesn’t look to me like it could do any chromosomal damage."

Decide beforehand what acceptable evidence IS.
Risk?/Safe?
A Basic Societal Issue

- Should you or the government decide?