

ABSTRACT
Presentation to the American Nuclear Society
Health Physics Society
Applicability of Radiation-Response Models to Low Dose Protection
Standards
Joint Topical Conference

Pasco, WA
September 30-October 3, 2018

Conference—Pasco, Washington, Oct 1-3, 2018

John Dale Dunn MD JD

Linear No Threshold (LNT) Radiation Biophysics Toxicology
Bad Science Producing Bad Risk Management

One—the historical basis for the no threshold claims in matters of radiation biophysics was not scientifically valid and a thorough investigation of the matter by Dr. Calabrese creates a serious question of ideology driving scientific claims rather than good evidence and reliable science.

Hermann Muller won the Nobel Prize for his LNT radiation biophysics research with flies and continued to be very influential on the BEAR and BEIR committees that established and maintained LNT as the paradigm for radiation biophysics. Medical science always has been founded on thresholds of effects, good and bad, for example the sweet spot in pharmacology or the no effect level of a toxic exposure. Historically Muller's suppression of Dr. Stern's contradictory evidence is not unprecedented, but definitely was a game changer.

Two—the idea that radiation or any other toxin or harmful substance has no threshold for effect as a cause of cancer in particular, but other harmful effects, ignores the evidence.

The one hit theory of radiation biophysical effects that has been expanded irresponsibly to all areas of toxicology, is based on an incorrect and unscientific assumption that a small radiation impact (and by extension chemical effect) can cause cancer by damaging genetic material, so there is no safe level of exposure. Oncological science is yet to show us a comprehensive and reliable theory for the cause of cancers and many cancers are clearly the result of telomeric dysfunction that creates polyploid/multiploid replication errors, not discreet codon hits under the low dose LNT theory. Malignant cells are so heavy with genetic material that even a first year medical student can identify them. The one hit LNT that pretends to explain malignancy is an empty vessel and the LNT the clearly multifactorial considerations that should guide rationale approaches to carcinogenesis.

Three—the widespread acceptance of linear no threshold toxicity/oncology has created a risk management protocol that is irrational and unscientific and does not serve the public well.

LNT driven cancer risk assessment and mitigation policies are irrational and unscientific and

create false scares and unjustified regulatory costs for no benefit. No threshold justifies excessive regulatory activity with high compliance costs for no measurable benefit. The LNT model is an annuity for regulators and toxicologists—one hit LNT and high dose rodent toxicology creates long lists of LNT, not real, carcinogens. The risk management measures for a one hit world are never ending and often just arbitrarily imposed with no “safe” level ever found. The adoption of cumulative lifetime radiation exposure as a measure of risk is also a precautionary principle, non scientific, protocol that ignores the real time on off nature of radiation exposures and the natural realities. Aging is the cause of most cancers, and may be coincident to “cumulative” radiation but cumulative exposure is used without good scientific justification for another excuse to aggressively regulate and scare the public at the same time. Association of cumulative radiation with aging ignores the obvious—maybe senescence and immune dysfunction associated with aging is the independent and dominant factor in carcinogenesis in the aged.

Conclusions

This presentation, the short article and a longer monograph will discuss the historical misconduct that begat the LNT, expose the elements of LNT that cannot prove up the case for the LNT claims, and show that continued use of LNT toxicology is not justified, unscientific and imposes excessive and harmful regulatory and economic burdens on society for no measurably worthy benefit.

John Dale Dunn MD JD
Emergency Physician/Inactive Attorney
Retired Clinical Faculty, Lecturer
Carl R Darnall Army Med Center
Fort Hood, TX