

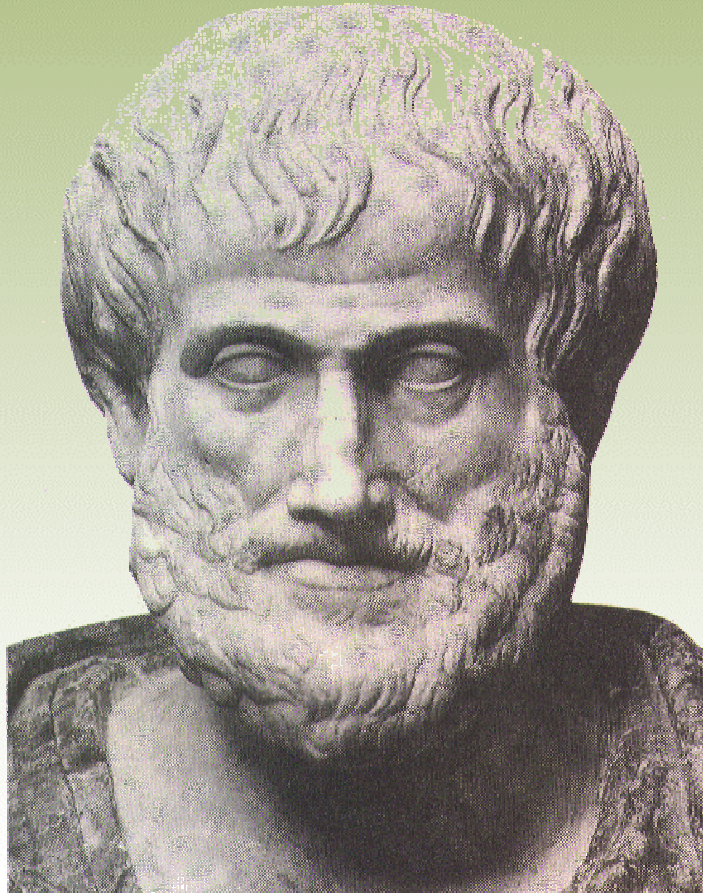
24th Annual Meeting
Doctors for Disaster Preparedness

The Challenges Ahead:
Will Sound Science Prevail?

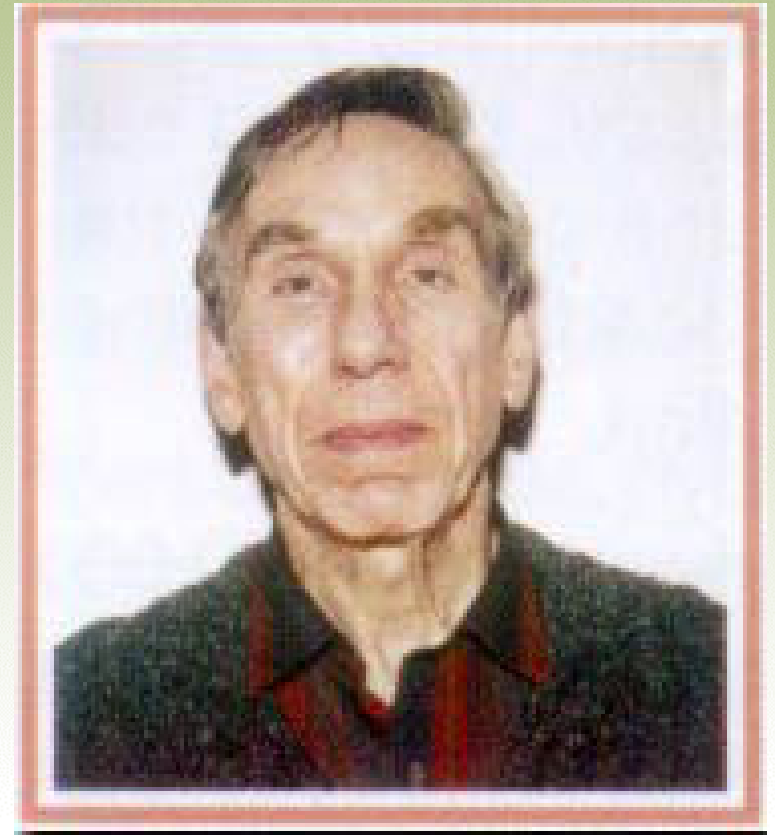
August 4-6, 2006

University Place
Portland State University
Portland, OR

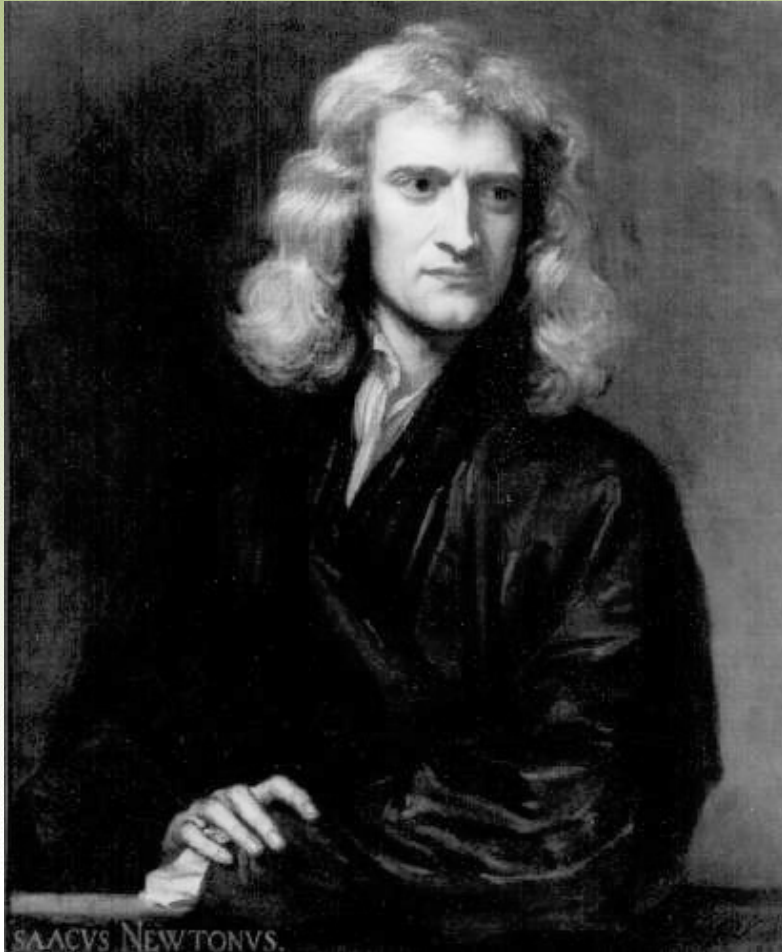
Lover of Truth & Knowledge



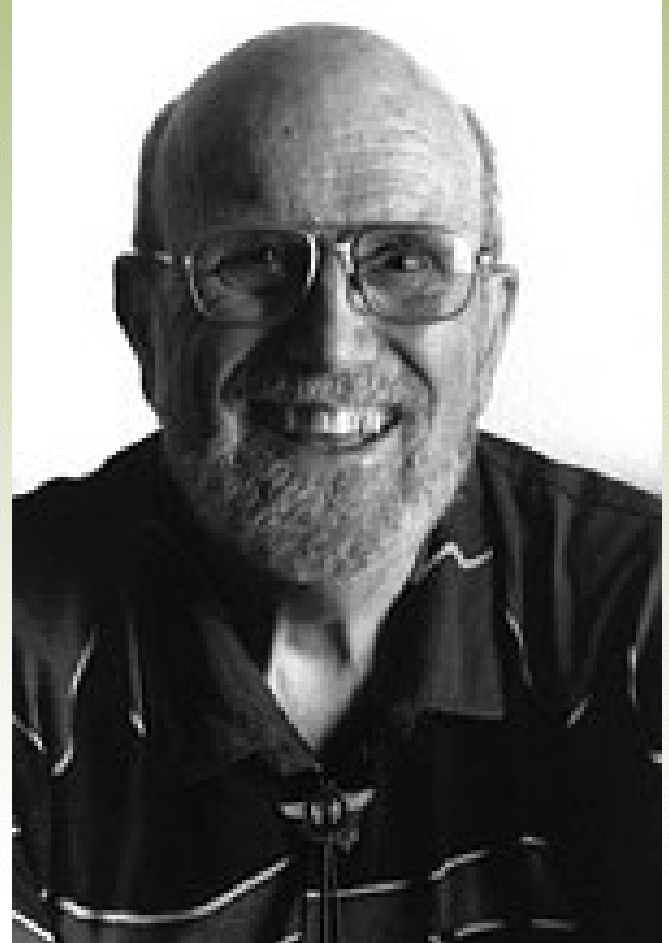
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Applying Science for Mankind



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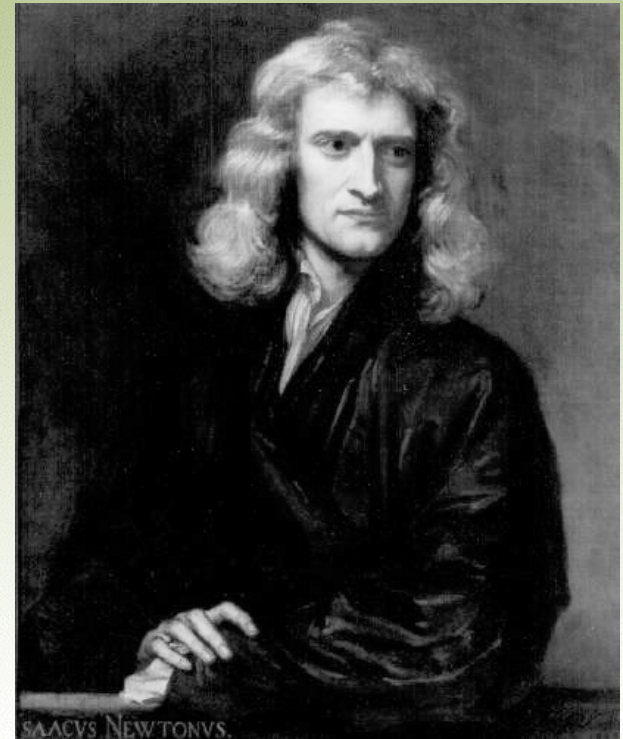
Cohen

Hiserodt

Rockwell



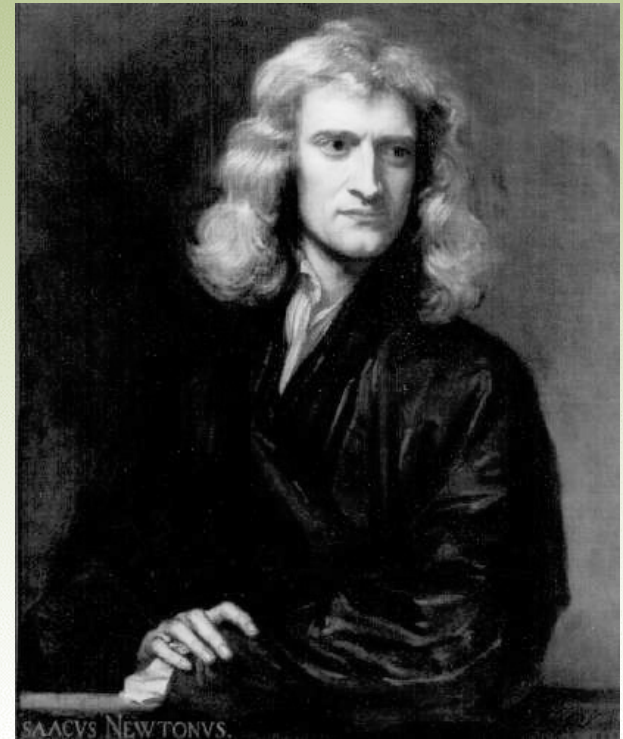
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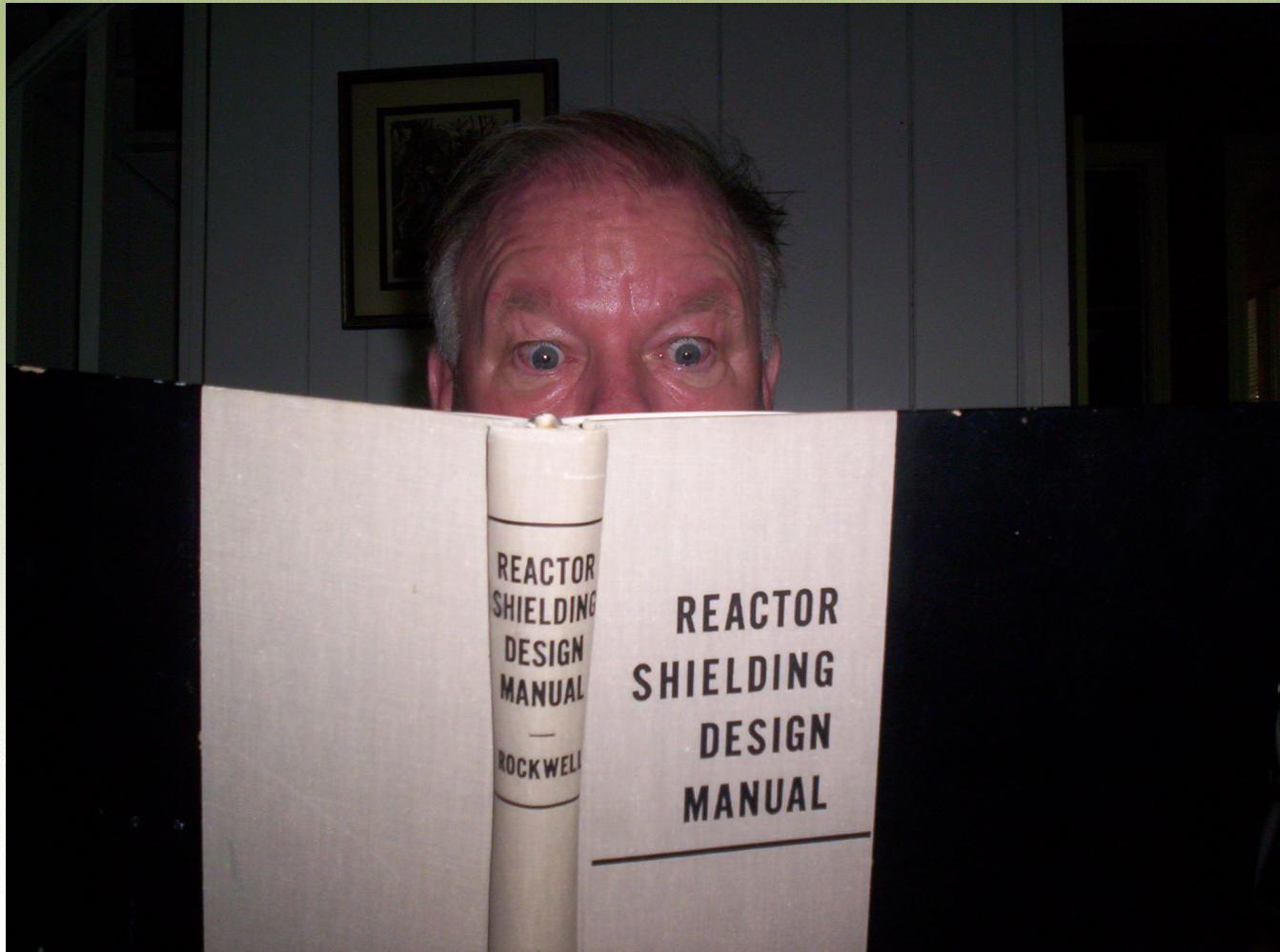
Cohen

Hiserodt

Rockwell



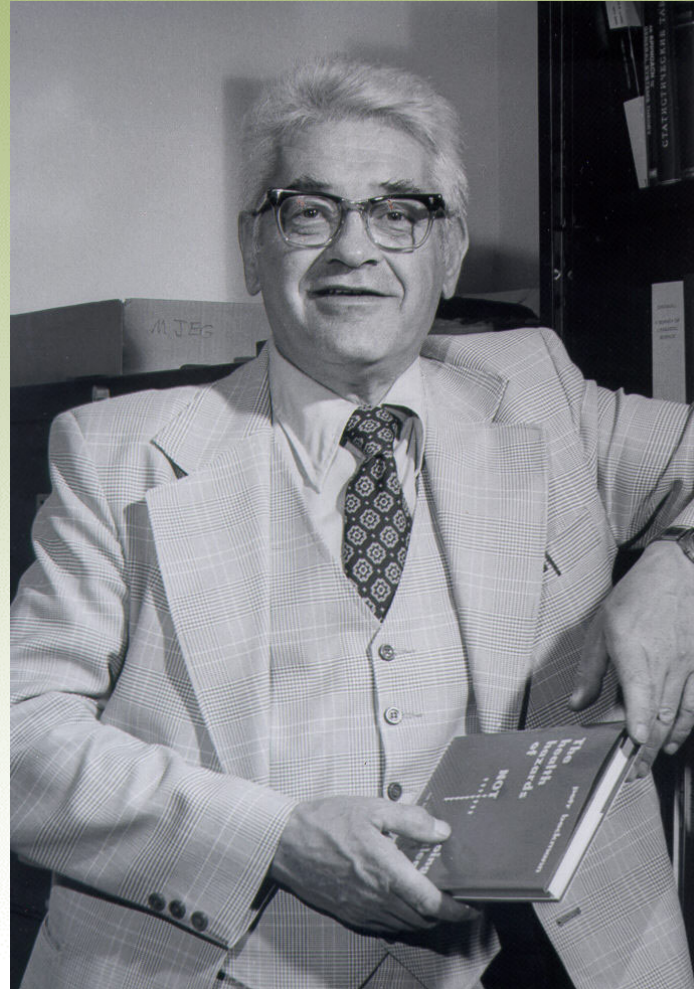
Ed enjoying Rockwell's design manual



Jane Orient, M.D.



Petr Beckmann (1924 – 1993)



ACCESS TO ENERGY

A Pro-Science, Pro-Technology, Pro-Free Enterprise Monthly Newsletter

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HORMESIS

is an expression used in physiology, derived from the Greek *hormo*, to excite, which refers to a phenomenon stated by the so-called Arndt-Schulz law: *Small doses of poisons are stimulatory*. The law has been recognized for chemical and biological toxins; for example, minute doses of germicides will *increase* fermentation of bacteria, and small doses of antibiotics will stimulate the growth of relatively dormant bacteria that they were supposed to kill.

One of the internationally recognized experts on hormesis is Dr T.D. Luckey, professor of biochemistry at the U. of Missouri at Columbia, who in 1945 discovered hormesis in dietary antibiotics. In 1969, he was intrigued by data suggesting that Japanese who received 11 to 120 roentgen in the 1945 atomic bomb explosions appeared to live longer than those who were exposed to larger doses or to no dose at all. This, he knew, would place man in conformity with ample, but widely scattered evidence observed in other living organisms; as early as 1898 a scientific paper reported that algae exposed to X-rays grew faster than non-irradiated controls. Luckey then set out to investigate whether the Arndt-Schulz law could be generalized from chemical and biological toxins to ionizing radiation.

What he found was a tremendous amount of uncollected literature supporting his hypothesis; the book that he published 11 years later is a scholarly work likely to remain the standard

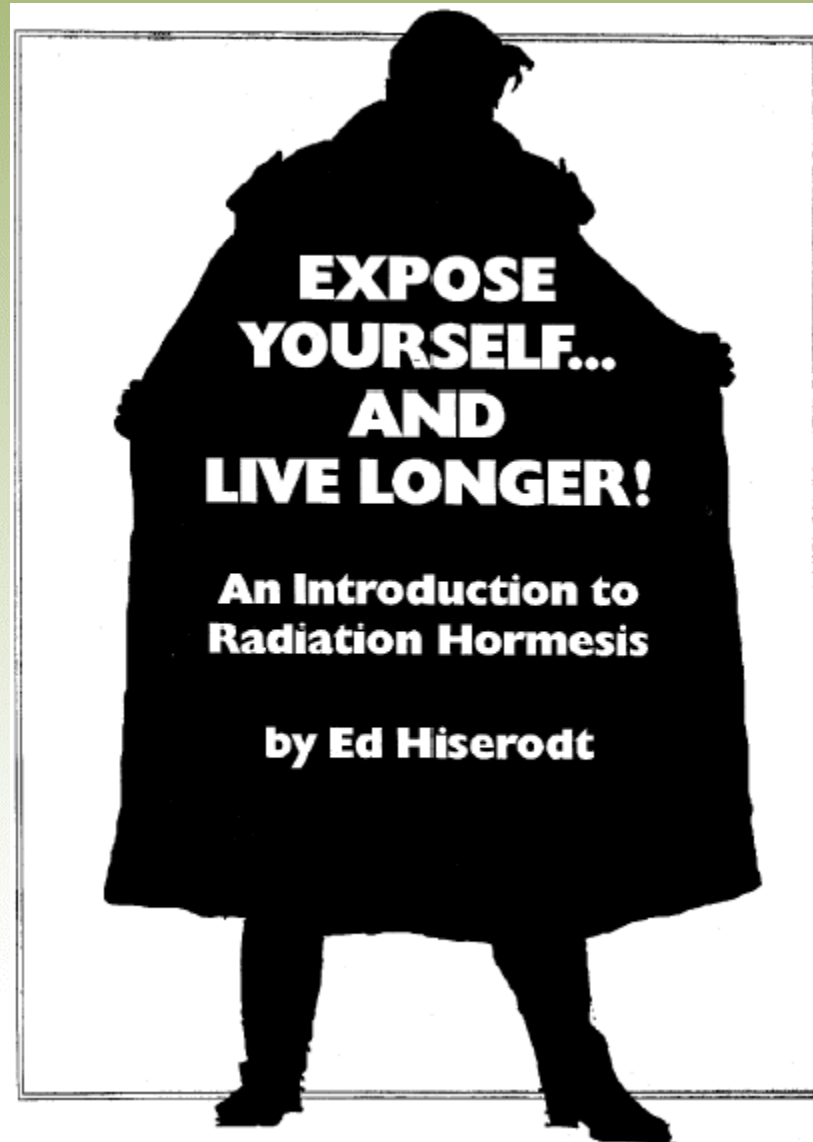
reference for many years to come. *Hormesis With Ionizing Radiation* (CRC Publ. Co., Boca Raton, Fla., 1980, 222pp.; for a price-gouging \$59.95) lists some twelve hundred references, and meticulously systemizes their results. A table listing merely results on gamma ray hormesis stretches for more than 20 pages, from 1957 to 1975, and lists experiments performed on organisms from viruses, bacteria and fungi through the plant and animal kingdoms all the way to vertebrates.

An interesting section of the book deals with "nine reasons why radiation hormesis has not been pursued diligently, nor exploited practically;" one of them is "disbelief in the results due to small numbers, poor or no statistical evaluations, and emotional inability to believe the differences are real."

Luckey seriously raises the question whether ionizing radiation is essential for life and states "Experiments by students in my laboratory indicate that radiation is essential for optimum reproduction." Moreover, based not merely on empirical statistics, but on well reasoned physiological arguments, he finds "ionizing radiation levels somewhat above ambient should be beneficial for many physiological functions."

His conclusions are carefully worded, supported by overwhelming evidence, and unambiguous. For example, "Radiation hormesis denies the validity of straight-line extrapolation from known harmful doses to zero. The argument that low doses give harmful effects in proportion to the dosage is invalid. . .

The title was.....



UNDER- EXPOSED

What If Radiation
Is Actually

GOOD
for You?

by Ed Hiserodt

...but we changed it.

Why People Fear Radiation

1. Inability to Sense

- Invisible
- Odorless
- Immaterial

2. Unquantifiable

- Confusing Units of Measure
- Unknown harmful levels

3. Media Bias

Radiation: Fear vs. Reality

Table 1 – News Stories on Deaths from Various Causes

	News Stories	Deaths per Year	In Previous Decade
Auto Accidents	120	50,000	500,000
Industrial Accidents	50	12,000	120,000
Asphyxiation accidents	20	4,500	45,000
Radiation accidents	200	0	0

Source: New York Times Information Bank, 1974 - 1978

If you remember these...



New International Radiation Standard...

1 SXR

= 175 millirad (mrad)

= 175 millirem (mrem)

= 1.75 milliGray (mGy)

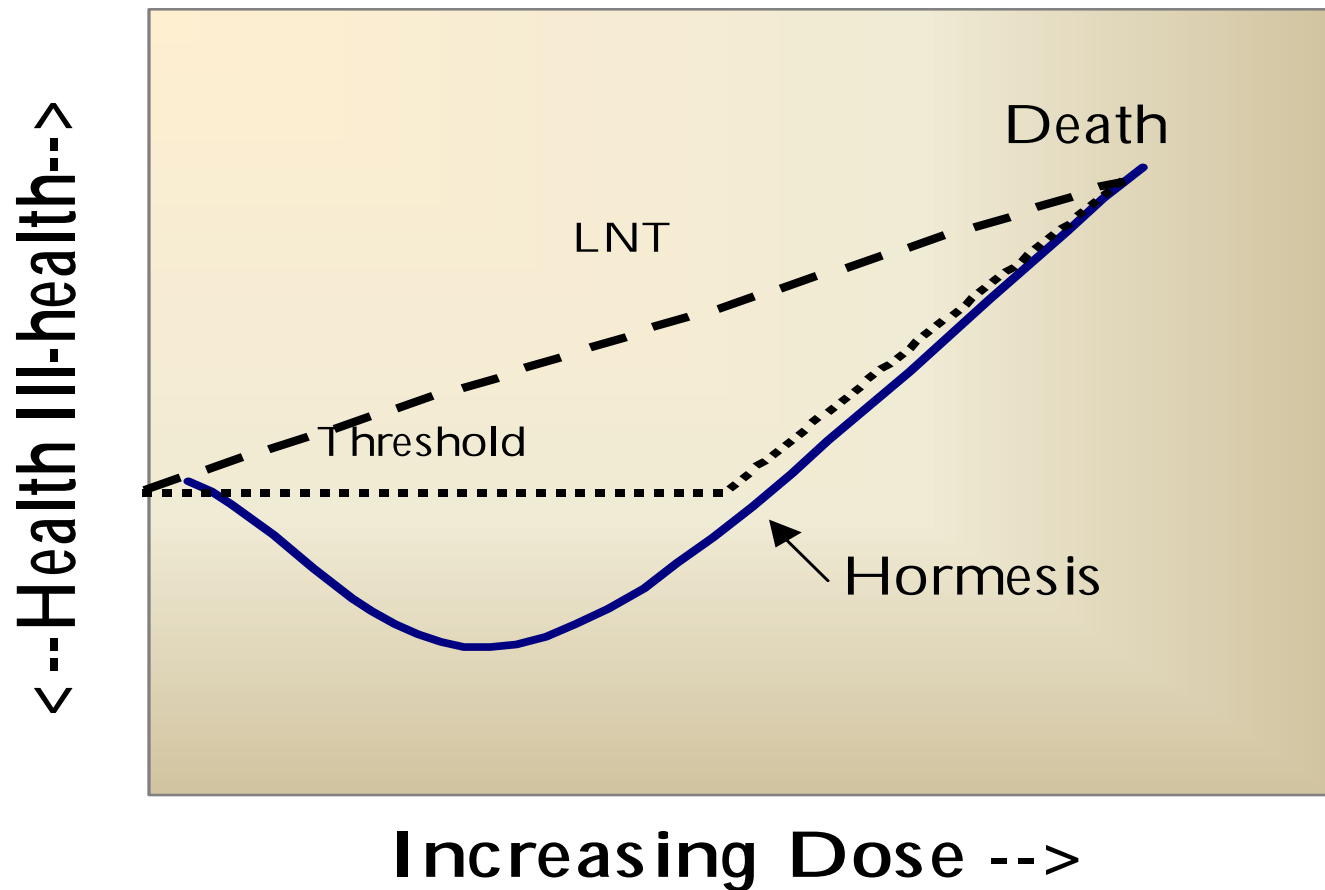
= 1.75 milliSievert (mSv)

= ½ Yr Average US Background

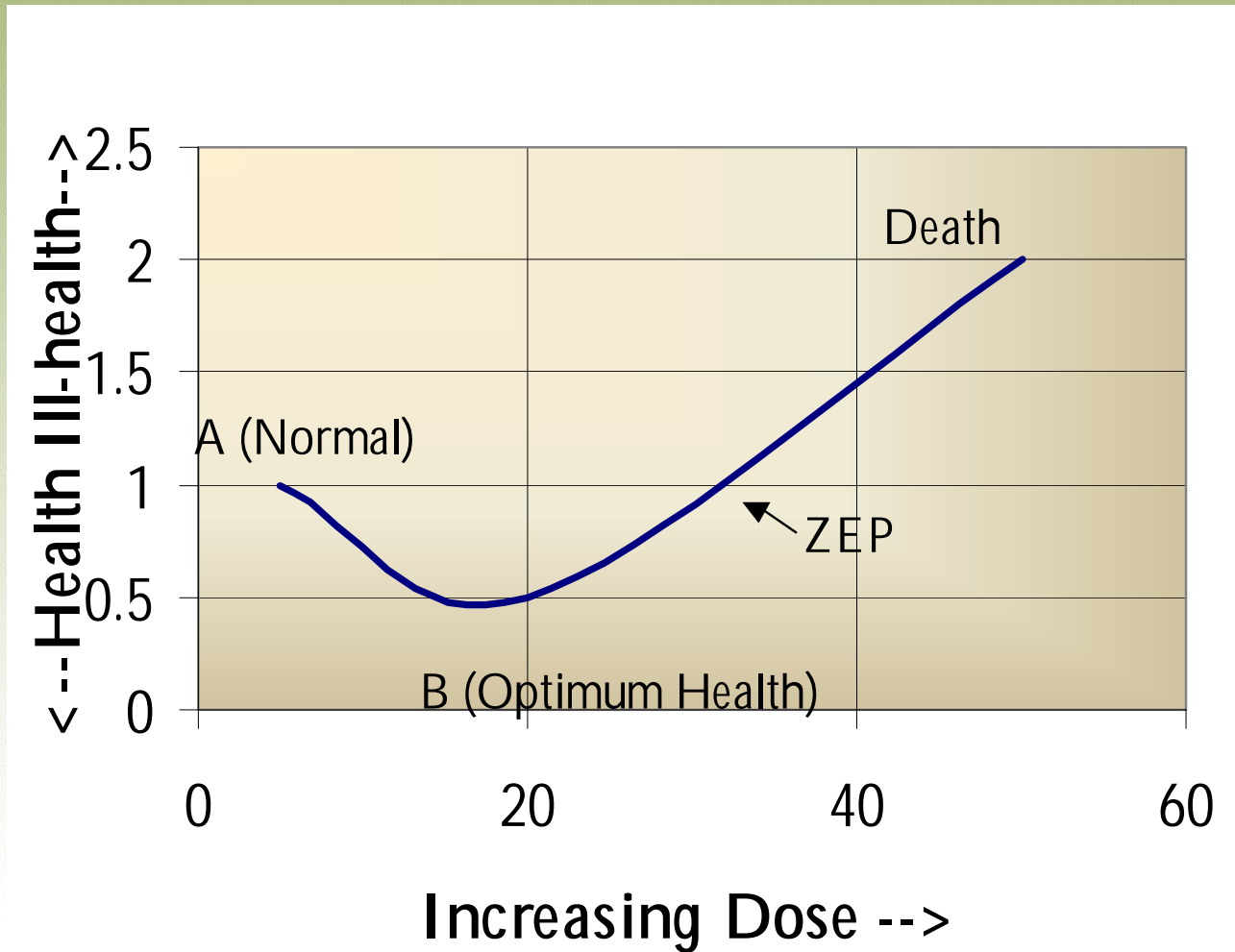
The LNT Equation

1. Every gamma ray has the potential for causing cancer.
2. The more radiation, the more cancer.
3. There is no safe level of radiation.

Dose-Response Theories

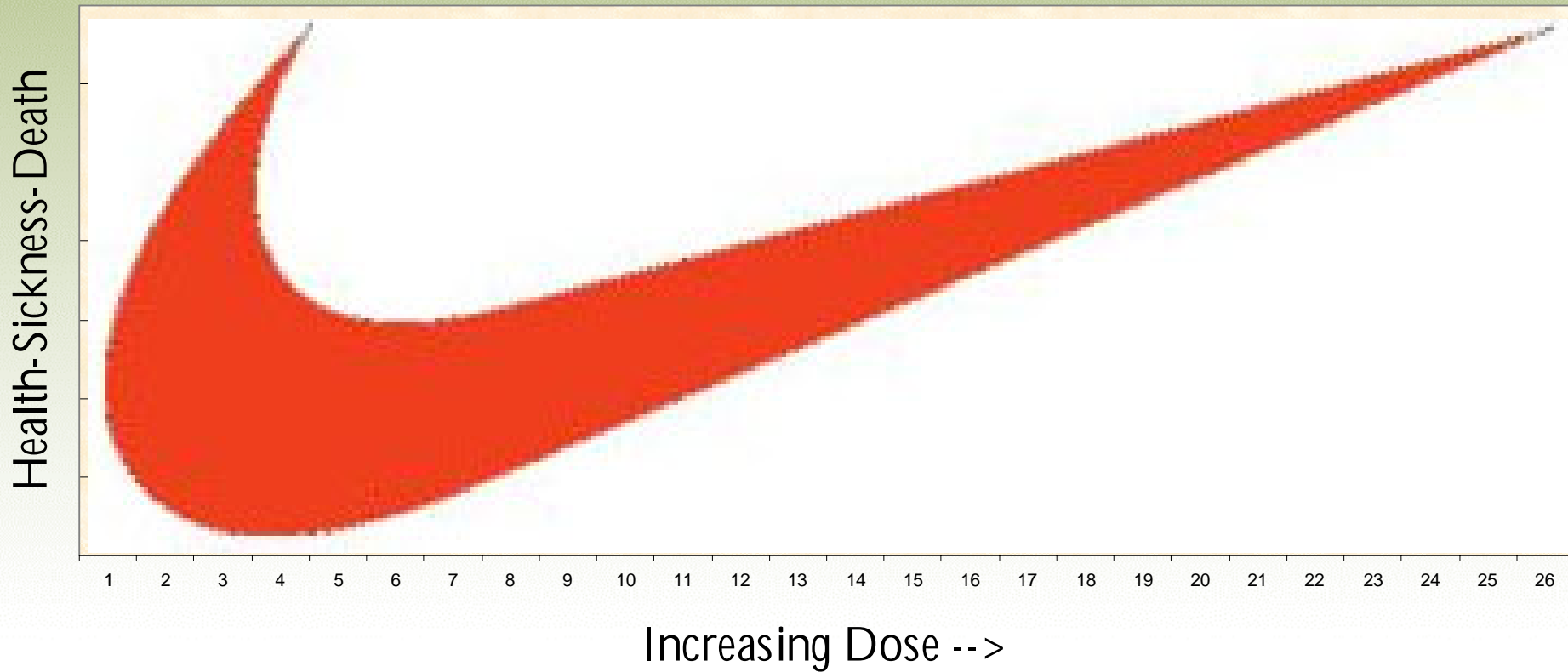


Typical Hormesis Curve



Hormesis – Grasping the Concept

Figure 1 - Typical Hormesis Curve



International Hormesis Symbol



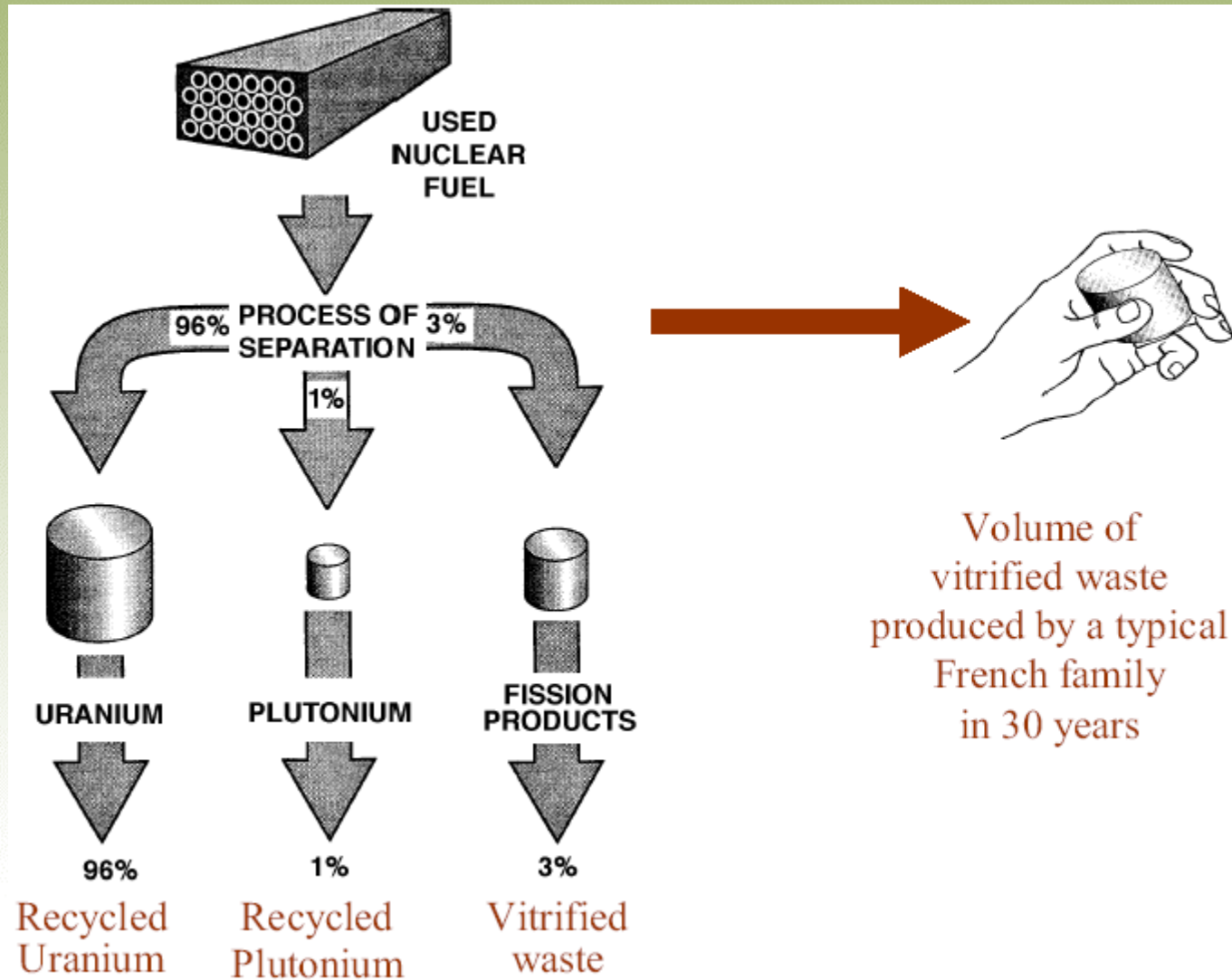
International Hormesis Symbol



Appearance of db/db mice at 90th week of age



Reprocessing of Nuclear Fuel is Ecological



Problems in the Dirty Bomb Business

- How much injury to inflict?
- How large an area?
- What isotopes to use?

Killer Isotopes?

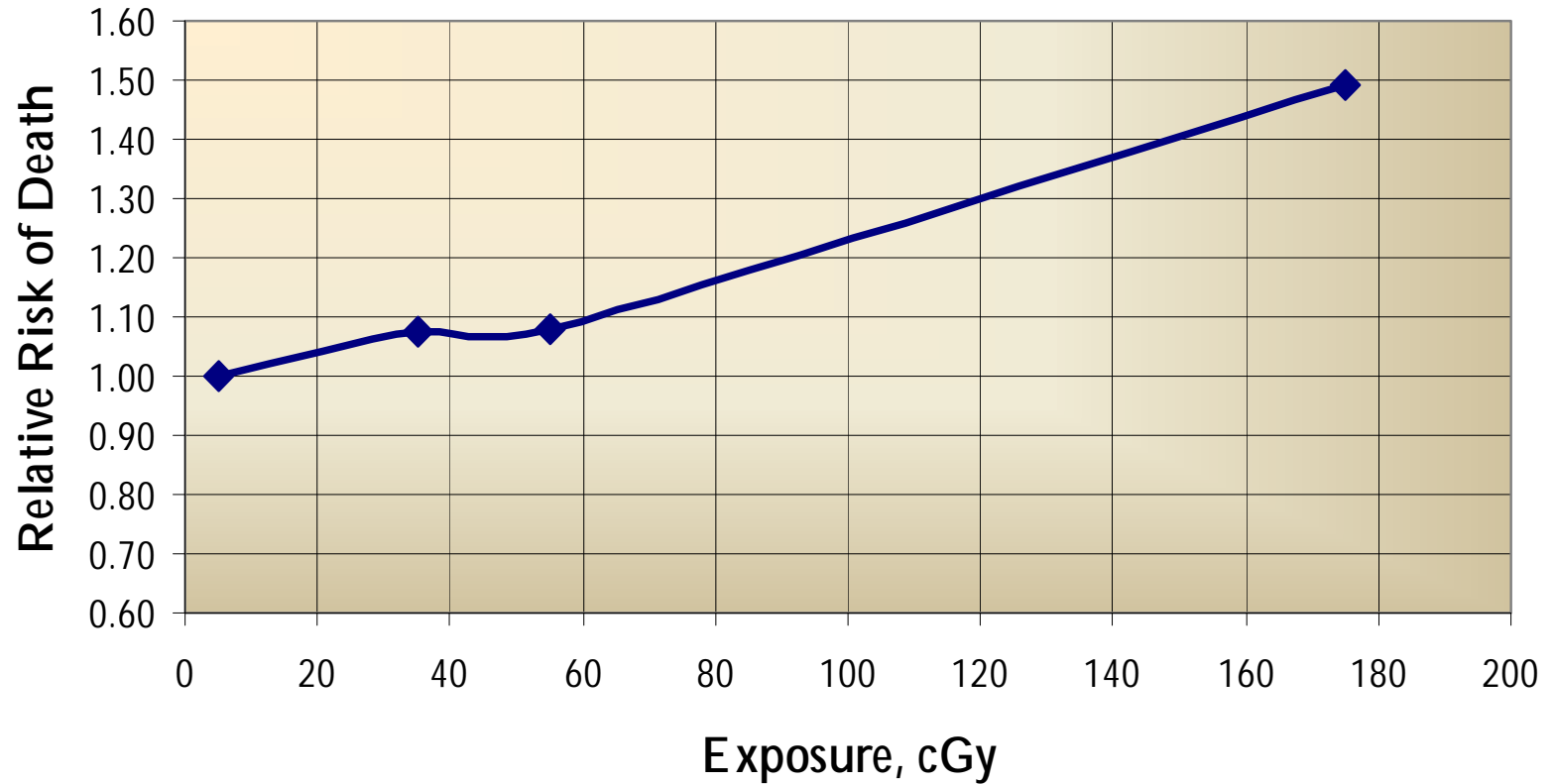
- Radium 226
- Cobalt 60
- Cesium 137, Americium 241,
Californium 252, Iridium 192

Problems in the Dirty Bomb Business

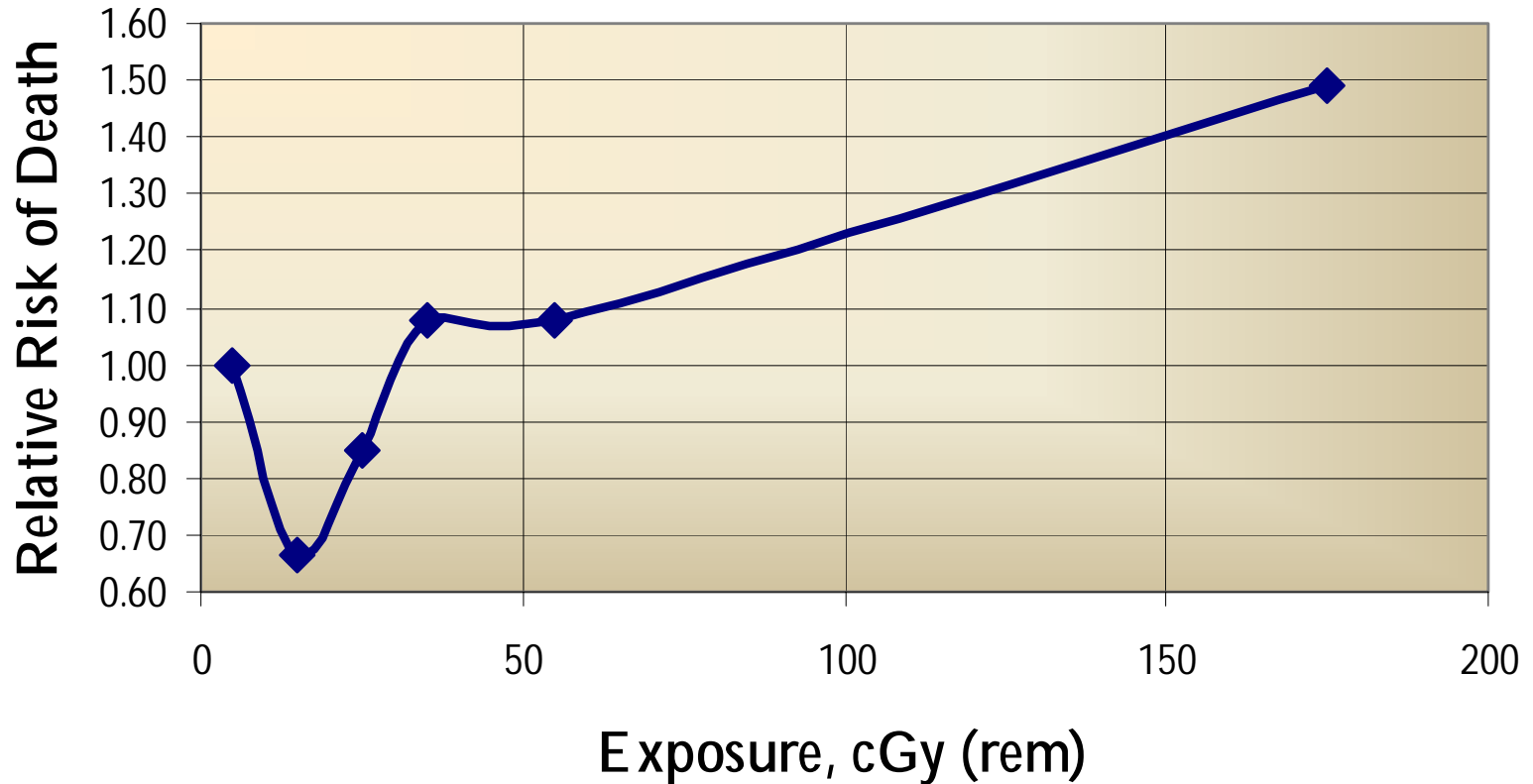
- How much injury to inflict?
- How large an area?
- What isotopes to use?
- How to disburse?

Radiation Serendipity...

"Proof" of the LNT...



Oh yeah, we forgot those data points.



Effects of Fluoroscopy on Cancer

- At 15 rad/cGy/rem/cSv there is a breast cancer mortality reduction of 34%
- At 25 rad/cGy/rem/cSv there is a breast cancer mortality reduction of 15%
- Between 40 rad – 80 rad there is an increase of 8% - 10%
- Above 100 rad, LNT kicks in

Effects of Fluoroscopy on Cancer

The decreased risk rate of breast cancer produced by low dose, low level radiation were rejected a priori by the choice of mathematical models that extrapolate the dose-risk relation from high dose exposures to low dose exposures.

Nine hundred excess deaths from breast cancer are predicted theoretically from the exposure of one million women to 0.15 Gy. However, the quantified low dose data predicts with better than 99% confidence limits that instead of causing 900 deaths, a dose of 0.15 Gy would prevent 10,000 deaths in these million women.

- Myron Polycove, M.D.

Visiting Fellow on the Nuclear Regulatory Commission

Lifesaving Radiation--the math

Women at risk -- 50,000,000

Five 3 rem exposures @ \$50 = \$250

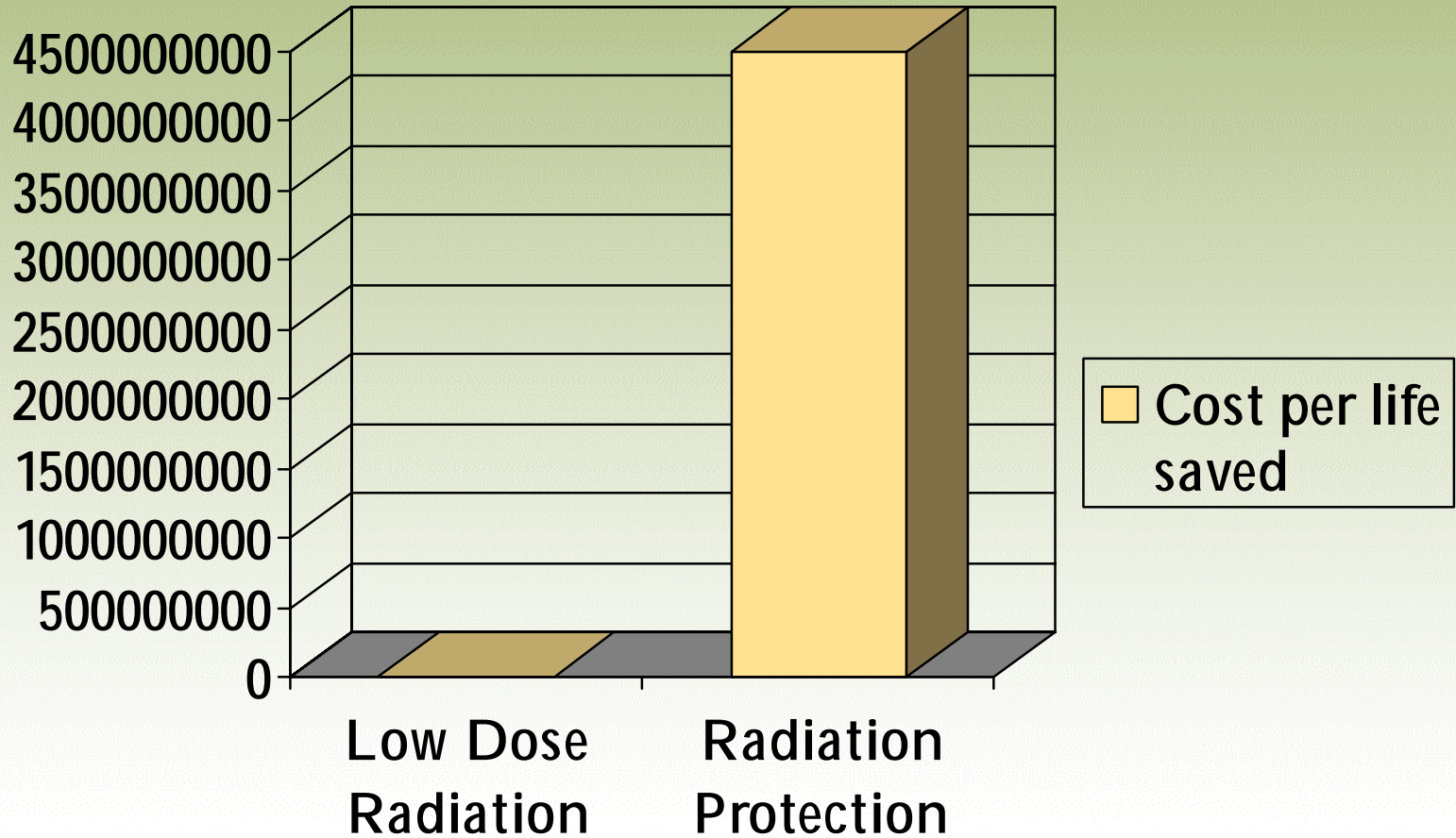
$\$250 \times 50,000,000 = \12.5 Billion

10,000 lives/million = 500,000 lives

$\$12.5 \text{ billion} / 500,000 \text{ lives} \dots$

= \$25,000 per life

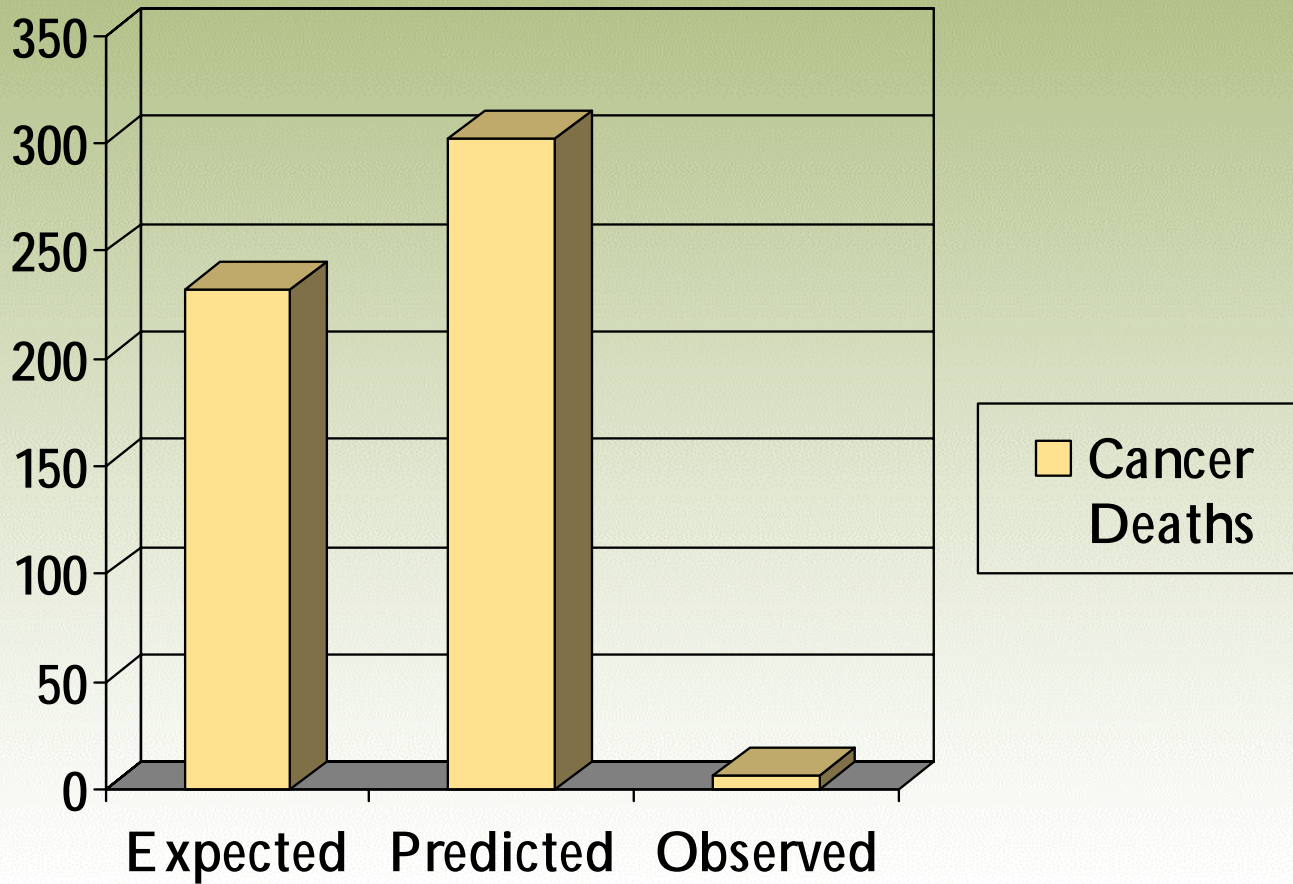
Lifesaving Cost Comparison



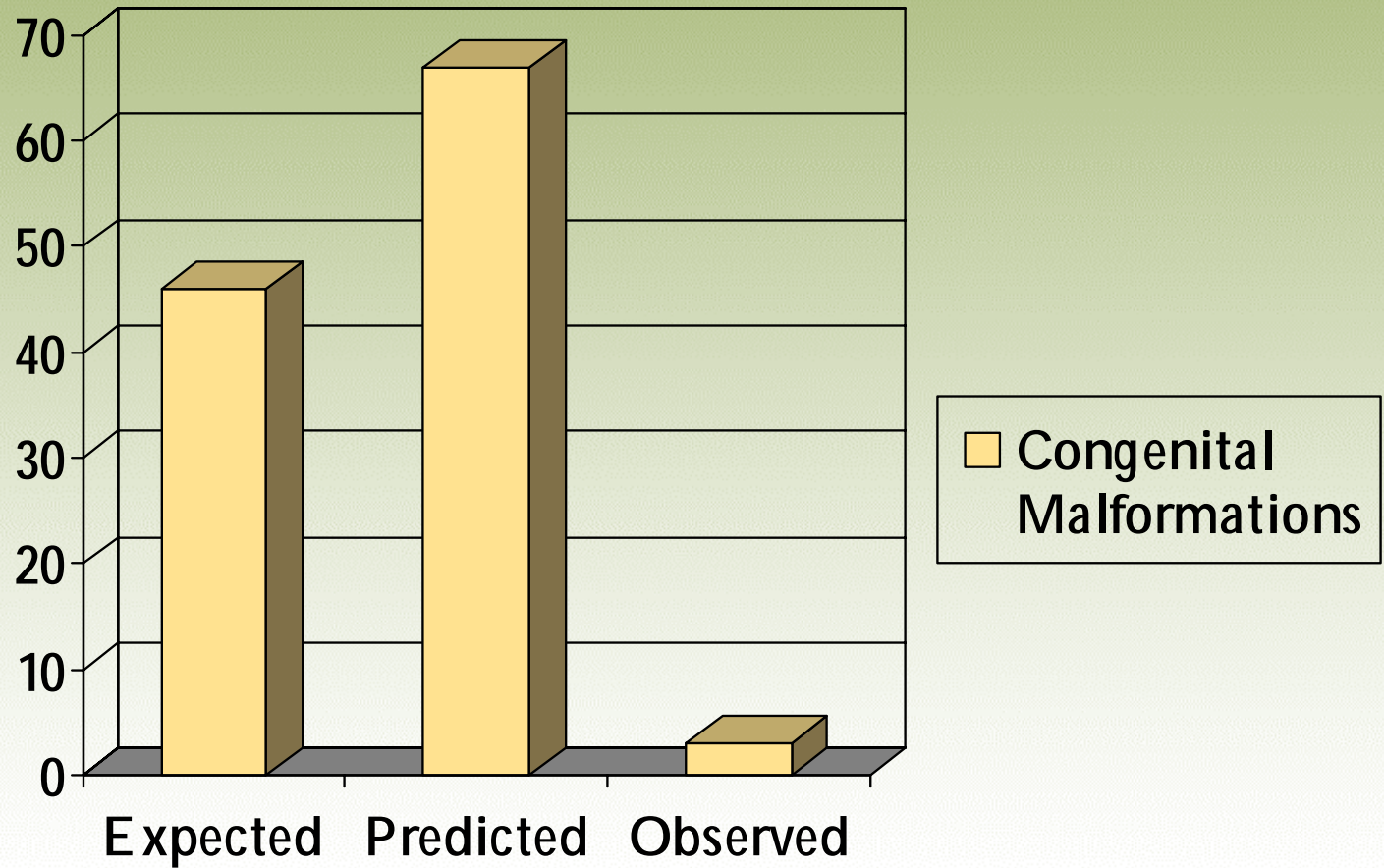
Picture of Taiwan Apartments



Taipei City Apartments



Taipei City Apartments



Picture of Taiwan Apartments



Guarapari Beach



Ramsar, Iran



Pripyat, Ukraine



Pripyat, Ukraine

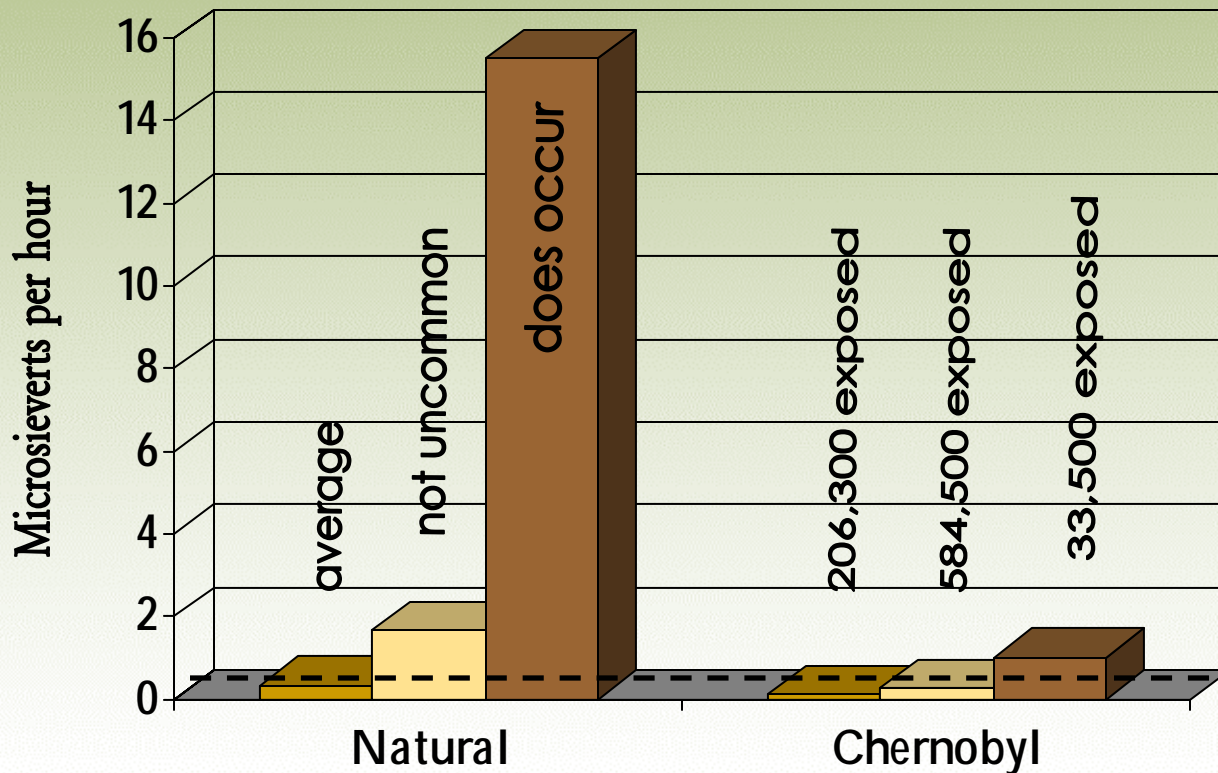


Pripyat, Ukraine



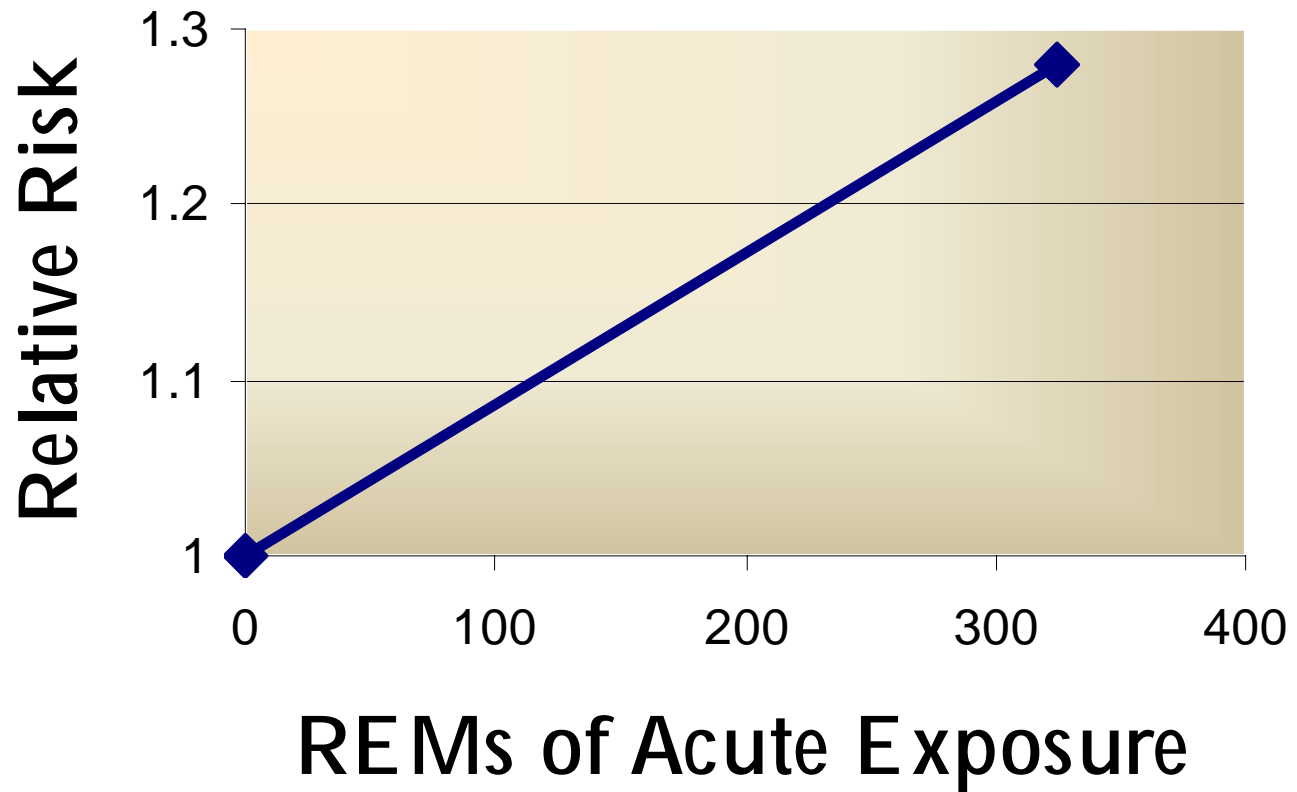
You Can Run, But You Can't Hide

Figure 5 – Comparison of Natural Radiation and Chernobyl Contamination

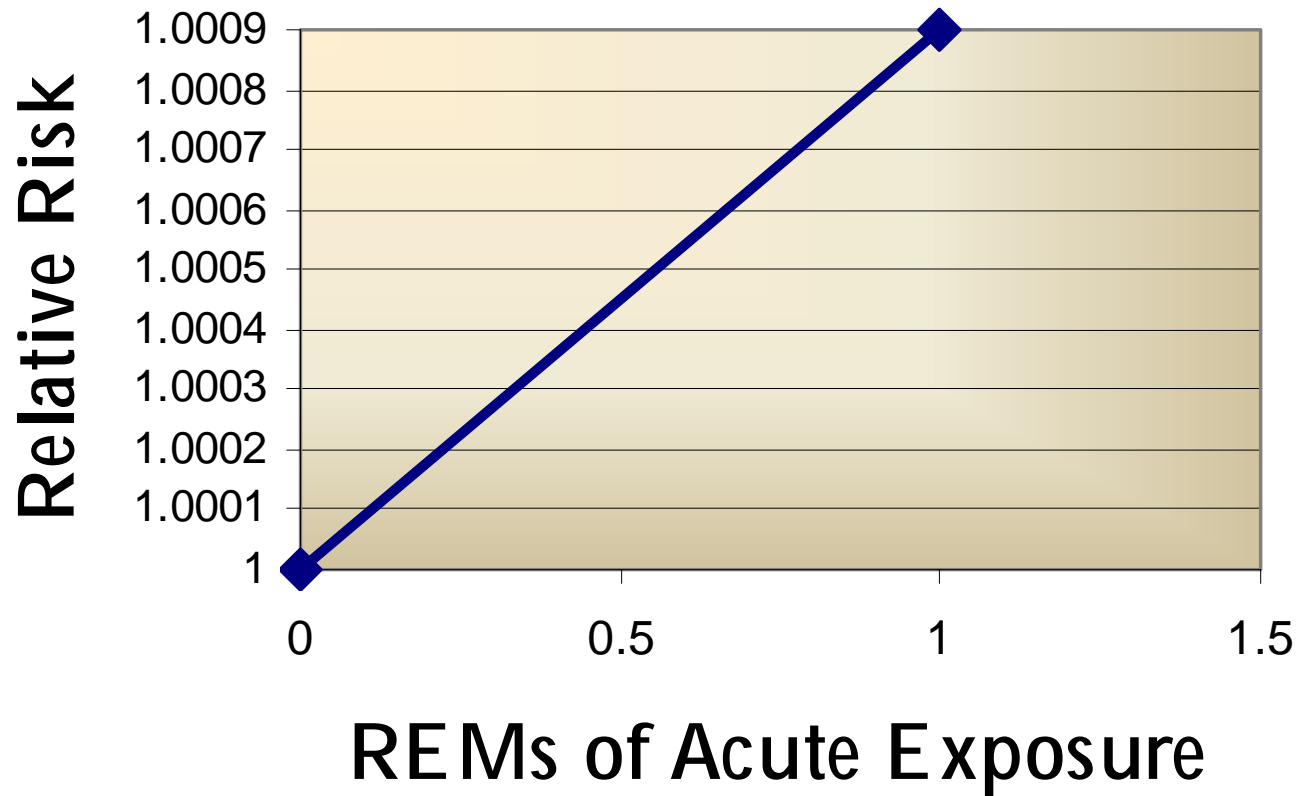


The dotted line marks the point of forced evacuation at Chernobyl.

Linear No-Threshold Theory



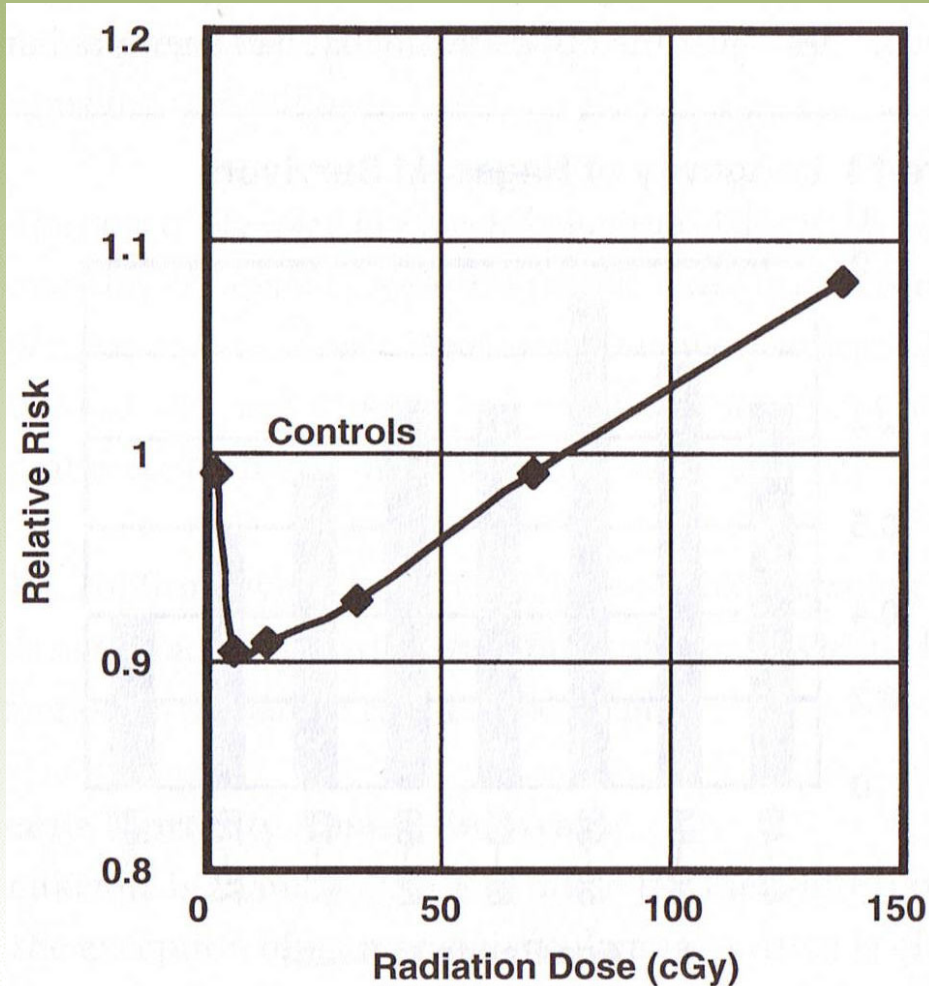
Get out the Microscope...



Excess Deaths

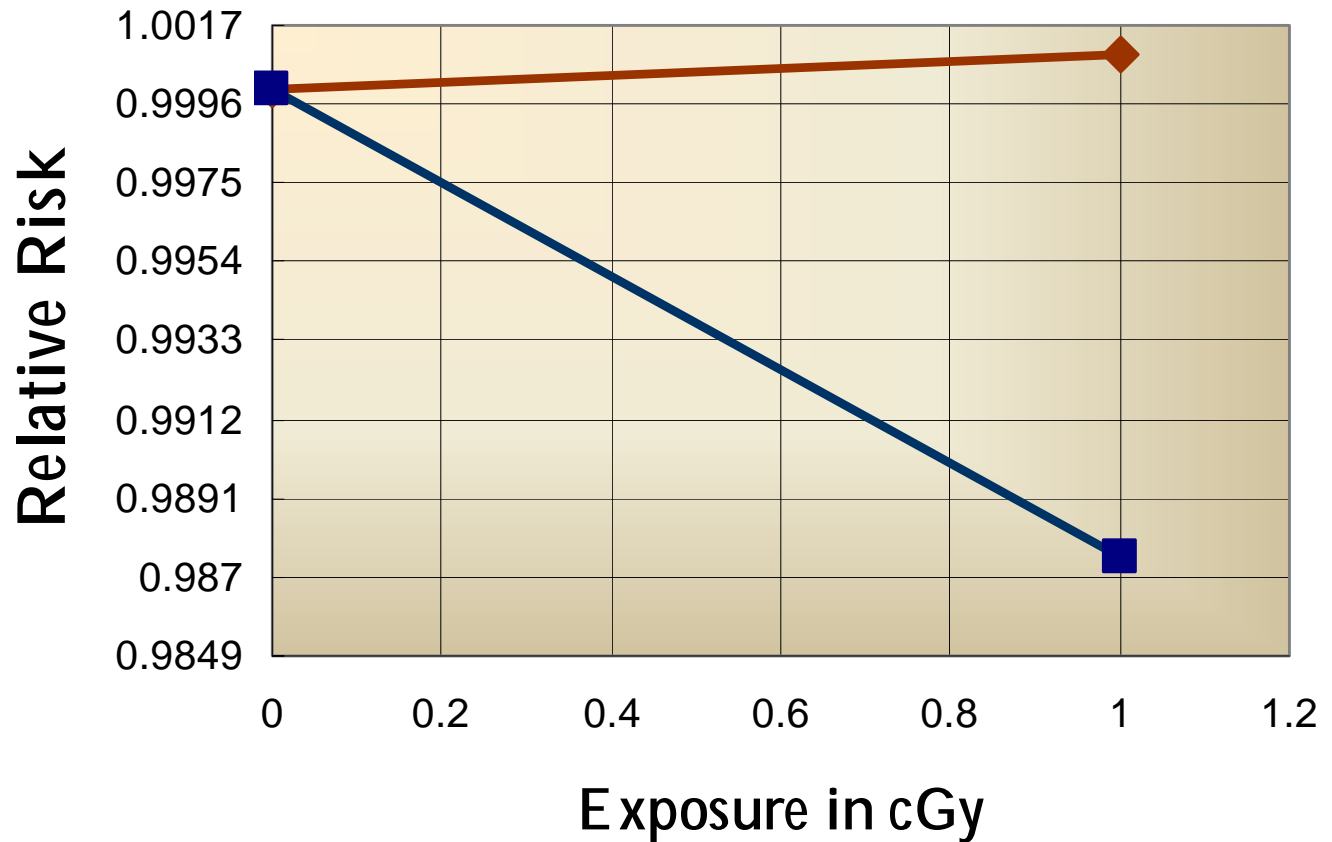
	mrem	Population	Normal	Relative Risk	Predicted Deaths	Excess
Greece	245	10 M	1,680,000	1.000225	1,680,379	379
Italy	140	56 M	9,408,000	1.000129	9,409,212	1,212
France	87.5	55 M	9,240,000	1.000081	9,240,744	744
Total excess deaths						2,344

Death Rates of A-Bomb Survivors in Hiroshima and Nagasaki (1950 – 85)



Source: Mine, M., Okumura, Y., Ichimara, M., Nakamura, T., and Kondo, S. Apparently beneficial effect of low to intermediate doses of A-bomb radiation on human life span. *International Journal of Radiological Biology*, 58:1035, 1990.

The Bright Side of the Picture



Excess Deaths

	mrem	Population	Normal	Relative Risk	Predicted Deaths	Excess
Greece	245	10 M	1,680,000	0.9725	1,633,800	-46,200
Italy	140	56 M	9,408,000	0.9842	9,259,354	-148,646
France	87.5	55 M	9,240,000	0.9902	9,149,448	-90,552
Total excess deaths						-285,398

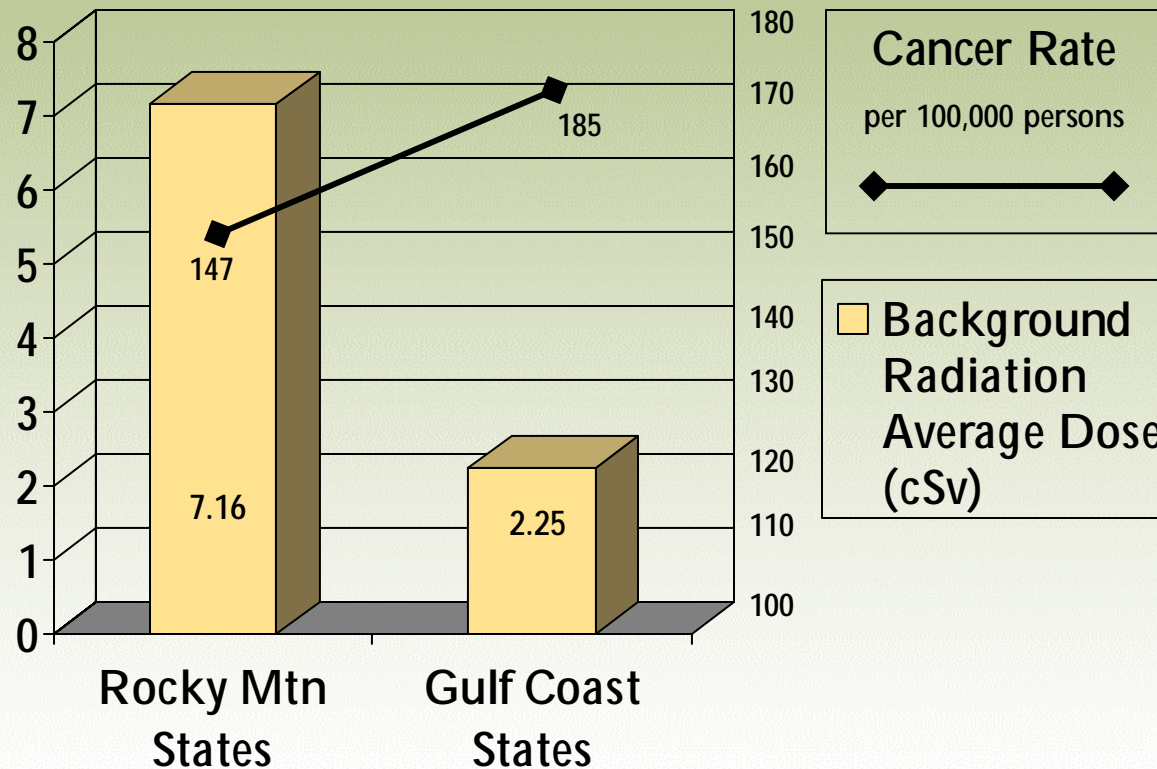
More Sources of Radiation

Free Enterprise Mine



More Sources of Radiation

The Colorado Plateau



Source: Jagger, H. Natural background radiation and cancer death in Rocky Mountain States and Gulf Coast States. *Health Physics*, 75(4), 1998. Cancer data from the American Cancer Society, 1998.

Suggested Sources of Radiation (by others)

- Tobernite and other materials available on e-Bay
- Enhanced residential radon
- Drive through gamma radiation for the whole family