

REVIEW OF ALAN WALTAR'S 2004 BOOK

Radiation and Modern Life, by Alan E. Waltar, Prometheus Books

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Some of the book sections:

Prologue (page 23)
How harmful is ionizing radiation (44)
History of nuclear power (102)
Issues for nuclear power (115)
Radiation health effects of space travel (185)
Fighting terrorism (195)
The question of the bomb (201)
Understanding our origins (205)
Radiological contamination (229)
A day with the atom (253)
Future—terrorism...(270)
Epilogue (273)

Some of many noteworthy points:

Financial contributions:

Radiation technology contributes \$420 billion to the U.S. economy, and 4.4 million jobs.

The benefits of harnessing ionizing radiation far outweigh the risks. (274)

Just one of several radioisotopes in common commerce is responsible for benefitting one out of every three Americans who enters a U.S. hospital or medical clinic (Page 9)

Less than 1% of all cancer is caused by radiation (p. 46)

Radiation accounts for much less than 10% of total leukemia incidence (46)

No scientifically documented cases where low level radiation (<10,000 mrem) caused any detrimental health effects (46)

As more data becomes available of no adverse health effects at low levels of radiation, many scientists argue that unnecessarily restrictive standards cost taxpayers huge sums (likely billions of \$/year) for safeguards that don't bear on public health or environment. (46)

Background radiation damage to cells is only 0.00004% of DNA damage due to other natural causes (48)

Linear hypothesis interpretation (of radiation damage to humans) explained (49, para. 2) and wrongly applied to the nuclear accidents at Three-mile-island and Chernobyl

Of the many epidemiological studies of people living in high background radiation areas, there has never been an instance of a demonstrated increase in cancer mortality (50)

Contact James B. Muckerheide (Radiation, Safety and Health nuclear group) for further documentation of the hormesis basis for understanding the human health effects of ionizing radiation (50)

Over one-third of the energy consumed in the U.S. comes in the form of electricity (101)

Two paragraphs on pp. 106-107 describe well the fission process/plant.

Natural gas pros/cons (111)

The U.S. uses much oil for transportation sector. We rely on oil for about one-third of our total energy consumption (112)

Land use: nuclear vs. solar vs. wind (113)

The maximum sun power that can ever exist is 70 watts/sq. ft. (without modification of the rays) (113)

Electrical energy production costs: (113)

| | |
|----------|----------------|
| Nuclear | 1.71 cents/kWh |
| Coal | 1.85 |
| Nat. Gas | 4.06 |
| Oil | 4.41 |

Geothermal: the bulk of the mass beneath the crust of the earth is heated by radioactive decay (114)

The author lists issues for nuclear power as: (115)

- o Safety
- o Waste disposal—there is enormous value in the material remaining in used nuclear fuel (120)

Refrain from permanently burying spent (used) nuclear fuel; burial wastes an enormous potential for (many) beneficial uses (120)

- o Non-proliferation
- o Cost—the biggest hurdle is cost for construction of new plants (122)

Performance improvement of nuclear plants—existing nuclear plants in just 10 years have added the equivalent of bringing 24 new plants on-line, even though no new plants have physically been built (123)

The Nuclear Energy Institute predicts that the U.S. (should have) the equivalent of about 50 new nuclear plants on-line in about 2020, just to retain the current 20% market share (123)

As fossil-fueled plants are determined to be environmentally unsafe (due to emissions), more nuclear plants will be required (123)

New, safer, and NRC-approved designs enable nuclear plants to be built in

less than five years, instead of 10 to 15 years as in the 1980s

- o General public acceptance—a substantial majority of the American public supports nuclear power (124)

World need for energy: U.S. citizens now use three times the energy per capita that the average world citizen will apparently be consuming in 2050 (126)

Terrorism

Dirty bomb: a radiation dispersion device (RDD)

At a point one mile from RDD explosion, the hazard from radiation would drop by a factor of 27 million (201)

Terrorists willing to die are terrorists because they are so desperate in their living conditions that life no longer holds meaning, promise, or hope (204)

Perspective on “risk” (per Dr. Bernard Cohen) (203)

The biggest hazard to a male is to be unemployed and living in poverty. The life patterns formed by being forced to live in poverty rob such a man of 3500 days of normal life expectancy (~10 years).

The second biggest hazard for a male is to remain unmarried. An unmarried male, on average, loses 3000 days of normal life expectancy.

A person 30# overweight can expect to lose 1,020 days of his or her normal life expectancy.

The annual risk of dying from heart disease is 1 in 397, whereas it is 1 in 56,424,800 for anthrax.

The author lived adjacent to the Hanford, Washington project for over 30 years. He knows of only one person who has suffered any adverse health effects due to the 60 years of site activity—one incident of a contaminated work area due to a chemical explosion in a glove box. (230)

By far the serious radiological insults to the environment occurred within the former soviet union. By comparison, the U.S. sites look pristine. (231)

The 1986 Chernobyl reactor accident occurred after technicians deliberately disabled all safety systems and pushed the reactor into a mode never tried before, in order to conduct a special experiment. (231)

The author stood on top of shielded, encapsulated high-level waste packages at both the La Hague reprocessing plant in France and the Sellafield reprocessing plant in Britain, and his radiation dose rate was less than normal background. (232)

Records from these reprocessing plants are publicly published and show that workers get less radiation at work than (walking around outside of work). (232)

As of 1994, some two million shipments of radioactive waste were made annually in the U.S. (There was) not a single incident of any member of the public being exposed to high levels of radiation or injured due to a radioactive release from any of these packages. (232)

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Additional key words

Radiation enhances precious gems (209)

Nuclear powered submarines the former soviet union deliberately sunk and discarded in the northern oceans (231)

Cask tests (233)

The Asian Brown Cloud, of fossil fuel origin, in August 2002 (234)

Global climate change (235)

Isotopes harnessed (272)

Hormesis (pp. 46, 50, 263, 299)

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