

Lecture 5

Experiments Without Controls

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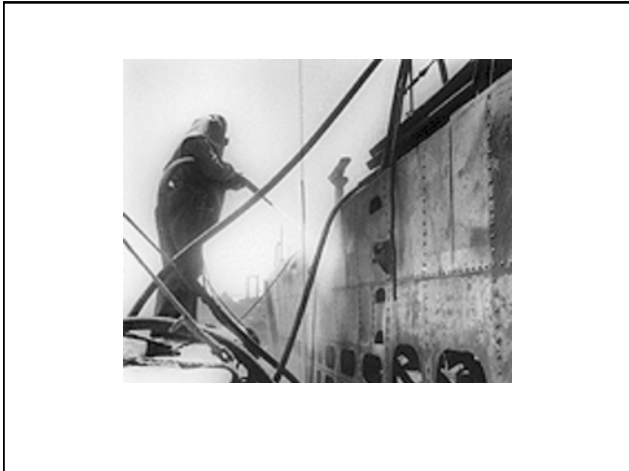
Challenges Faced by AEC

- *Understanding Resilience to an Attack*
- *How to Minimize Human Exposure*
- *How to Decontaminate & Restore Environment*
- *How to Convince Public of the Need for Testing*
- *How to Maintain Secrets*
- *How to Manage Those Harmed by Experiments*



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33,000 Protesters Over City's Redevelopment Plan for 1400 acres.

Effective Radiation Dose: 1951-1962

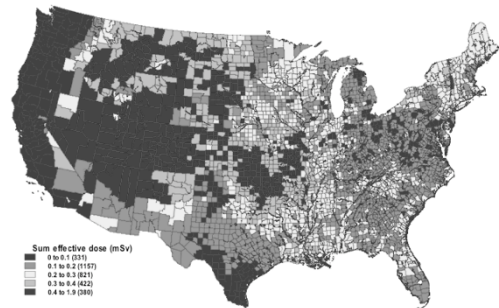


Fig. 26. Map of the effective dose by geographical area for the tests conducted from 1951 through 1962.

Downwinders.

\$50,000 is available to an eligible individual who was physically present in one of the affected areas downwind of the Nevada Test Site during a period of atmospheric nuclear testing, and later contracted a specified compensable disease.

Radiation Exposure Compensation Act 1990

- Providing for compassionate payments to individuals who contracted certain cancers and other serious diseases as a result of their exposure to radiation released during above-ground nuclear weapons tests or as a result of their exposure to radiation during employment in underground uranium mines.

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Onsite Participants:

Nevada, Pacific, Trinity, or South Atlantic Test Sites

A payment of \$75,000 is available to eligible individuals who participated onsite in a test involving the atmospheric detonation of a nuclear device, and later developed a specified compensable disease.



***Uranium Miners, Millworkers
& Ore Transporters***

\$100,000 is available to eligible individuals employed in aboveground or underground uranium mines

If mines were located in Colorado, New Mexico, Arizona, Wyoming, South Dakota, Washington, Utah, Idaho, North Dakota, Oregon, and Texas

Any time during the period beginning on January 1, 1942, and ending on December 31, 1971.

Claim Type Desc	Approved	\$ Approved	Denied	Total
Downwinder	12,793	\$639,620,000	3,498	16,683
Onsite Participant	1,274	\$91,058,476	1,527	2,849
Uranium Miner	4,989	\$498,174,560	2,979	8,112
Uranium Miller	1,204	\$120,400,000	319	1,562
Ore Transporter	246	\$24,600,000	95	347
Total:	20,506	\$1,373,853,036	8,418	29,553

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Nuremberg Trial 1946

23 Medical Doctors on trial for murder, torture and other atrocities performed in the name of medical science in concentration camps.

Nuremberg Code (1946)

1. Voluntary & Informed Consent of the Human Subject is Essential.
2. The experiment should be such as to yield fruitful results for the good of society, unprocurable by other methods or means of study, and not random and unnecessary in nature.
3. Scientists should have conducted prior animal testing, and possess knowledge of the natural history of the disease being explored.
4. Conduct experiment to minimize unnecessary physical and mental suffering.
5. No experiment should be conducted if death or disability is anticipated.
6. The degree of risk should be less than the humanitarian importance of intent.
7. Facilities should be available to protect against remote possibility of injury, disability or death.
8. The experiment should be conducted only by qualified scientists.
9. The human subject should be free to terminate the experiment for any reason of physical or mental stress.
10. The experiment should be terminated if at any time the scientist believes that injury, disability or death is a likely outcome.

American Medical Association Guidelines

- *Voluntary and Understanding Consent of Subject*
- *Prior Animal Experimentation*
- *Appropriate Medical Supervision*
- *Those Treated Expected to Benefit*

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Isotope Injections at Brookhaven National Lab

Government Funded Human Experiments

Between 1944 and 1974 the AEC/DOE sponsored pediatric research with radioactive compounds to better understand children's physiology, pathology, and diagnostic technology.

81 studies involved children's participation in radiation research.

21 studies supported by federal funds were determined to be "non-therapeutic"...no benefit to the participating child could possibly result.

AEC Medical Advisor:

Recommending suppression of evidence of plutonium injections...

"There are a large number of papers that do not violate national security, but do cause considerable concern.

"Papers referring to levels of soil and water contamination surrounding AEC installations, idle speculation on the future genetic effects of radiation and papers dealing with potential process hazards to employees are definitely prejudicial to the best interests of the government.

" Every such release is reflected in an increase in insurance claims, increased difficulty in labor relations and adverse public sentiment. "

Vanderbilt Hospital Nashville Tennessee
1945-1947

829 pregnant women
fed radioactive tracer cocktails

University of Tennessee College of
Medicine, and the John Gaston Hospital

In 1951, two African American women, ages 22 and 33 years old were administered I^{131} , while nursing infants 4 months in age.

Both mothers had been diagnosed with thyroid disease.

The infants continued to nurse, and the levels of I^{131} were monitored in the mothers breast milk and thyroid, and the infants thyroid.

The infants accumulation of I^{131} in their thyroids was significant, prompting the researchers to warn against the administration of I^{131} to lactating women.

Harvard, BU and Mass General:

Experiment on “mentally retarded children” in
1961 at the Wrentham State School.

The experiment was designed to understand
whether non-radioactive iodine could block
thyroid uptake of radioactive I^{131} .

NIH, AEC & Quaker Oats Inc.

Students living at the Walter E. Fernald School, a
Massachusetts institution for "mentally retarded" children
were fed breakfast food containing radioactive iron and
calcium.

Nine boys between 10 and 15 years in age, and one 21 year
old served as subjects. They were divided into two groups,
the first receiving an intravenous injection of Ca^{45} , while the
others received it orally in the breakfast cereals.

Several letters were sent to the parents of students, who
would become members of the “Science Club” if they agreed
to participate.

Dear Parent:

In previous years we have done some examinations in connection with the nutritional department of the Massachusetts Institute of Technology, with the purposes of helping to improve the nutrition of our children and to help them in general. For the checking up of the children, we occasionally need to take some blood samples, which are then analyzed. The blood samples are taken after one test meal which consists of a special breakfast meal containing a certain amount of calcium. We have asked for volunteers to give a sample of blood once a month for three months, and your son has agreed to volunteer because the boys who belong to the Science Club have many additional privileges. They get a quart of milk daily during that time, and are taken to a baseball game, to the beach and to some outside dinners and they enjoy it greatly. I hope that you have no objection that your son is voluntarily participating in this study. The first study will start on Monday, June 8th, and if you have not expressed any objections we will assume that your son may participate.

Sincerely yours,
Clemens E. Benda, M.D.
Clinical Director and
Malcolm J. Farrell, M.D.
Superintendent

Clinton Era Reforms

- President Clinton's 1995 EO on declassification
- 400 million pages of records were declassified between 1990-2000.
- 20 percent or so reduction in the total backlog.
- However new declassification programs have been initiated in CIA, the National Security Agency, and the National Reconnaissance Office.

DOE Reforms

- Former Energy Secretary Hazel O'Leary undertook her "openness initiative" in 1993.
- Resulted in the recent declassification of some 70 categories of information previously restricted under the Atomic Energy Act.
- In 5 years, DOE declassified more information than during the previous five decades combined.

National Security Administration

- Largest Intelligence Agency in World
- Exempt from FOIA.
- Recent request for intelligence budget information for 1947 rejected as a threat to national security.
- Secret Programs: \$23.2 billion: 17% Pentagon's total budget.

Environmental and Health Lessons from Nuclear Weapons Testing

- Persistence: Half life & Residency
- Movement: Atmosphere, Water, Soils...Food
- Fate: Human Tissues
- Effects: Thyroid, Cancer, Heritable Mutations
- Dose Response
- Susceptibility
- Health Surveillance

Figure 3-2
Radiation Hotspots Resulting From the Chernobyl Nuclear Power Plant Accident, April 1986



HOTSPOTS OF RADIATION: Cesium 137/
km²

- Chernobyl
- Confiscated 40 Ci/km²
10 mile radius
- Permanent Control (15-40)
- Periodic Control (5-15)
- Unregulated (1-5)



AREA
CONTAMINATED
3200 sq km
40 Ci/sq km

76,000 sq km
1-5 Ci/sq km

3 million
people
1-5 Ci /sq mi



500 Million Tons of Highly Radioactive Waste Entombed

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Concluding Thoughts

- *Secrecy is a Form of Control or Regulation*
- *Concentrates Knowledge Among Those with Authority and Power*
- *Secrecy Inhibits Public Intelligence*
- *Undermines Democracy*
- *Secrecy Prevents Accountability*
- *Secrecy Breeds Clandestine Surveillance: And Normally Invades Privacy*
- *May Restrict Individual Liberty—Limit Rights (e.g. 911 detainees)*
- *Enhances the Persuasive Power of Elites: Provides Narrative Advantage*
- *Secrets Turn Information into a Commodity of Great Value: Property*
- *..Yet Their Value Limits their Lifespan....*

“It is not enough for a handful of experts to attempt the solution of a problem, to solve it and then to apply it.

“The restriction of knowledge to an elite group destroys the spirit of society and leads to its intellectual impoverishment.”

Albert Einstein