

Environmental epidemiology for the people:

Working with communities on toxic chemicals and the precautionary principle

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Science for the People Conference

April 12, 2014

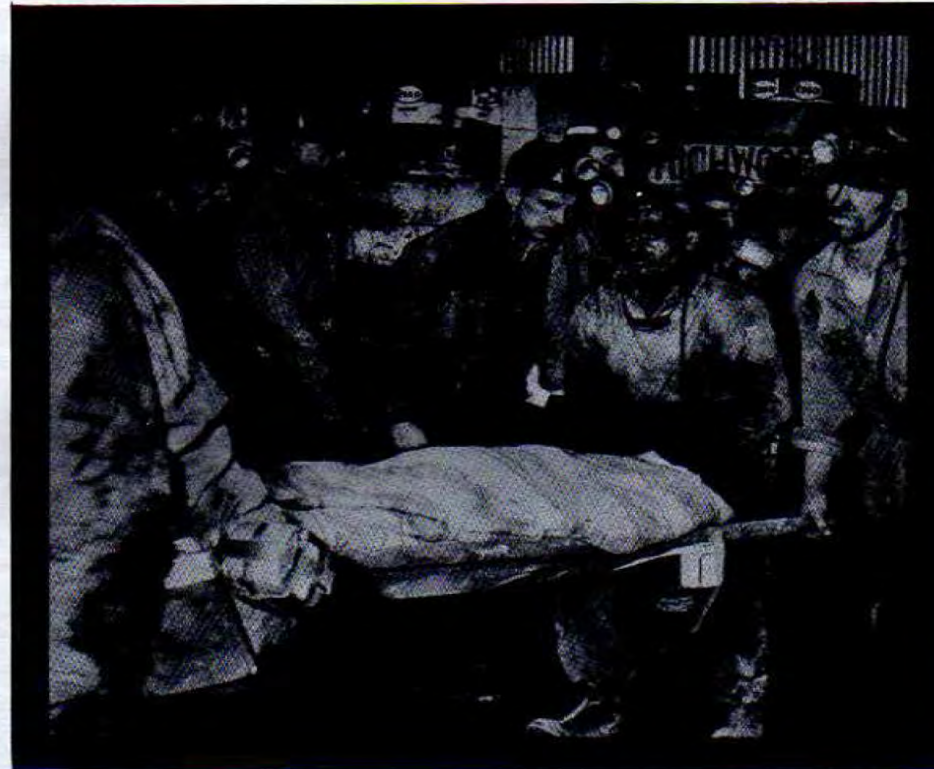
Outline and Main Points

- The practice of environmental epidemiology should be consistent with the precautionary principle
- However, environmental epidemiology as practiced by public health and environmental agencies does not adhere to the precautionary principle and fails to serve communities
- Two examples of environmental epidemiology with/for the people:
 - Brick Township, NJ autism cluster investigation
 - U.S. Marine Corps Base Camp Lejeune, NC studies of drinking water contamination and adverse health outcomes

Vol. VII
No. 5
75¢

SCIENCE FOR THE PEOPLE

OCCUPATIONAL HEALTH and SAFETY



BI-MONTHLY PUBLICATION OF SCIENTISTS AND ENGINEERS
FOR SOCIAL AND POLITICAL ACTION · SESPA · SEPT. 1975

SCIENCE FOR THE PEOPLE

EPIDEMIC ! Cancer-Producing Society

US DEATHS FROM VARIOUS CAUSES

CANCER DEATHS, 1975	365,000
World War II Battle Deaths	292,000
Viet Nam War Deaths (8 years)	41,000
Korean War Deaths (3 years)	54,000
Spain Influenza Deaths (1918)	100,000
Radio Cesium (1945) Deaths	1,000



RACISM AT HARVARD
MALE CONTRACEPTION
JOBS AND THE ENVIRONMENT
NONVERBAL COMMUNICATION & WOMEN

JULY 1976 VOL. VIII NO. 4 \$1

Seabrook, NH

May 1, 1977



Primary roles of epidemiologists

- Design and conduct scientific research
- Apply knowledge from scientific research to promote public health
 - Participate in policymaking and interventions
 - **Advocate for public health – an obligation to act!**

Precautionary Principle

“When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some of the cause and effect relationships are not fully established scientifically.”

– Wingspread Conference Statement, January 1998

Precautionary Principle: Central tenets

- **Heed early warnings!**
- Take preventive action in the face of uncertainty (but with credible evidence of potential harm)
- Shift burden of proof to the proponents of activity
- Explore a wide range of alternatives
 - Set goals that move us towards desirable futures
- Increase public participation in decision-making

Environmental Community Action (ECO-Action)

- GA environmental and social justice grassroots organization, founded in 1989
- Recognizes that environmental threats to health and quality of life of many communities are rooted in political and economic inequalities

ECO-Action

- **Mission:**
 - help communities organize to confront environmental health threats
 - strengthen community participation in environmental (& other local issues) decision-making
- Assisted Athens GA community to fight planned expansion and increased TCE emissions by an auto parts plant
 - Nakanishi Co. agreed to replace TCE with a non-carcinogenic, low toxicity degreaser
 - The process recaptures chemical for re-use

INCONCLUSIVE BY DESIGN:

*Waste, Fraud and Abuse in
Federal Environmental Health Research*

An Investigative Study by
the Environmental Health Network
and the National Toxics Campaign Fund

May 1992

Epidemiologists and other public health practitioners tend to:

- Have a negative attitude toward advocacy
 - fear that advocacy will undermine “objectivity”
- view activists as emotional and inflexible, unable to be rigorous and objective
 - fear that community involvement will “contaminate” the research





Health and environmental agencies tend to:

- Maintain ownership of the problem definition and the problem solution
- Discount local knowledge
- Decide-Announce-Defend (“**DAD**”) strategy
 - the public is “involved” only after the deliberation and decision-making process is over.
- Conduct research that is not responsive to community needs

Health and environmental agencies tend to:

- Use a “one-size fits all” methodological approach
- Ignore assumptions and values underlying their methods
- Use statistical significance testing to deny a causal relationship
 - Err on the side of rejecting a causal relationship
- Deny links between chemical exposures and diseases
- Be more concerned with conserving their resources



A Spring Night In Cancer Alley
Mossville, LA | 1956 - 2013

UNLUCKY CHAP,
WATSON... APPARENTLY
HE MET WITH AN
ACCIDENT...



Table 26.4 Key aspects of research likely to affect the outcome of a study, whether underestimating (false negative) or exaggerating (false positive) the possible existence of an environmental hazard

Methodological features and their main direction of error	
Inadequate statistical power	False negative
Lost cases and inadequate follow-up for long-term effects	
Exposure misclassification	
Insensitive or imprecise outcome measures	
Adjustment for confounders with better precision than the exposure	
Failure to adjust for confounder with effects in the opposite direction	
Disregarding vulnerable subgroups	
5 % probability level to minimize risk of false positives (Type I error)	
20 % probability level to minimize risk of false negatives (Type II error)	False positive
Pressure to avoid false alarm	
Incomplete adjustment for confounders with similar effects	
Post hoc hypothesis	
Publication bias towards positive findings	



"I can prove it or disprove it! What do you want me to do?"



Definition of a public health catastrophe:

“a health effect so powerful, even an epidemiologic study can detect it.”

-David Ozonoff

Chemical Industry Tactics

- Fund and publish research that supports the industry position
- Hide industry involvement in research
- Suppress or criticize research that does not support the industry position
- Change scientific standards
- Disseminate industry's interpretation of risk in the lay press and directly to policymakers

“Doubt is our product since it is the best means of competing with the ‘body of fact’ that exists in the minds of the general public. It is also the means of establishing a controversy.”

Brown & Williamson Document #332506:
Smoking and Health Proposal

Key demands of community activists

Health and environmental agencies must:

➤ **be transparent**

➤ **involve full public participation**

- at an early stage (or beginning) of deliberation

“Epidemiologists would not be required to surrender rigor, but they would be required to share power”

Schwab M, Syme SL. On paradigms, community participation and the future of public health. Am J Public Health 1997;87:2049-52.

New Jersey

Brick Township

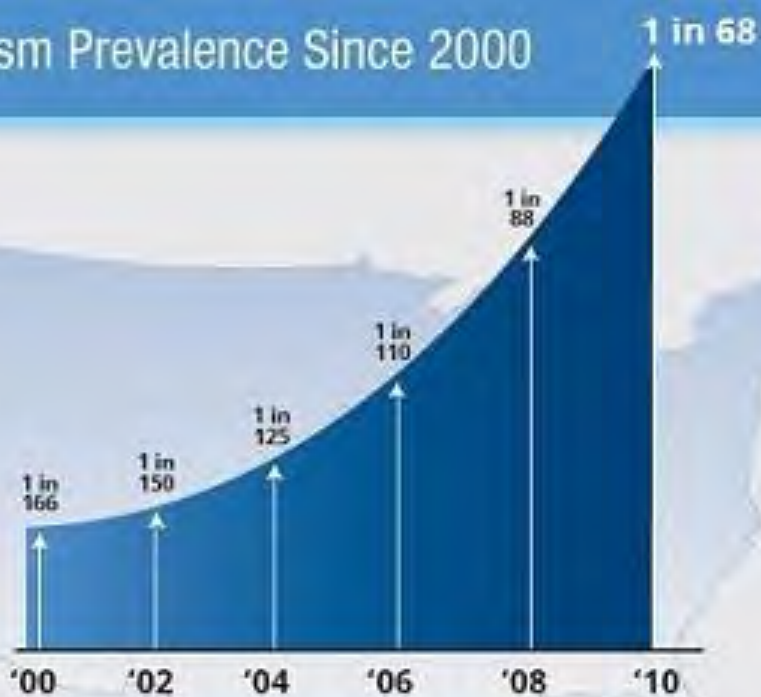


Prevalence Study Results

Brick Township, NJ 1998

- **Prevalence of autism spectrum disorder (ASD) was 6.7 cases per 1,000 children.**
- **Previous estimates of ASD prevalence:**
 - **U.S. in the 1980s = 0.4/1,000**
 - **Non-U.S. studies prior to 1998 = 2/1,000**

Autism Prevalence Since 2000



CDC Prevalence Statistics for ASD





Lejeune Water CONTAMINATION





(L-R) JERRY ENSMINGER, MIKE GROS & JEFF BYRON BEING SWORN IN AT CONGRESSIONAL HEARING IN JUNE 2007.

SEMPER FI

ALWAYS FAITHFUL



Documentary focuses on one Marine --
Master Sgt. Jerry Ensminger -- who lost his daughter to a rare disease
blamed on contaminated drinking water that has long plagued Camp Lejeune.



Obama signs law giving health care to Lejeune tainted water victims



The Honoring America's Veterans and Caring for Camp Lejeune Families ("Janey Ensminger") Act of 2012



A TRUST BETRAYED

The Untold Story of Camp Lejeune
and the Poisoning of Generations
of Marines and Their Families

MIKE MAGNER

Grading Government Transparency

UCS report 3/2013

“At places like [the] CDC, you often have to have a public affairs person sitting there taping interviews and policing the scientist’s statements.”

— *Dan Vergano, science reporter and columnist at USA Today, 2012*

“I am supposed to direct the request to our media office, and I do so. However . . . I often provide detailed background information to the reporter, off the record, so the reporter can move ahead with preparing her/his story.”

— *anonymous CDC scientist, 2012*

