

1 TESTIMONY OF
2 DR. KAI T. ERIKSON '82 JAN 17 P7:19
3 ON BEHALF OF JOINT INTERVENORS
4 JANUARY 19, 1982
5 CONTENTION 1
6

7 My name is Kai T. Erikson. I have been a Professor of
8 Sociology and American Studies at Yale University since 1966,
9 and Editor of The Yale Review since 1979. I received a B.A.
10 in sociology from Reed College in 1953, and both a M.A. in
11 1955 and a Ph.D. in 1963 from the University of Chicago. I
12 held a joint appointment in the Departments of Psychiatry and
13 Sociology at the University of Pittsburgh from 1959 to 1963,
14 and a similar appointment at Emory University from 1963 to
15 1966. I am a Fellow of the American Sociological Association
16 and served as an elected member of its governing Council from
17 1974 to 1977. I am the immediate past President of the
18 Eastern Sociological Society, and I was President of the
19 Society for the Study of Social Problems in 1970-1971.

20 In recent years my professional work has focused
21 increasingly on human responses to emergencies. Between 1973
22 and 1976 I did an intensive study of the Buffalo Creek flood
23 of 1972, and I wrote a book on the topic which in 1977 won
24 the Sorokin Award of the American Sociological Association
25 for the best book written in sociology during the preceding
26 year as well as a Nomination for the National Book Award.
27 Since that time I have done a briefer study of the effects of
28 mercury contamination on an Ojibwa Indian Band in Northwest

1 Ontario, and I have written on general problems of toxic waste
2 disposal with particular reference to the situation at Love
3 Canal in upstate New York and on the bombings of Hiroshima and
4 Nagasaki in 1945. In the past two years I have kept abreast
5 of research dealing with human reactions to the incident at
6 Three Mile Island, and I testified on related matters before
7 the Licensing Board of the Nuclear Regulatory Commission
8 considering a restart of TMI-1. I have lectured widely on the
9 general subject of human emergencies, including the principal
10 address to the Red Cross National Convention in Miami,
11 Florida, in 1977. In the course of the various activities
12 described above, I have read a substantial part of the
13 available literature on responses to disaster from both a
14 sociological and a psychiatric standpoint.

15
16 I have recently reviewed three documents relevant to
17 these present proceedings -- the PRC Voorhees Evacuation Times
18 Assessment for the Diablo Canyon Nuclear Power Plant, Phase I
19 and Phase II Reports; Chapter Four of the TERA Corporation
20 report entitled "Earthquake Emergency Planning at Diablo
21 Canyon"; and the San Luis Obispo County Nuclear Power Plant
22 Emergency Response Plan, revision B (October, 1981).

23 The main burden of my testimony is that the three
24 documents, taken together, do not constitute an adequate
25 emergency plan for response in the event of a serious accident
26 at the Diablo Canyon Nuclear Power Plant, particularly if the
27 accident were of a sort to require large-scale evacuation.
28 The documents outline in quite some detail how an evacuation

1 could be managed if everyone involved were to behave in the
2 expected manner. To that extent, they describe what is
3 technically and logistically possible.

4 But it is my opinion that those documents need to be
5 supplemented by additional information on the social and
6 psychological dispositions of the human actors who play a part
7 in the various scenarios, because once we have estimates as to
8 how rapidly people could evacuate the danger zone, we then
9 need further estimates as to how people are likely to behave
10 in fact. Without these further estimates, confidence in the
11 feasibility of evacuation as a means to protect the public may
12 be misplaced.

13 I submit that two additional kinds of information are
14 necessary to an adequate emergency plan.

15 First, any accident serious enough to require evacuation
16 of the area surrounding the power plant is likely to be
17 traumatic for a number of local residents, and final emergency
18 plans should take into account what has been learned in other
19 crisis situations about the way people typically respond to
20 moments of severe stress. I cannot deal now with the full
21 range of social and psychological reactions described in the
22 available studies, but I would like to note three that may be
23 of particular relevance here.

24 There are good reasons to suppose that crisis situations
25 involving the risk of radiation or some other form of
26 contamination are different from the typical run of natural
27 disasters and human accidents. Most emergencies, whether they
28 result from acts of God (such as floods, storms, earthquakes)

1 or acts of men (such as accidental explosions or deliberate
2 bombings), have a clear beginning and a clear ending. Sooner
3 or later the flood waters recede, the winds abate, the smoke
4 clears, the bombers leave; an "all clear" is sounded both
5 literally and figuratively to indicate that the incident is
6 over and the source of danger gone. But when an invisible
7 threat hangs in the air or is lodged in the tissues of the
8 body for an indeterminate amount of time, and the survivors
9 have no sure way of knowing how much damage has been done or
10 is yet to be done, the event is never quite over. The cause
11 for alarm never quite disappears. This has been the
12 situation, for example, in such diverse places as Hiroshima
13 and Nagasaki, Seveso, Minamata, the Love Canal, certain
14 districts of Northwest Ontario, and Three Mile Island -- all
15 of them places where residents have reason to fear that they
16 (and maybe even children yet unborn) have been contaminated in
17 one way or another. Events of that kind often provoke a
18 deeper and more lasting form of anxiety.

19 There are also good reasons to suppose that a substantial
20 number of people who are exposed to an immediate peril will
21 over-react in the sense that they will evacuate before being
22 advised to, will move longer distances than advised, and, in
23 general, will respond to their own feelings of alarm by doing
24 more than is required and doing it earlier than is required.
25 This tendency has been noted in many different emergencies and
26 has been called "hyper-vigilance," "the counter-disaster
27 syndrome," "the evacuation shadow phenomenon," and so on. At
28 the same time, however, it is also likely that another

1 substantial number of exposed people with under-react, for one
2 very common reaction to moments of crisis is to become
3 immobilized, to go numb, to freeze. This tendency has also
4 been noted in many different emergencies and has been called
5 "the disaster syndrome," "psychic numbing," and so on. It is
6 my opinion that both of these tendencies, but especially the
7 tendency to over-react, becomes sharper when radiation or some
8 other contaminant is involved because people do not know what
9 the dangerous substance looks like or feels like, how far it
10 can reach out into the countryside, or how long its effects
11 can last. Many more people evacuated the regions around Three
12 Mile Island than were advised to, for example, and those who
13 did so drove many more miles on the average than was
14 necessary.

15 And there are good reasons to suppose, finally, that
16 people who are expected to play helping roles in an evacuation
17 and who also are members of families will be in a situation of
18 very marked conflict if an emergency is declared. To say that
19 there will be conflict is not to say that we know in advance
20 how everyone will resolve it, but I would regard it as a
21 matter of everyday common sense that a number of emergency
22 workers will first go home to tend their children in the event
23 of a crisis no matter what commitments they have elsewhere,
24 and they will do so because they feel, as is the case with
25 parents everywhere, that their major responsibility is to
26 attend the needs of their own offspring. A sociologist has no
27 professional warrant to call such behavior instinctual
28 (although the great majority of biologists and psychiatrists

1 would probably do so), but he is certainly in a position to
2 point out that many research studies have found people
3 reluctant to turn to emergency duties until such time as they
4 have been reassured about the safety of their families. This
5 general finding was phrased well by James Cornell:

6 First, the basic unit of human life -- the
7 family -- emerges as the single most
8 important force influencing behavior.
9 Survivors rapidly turn their own anxiety into
10 concern for their kin. A person's first
11 regard is for saving family members, often at
12 the expense of other victims or oneself.
13 Even officials charged with the safety of an
14 entire community find their first allegiance
15 is to their family. As Ralph Linton has
16 written, "In Gotterdammerung. . .the last man
17 will spend his last hours searching for his
18 wife and child."

19 Any evacuation plan that takes for granted the readiness of
20 local emergency workers to report for duty, regardless of
21 other family obligations, runs a high -- and in my opinion
22 unacceptable -- risk of failure.

23 The second kind of information I would regard as
24 necessary for an adequate emergency plan is data on the
25 attitudes and outlooks of the people who are expected to
26 evacuate in the event of a crisis or who are expected to aid
27 in the evacuation effort itself. A number of assumptions
28 have been made throughout the three documents I have reviewed
about the way in which people will behave if an evacuation is
ordered, and some of the most important of those assumptions
could be examined in greater detail by a survey of the
relevant population. The technology for such a study is
every bit as accessible as that for the kinds of estimates

1 already undertaken. Here, in a rough order of priority, are
2 some of the assumptions that concern me:

3 The documents (or "plan") assume that emergency workers
4 who reside within the danger zone can be counted on to report
5 for duty whether or not their own families have assembled and
6 evacuated, and this assumption is problematic for all of the
7 reasons noted above. It may be reasonable to take for
8 granted that officers from the California Highway Patrol and
9 County Sheriff's Office, as well as physicians and nurses and
10 other medical personnel, will report as expected. But a very
11 large number of other people figure in the plan as well --
12 people to drive school busses and the rest of the available
13 fleet, people to staff the communication centers and conduct
14 telephonic surveys, people to monitor the spread of radiation
15 and set up check points of one kind or another and work with
16 decontamination teams, people to drive ambulances and
17 wreckers and whatever other vehicles are brought into play to
18 transport the disabled and to move public address systems
19 from place to place, people to repair roads and erect
20 barricades and maintain care centers and handle necessary
21 food and water supplies and, in general, carry out the
22 hundreds of other tasks that might, in a real emergency, be
23 required. As things presently stand, we have no way of
24 knowing what all of those people are likely to do in the
25 event of a serious crisis (although it may be instructive to
26 notice that many of the emergency workers who are expected to
27 aid evacuation if yet another accident should strike Three
28 Mile Island -- fire fighters and bus drivers among them --

1 have let it be known that their families would come first).
2 A carefully designed and carefully conducted study could
3 provide valuable information on two matters: (a) how the
4 people of San Luis Obispo County who may be called upon for
5 emergency duty feel about those prospects, (b) what
6 proportion of the emergency work force has family obligations
7 that might prove to be a source of conflict, and (c) what
8 actions the emergency workers intend to take in the event a
9 serious accident occurs.

10 The plan also assumes that emergency workers who reside
11 outside the danger zone will move into it if asked to do so,
12 and that assumption, too, is problematic. Police and medical
13 personnel from elsewhere in the county could presumably be
14 relied upon, but it is quite another matter to take for
15 granted that everyone else who makes up the emergency work
16 force --truck drivers, heavy equipment operators, laborers,
17 volunteer firemen -- will be willing to leave places of
18 relative safety and expose themselves to hazard, especially
19 if they are expected to arrive equipped with dosimeters,
20 iodine blocking pills, protective gear of one kind or
21 another, and other reminders that the work they are about to
22 do may prove very dangerous indeed. It is worth noting,
23 moreover, that emergency workers who live a few miles outside
24 the perimeter of the danger zone may not feel confident that
25 their families are safe and hence they may engage in
26 evacuation efforts themselves. That is roughly what happened
27 at Three Mile Island, and careful testing of the local

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1 population could sharpen our estimate as to whether it might
2 happen in San Luis Obispo County as well.

3 The plan further assumes that parents of school-age
4 children will be willing to evacuate without first-hand
5 reassurances that their offspring are being safely conveyed
6 out of the area, and that is problematic as well. It may
7 turn out that the residents of the county will feel very
8 comfortable with this arrangement, but given what social
9 scientists have learned about the closeness of family ties
10 and the anxieties most parents have concerning the safety of
11 their children, it would seem foolhardy to take that view for
12 granted. And if a fair number of parents admit upon
13 questioning, as I would expect them to, that they might be
14 very tempted to drive to the school themselves, then there
15 would be substantially more traffic on the roads than the
16 present estimates allow for.

17 The plan assumes, in addition, that residents will not
18 only believe the warnings they receive but will follow the
19 directives given them by local officials, and both of those
20 assumptions should be regarded as problematic until such time
21 as more information is available. Whether or not the
22 agencies that might be in a position to issue warnings are
23 viewed as credible by county residents should be fairly easy
24 to ascertain. Whether or not local officials can reasonably
25 expect their instructions to be followed, however, may be
26 somewhat more complicated. For example, for people who are
27 directed to take shelter, the impulse to travel to the spot
28 where one's family is located will be great, no matter what

1 the risk of exposure on the way. Or, as another example, in
2 the event of staged or partial evacuation, the impulse to
3 leave may be a hard one to overcome for a number of people who
4 are not asked to evacuate. This was demonstrated during the
5 TMI accident when a substantially greater percentage of the
6 population evacuated than was advised to do so.

7 The plan assumes, finally, that vehicular traffic will
8 drain out of the danger zone in "preferred evacuation
9 directions," and that assumption needs to be reviewed along
10 with the others discussed here. For one thing, the plans
11 calls for some traffic to move toward the power plant for at
12 least a short time (as is the case, for instance, when
13 evacuees from Arroyo Grande are asked to travel north on
14 State 227 before veering east on U.S. 101), and there is no
15 consideration given to the possibility that people will balk
16 at being ordered to take what may seem at first to be an
17 illogical and perhaps even dangerous route. Moreover, the
18 plan assumes that drivers will have no other object in mind
19 than to vacate the danger zone along the given roads, but it
20 is likely that some of them will have particular destinations
21 in mind -- the home of a relative or friend, say. If, for
22 either of those reasons, vehicles enter the road network
23 moving in the "wrong" direction or cause congestion at
24 intersections in an effort to do so, the evacuation of the
25 area might very well be adversely affected.

26
27 It is my opinion, then, that a social and psychological
28 profile of the local population should be undertaken by an

1 able research organization, for if any of the assumptions
2 described above turn out to be unwarranted by even a small
3 margin, then the time estimates on which the plan now relies
4 would have to be revised. The plan is full of detail, but
5 whether or not it is capable of implementation depends to a
6 very large extent on the attitudes and intentions and
7 emotional reflexes of the human beings charged with carrying
8 it out. If it is incapable of implementation, then simple
9 logic dictates that it will provide no real protection to the
10 public.

11 The actual character of the study being proposed here
12 would have to be outlined in greater detail than these
13 circumstances (or my competencies) permit, but it is
14 reasonable to presume that it would take the form of a
15 questionnaire instrument administered to a random sample of
16 the "relevant" population -- "relevant," for these purposes,
17 meaning those people who are expected to take part in any
18 evacuation and those people who are expected to serve as
19 emergency workers in the process.

20 Such a survey would serve two purposes. It would prove
21 invaluable as a supplement to the present emergency plan, and
22 the information it could supply would help immensely in
23 whatever programs of public information are being
24 contemplated for the area.

25 Thank you. An abbreviated resume is attached.
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New Haven, Connecticut

Born in Vienna, Austria, 1931
U.S. citizen (derivative, 1937)
Married, two children

EDUCATION

1949-1950	University of California, Berkeley
1950-1953	Reed College (B.A.)
1953-1955	University of Chicago (M.A.)
1957-1963	University of Chicago (Ph.D.)

POSITIONS

1954-1955	Research Fellow, Family Study Center, University of Chicago
1955-1957	Social Science Technician, Walter Reed Army Institute of Research, Washington, D.C. (while on active duty with U.S. Army)
1959-1963	Instructor to Assistant Professor, Departments of Psychiatry and Sociology, University of Pittsburgh
1963-1966	Associate Professor, Departments of Psychiatry and Sociology, Emory University
1966-	Associate Professor to Professor, Department of Sociology and American Studies Program, Yale University
1968-1969	Fellow, Center for Advanced Study in the Behavioral Sciences, Stanford, California
1969-1973	Master, Trumbull College, Yale University (Chair, Council of Masters, 1970-1973)
1973-1974	Visiting Professor, Department of Sociology, University of New Mexico
1974-1977	Chair, American Studies Program, Yale University
1979-	Editor, <u>The Yale Review</u>

SELECTED PUBLICATIONS

Books

Wayward Puritans: A Study in the Sociology of Deviance (New York: John Wiley, 1966)

Everything in Its Path: Destruction of Community in the Buffalo Creek Flood (New York: Simon & Schuster, 1976)

English edition entitled In the Wake of the Flood (London: George Allen & Unwin, 1979)

Articles

"The Confirmation of the Delinquent," Chicago Review, Winter Issue, 1957 (with Erik H. Erikson)

"Patient Role and Social Uncertainty: A Dilemma of the Mentally Ill," Psychiatry, 20:263-274, 1957

"The Functions of Deviance in Groups," Social Problems, 7:98-107, 1959 (with Robert A. Dentler)

"Impressions of Soviet Psychiatry: Some Travel Notes," Psychiatric Communications, 5:1-12, 1962

"Notes on the Sociology of Deviance," Social Problems, 9:307-314, 1962

"A Return to Zero," American Scholar, 36:134-146, 1966

"A Comment on Disguised Observation in Sociology," Social Problems, 14:366-373, 1967

"Case Records in the Mental Hospital," in Stanton Wheeler, editor, On Record: Files and Dossiers in American Life (New York: Russell Sage, 1969) (with Daniel J. Gilbertson)

"Sociology and the Historical Perspective," American Sociologist, 5:331-338, 1970

"Sociology: That Awkward Age," Social Problems, 19:431-436, 1972

"Introduction," In Search of Common Ground: Conversations with Erik H. Erikson and Huey P. Newton (New York: Norton, 1973)

"Loss of Communitarity on Buffalo Creek," American Journal of Psychiatry, 133:302-306, 1976

SELECTED PUBLICATIONS (continued)

"On Teaching Sociology," New England Sociologist, 1:35-40, 1979

Book Reviews

American Journal of Sociology
American Scholar
American Sociological Review
Contemporary Sociology
New York Times Book Review
Transaction
Yale Law Journal

HONORS

McIver Award, American Sociological Association, 1967

Sorokin Award, American Sociological Association, 1977

PROFESSIONAL MEMBERSHIPS

American Sociological Association (Chair, Committee on Professional Ethics, 1971-1973; Council, 1974-1977; Committee on Executive Office and Budget, 1978-1981)

Society for the Study of Social Problems (President, 1970-1971)

Eastern Sociological Society (President, 1980-1981)

1981
September 1979

"A Report to the People of Grassy Narrows,"
in Christopher Vecsey and Robert W. Venables,
editors, American Indian Environments:
Ecological Issues in Native American History
(Syracuse, N.Y.: Syracuse University Press,
1980) (with Christopher Vecsey)