50-205

United States Senate

COMMITTEE ON APPROPRIATIONS

May 31, 1963

Honorable Glenn T. Seaborg
Chairman, Atomic Energy Commission
Washington 25, D. C.

Dear Chairman Seaborg:

For many months I have been receiving assorted protests and apprehensive expressions prompted by plans for the Bodega Head nuclear generating plant being perfected with cooperation of your Commission.

There is widespread uneasiness about the dangers which may attend this project. I know that your Commission is aware of the hazards involved and has been made aware of public uneasiness, to say the least, about possible consequences of some accident as well as of adverse effects on marine life from normal operations.

I have engaged in some correspondence with a constituent who is a respected scientist with grave doubts about the wisdom of proceeding. I have advised him to register his views at the hearing I was notified your Commission intends to hold at Santa Rosa on the application for a license. Nevertheless, he has taken the trouble of writing me at length and has made some challenging statements which I deem worthy of thorough evaluation. Because I want to see that the fullest consideration is given every earnest expression of doubt, I am sending you a copy of this individual's most recent letter, which I trust will be reviewed carefully. I would welcome comment on the challenging points made therein.

With kind regards, I am,

Sincerely yours,

Thomas H. Kuchel

THOMAS H. KUCHEL
United States Senator

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DOCKET NO. 50-205

May 20, 1963

Senator Thomas H. Kuchel
Senate Office Building
Washington 25, D. C.

Dear Senator Kuchel:

Thank you for your letter of May 13, in reference to the affair of Bodega Head. I hope you will bear with me at least once more on this problem. At the outset, since you seem to believe that there is no danger of adverse effects on marine life and imply, perhaps unintentionally, that I may possibly be opposing progress out of fear and/or doubt, I should explain that I am director of the marine station maintained by the University of the Pacific, immediately downwind of Bodega Head, and that I enjoy a modest international reputation in the field of marine biology. Your friend Leslie Chambers can perhaps enlighten you further. Anyhow, as a person of some competence in marine biology, I cannot make any unqualified prediction that there will be no adverse effects on marine life, as I do not believe we (including the AEC) have the information on which to base the prediction. In large part on the strength of my testimony at the Public Utilities Commission hearings last year, the Commission ordered the Pacific Gas and Electric Company to undertake study of the hydrographic and marine biological aspects to determine the possibility of such effects. As it is a regulatory body composed mostly of lawyers, I doubt that the Commission really knew just what it was asking for. At the present time, the National Science Foundations is debating whether or not to grant 1.5 million (or thereabouts) to the University of California to build a marine laboratory near the reactor site. Although I am frequently consulted by the National Science Foundation on matters of this nature, I felt too personally involved to be objective about this one and did not participate in the deliberations. I don't know what they will finally decide, but I know they are very unhappy about being placed in a somewhat awkward situation by the University of California.

As for opposing "progress", I do not claim to know much if anything about nuclear power and reactors, but I daresay that you are aware that neither the scientific nor economic communities are unanimous concerning the need for a reactor at Bodega Head and, indeed, it would appear from what I have seen of Seaborg's report to the President that the Bodega Head project is being promoted for reasons of prestige and encouragement of the private power program for atomic energy, somewhat ahead of the real economic justification.

What I do object to is the fact that a very large reactor complex, amounting ultimately to four large reactors, is proposed for a site known to be seismically active, namely rather close to the San Andreas fault, and that while a great deal has been said about the comparative safety with which reactors can now be operated, the dangerous and hazardous business of opening up the reactor to replace the fuel rods, and the preliminary treatment of this material at the site before it can be moved away has been very soft-pedalled. The release of radioactivity during this process is four or five times as great as during "normal operation". Should this

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process coincide with a major earthquake, the release of contamination is inevitable. What the statistical probabilities of such a coincidence may be, I have no idea. However, we must not forget that in the matter of radioactive materials we are dealing with a source of pollution to which the statute of limitations cannot be applied. This principle appears to have been established in England, and I am enclosing a copy of a book review from Nature for April 27, concerning this point. Also in that same issue is a general article on radiation damage, and a paragraph from that article concerning an incident at Oak Ridge is included. This sort of thing would suggest that the potential danger from a reactor on Bodega Head is rather higher than at other places, and I understand that Pacific Gas and Electric Company is also considering a site at Collinsville for another reactor. As far as I am concerned, they would be better off to go there now. In any event, I wish to reiterate that this is too serious a matter to be left up to the decisions of people in the promoting agency (A.E.C.) and the operating agency (P.G.& E.). This is why I believe this specific problem of Bodega Head should be looked into thoroughly by the best scientific minds we have available.

You have mentioned the action of the Corps of Engineers. This brings up a general problem concerning the charge under which the Corps of Engineers operates in our navigable waters. It reaches all its decisions, and weighs evidence, only upon the effect of the project on navigation. If the project has no effect on navigation or promises not to interfere with the maintenance of dredged channels, and the like, the Engineers have no recourse but to approve it, even if it should conflict with local laws or equities. This they have made plain again and again at hearings. It would be quite possible, for example, for the Corps (should the matter fall under their jurisdiction) to approve the dredging of the sand bars outside San Francisco Bay for fill and building material, even if some very competent experts predicted that this could mean the subsequent lack of nourishment to the beaches on the San Mateo shore. In fact, Dr. Inman of Scripps Institution of Oceanography has predicted that, as a result of jetties and harbor improvements in southern California, the life expectancy of southern California beaches may be about twenty years. The present sand will be carried away by shore currents and its replacement will not be possible. Accordingly, I believe that Congress will sooner or later have to modify the charge under which the Corps of Engineers operates with respect to such alteration of the environment. I believe that many people within the Corps would welcome such a change. In any event, I think the decisions of the Corps in relation to activities at Bodega Bay cannot be cited as approval in any way of the proposed reactor project at Bodega Bay.

I certainly plan to register my views at the proposed A.E.C. hearing, although we have been informed by our State Coordinator of Atomic Energy that only expert testimony relating to the operation of the reactor will be accepted as relevant by that hearing board.

Very truly yours,

Joel W. Hedgpeth

cc: Senator Clair Engle

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From "NATURE" No. 4878, April 27, 1963

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'NUCLEAR LIABILITY'

Law and Administration
Vol. 3: Nuclear Liability. Edited by Jerry L. Weinstein. (Progress in Nuclear Energy, Series 10.) Pp. xxxiv+483. (London and New York: Pergamon Press, 1962.) 140s. net.

The operation of a nuclear reactor or plant in which there is a criticality hazard raises safety and legal problems which are entirely new. Unless the dose is high, radiation injuries do not normally become evident for some time, possibly as much as 20 years after the event, so in this field the limitation period within which legal claims can be made must be extended far beyond the usual three years. If a major accident occurs, radioactive contamination can take place over a wide area, possibly even outside the national boundary, resulting in restriction in the use of foodstuffs. These are but two of many problems which nations having such plants have tried to meet with new legislation, which although it may differ in detail shows good agreement internationally on all major points.

The normal concept of liability by fault is replaced by absolute liability, in which the operator of the plant is wholly liable for the consequences of an accident. The amount of money which must be available is clearly very large; under British law, the sum is 5 million pounds, beyond which the Government undertakes to provide anything further. Other countries have similar amounts and regulations written into their legislation. Except where the Government is the operator, it is rarely possible to carry this risk, and it is normal, therefore, to cover it by insurance; even here, the amount is high, and special consortia of insurers have had to be set up in various countries.

Interesting points arise if an accident can be proved to be caused by a faulty part supplied, for example, by a small firm. Each sub-contractor is not, however, required to cover himself, since the operator is wholly liable, though this does not exclude the possibility of his being sued by the operator.

The transport of nuclear fuel and waste materials is not an everyday occurrence, but an accident could have very serious consequences. In such an event, Who is responsible, the carrier, the shipper or the consignee? This is fairly clear at international level for sea and air transport, but not necessarily for land transport.

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These are all problems which are discussed in considerable detail in the volume under review. Appropriately enough, the contributors are truly international, and even if some of the chapters are speculative, they are none the worse for that. One most valuable chapter is a review of 384 nuclear accidents, ranging from those causing death or widespread contamination, to relatively minor spills of radioactive materials; though not a comprehensive list, it is international in scope. It shows clearly how few serious accidents have occurred, and how difficult it is, therefore, to assess the probability of a nuclear accident; this in turn makes it very difficult to assess insurance rates, which are almost certainly too high at the present time.

This book may not have a general appeal to the legal profession, since the subject is so specialized, but it is an important addition to any library on nuclear matters. It is to be hoped that further volumes of similar standard covering general legislation on radioactivity will follow.

H. D. Evans

Excerpt from:

L&R File cy (Suppl.)

EFFECTS OF ATOMIC RADIATION

by C. Auerbach,
NATURE, April 27, p. 343

Several nuclear accidents are discussed. The LD_{50} for humans exposed to short-term whole-body radiation is estimated to lie between 300 and 500 rads. In the Oak Ridge accident in 1958, five persons received doses near the lower limit of this range. All of them recovered without visible damage. To this, however, must now be added the more recent cytological finding[3] that in 1962 the blood of all these persons showed a high proportion of abnormal chromosome counts and of chromosome abnormalities. A smaller proportion of similar abnormalities was found in the blood of persons who, in the same accident, had been exposed to lower doses. After the Windscale accident, the ^{131}I content of milk in neighboring farms was more than 1 µc./l., a dose that is considered equivalent to 130 rads, that is, to more than half the dose (200 r.) that, given as X-rays to the necks of young children, produced cancer of the thyroid in about 3 per cent of them. Although this highly contaminated milk was withdrawn from the market, there remains the disturbing fact that the controls, that is, milk samples taken in this same area before the accident, contained 44 mµc. iodine-131/l. as compared with 5·6 in the United Kingdom as a whole.

[3] Bender, M. A., and Gooch, P. C., Rad. Res. 16, 44 (1962)

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TO: TLAE (A.E. BEGAS)

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RE: COMMENTS ON PROPOSED [illegible] BY PROF. [illegible], DISTRIBUTED AT ARGONNE NATIONAL LAB AUGUST 3, 1963

ENCLOSURES:

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REMARKS:

DATE OF DOCUMENT: 7/26/63	DATE RECEIVED: 7/2?/63
NO.: 5293	
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REPORT:	OTHER:
ORIG.:	CC:
OTHER:	
ACTION NECESSARY ☐	CONCURRENCE ☐
NO ACTION NECESSARY ☐	COMMENT ☐
DATE ANSWERED:	BY:
FILE CODE: 50-205	

REFERRED TO	DATE	RECEIVED BY	DATE
[illegible]	7/30		

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