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Department of Energy
Washington, D.C. 20545

JUN 29 1978

TO: W. W. Burr, Deputy Director
Division of Biomedical and Environmental Research

FROM: George W. Cunningham
Acting Program Director for Nuclear Energy

SUBJECT: ETN RECOMMENDATIONS ON RADIATION EXPOSURE INQUIRY

On May 31, representatives of ETN and DP met with you to discuss the May 9, 1978 White House memorandum directing HEW to coordinate the formulation of a federal agency program which would respond to growing concern over the effects of radiation exposure on participants in nuclear tests and workers in nuclear-related projects. At the meeting, it was agreed that the requested study program could impose major requirements on DOE nuclear activities, and that DOE involvement should therefore be carefully planned and executed with full participation by all appropriate agency offices. Accordingly, ETN recommended that a mechanism, approved by the Under Secretary, be established to assure agreement among DOE participants on major policy issues affecting DOE programs during the course of the study.

The purpose of this memorandum is to formalize the above recommendation, and to offer additional comments and recommendations regarding the four-point program called for by the White House (program points quoted below).

> "1. A study or series of studies which would determine the effects of radiation exposure on participants in nuclear tests, including members of the armed forces and civilian personnel, workers at nuclear facilities and projects, and other persons as indicated."

Considering the numerous AEC/ERDA/DOE studies of radiation exposure which have already been conducted, it is important to determine, at the outset, exactly what kind and amount of additional information needs to be obtained, and why. DOE should resist the initiation of additional and redundant federally sponsored effort related to the effects of radiation exposure until these questions are addressed and settled. If the need for additional effort becomes clear, it should be carefully planned and monitored to assure achievement of agreed-upon objectives.

"2. A public information program to inform persons who might have been affected and the general public about the steps being taken and the conduct of the studies."

As a continuation of long-standing practice, DOE contractor personnel whose work entails exposure to radiation are thoroughly informed on potential hazards, trained in radiation avoidance, and monitored for radiation exposure. Thus, informing these persons as to additional radiation exposure studies should usefully supplement their current knowledge of the subject.

Regarding an information program for the general public, care should be taken to emphasize that concern for radiation exposure is not a new issue, but has been a central feature of U.S. nuclear energy programs since their inception.

"3. A plan for ensuring that persons adversely affected by radiation exposure receive the care and benefits to which they may be or should be entitled."

Existing radiation monitoring efforts should be useful in identifying persons who might be adversely affected by radiation exposure. Previous experience has shown that only a few individuals have been potentially affected and that the exposures are being reduced.

AEC and AEC contractor employee exposures for 1947 to 1974 are shown in the attached table. This table shows that during this 28-year period over 99.8% of the employees monitored received an annual dose of less than 5 rem and that over 94.8% received one rem or less. The majority of exposures in excess of five rem in a year* resulted from accidental situations.

"4. Recommendations on steps which can be taken to reduce the incidence of adverse radiation exposure of this type in the future."

Although the number of cases of adverse radiation exposure among AEC/ERDA/DOE contractors has been low, steps can be taken to further reduce the incidence of exposure, should this be found necessary. A program to reduce routine and accidental exposure to radiation would consist of additional emphasis on radiation avoidance training, more extensive radiation monitoring, additional administrative controls, increased shielding and decontamination efforts, and increased emphasis on facility/process design to reduce radiation exposure.

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* The basic federal standard for radiation protection (10CFR 20.101)

The comments above are expressed in terms of radiation exposures in government-owned facilities. A comprehensive federal plan to minimize radiation exposure would also need to address the commercial nuclear industry. As part of its LWR technology development program, ETN is currently developing methods for decontaminating LWR systems (to reduce existing sources of high in-plant radiation), and methods of remotely determining incipient failure of certain plant components (to permit timely preventive maintenance and thus reduce the need for component replacement, when workers may receive relatively high doses). Further study would be needed to identify other useful LWR radiation exposure reduction work. Candidate work areas are: special training for maintenance workers, methods of reducing the buildup of radioactive contamination, and LWR plant design to minimize radiation dose to personnel.

Due to the importance of the overall federal agency programs and the potential impact on ETN contractors and programs, ETN should be represented on any DOE task forces that might be set up in response to the White House memorandum and subsequent HEW actions. Also, ETN representation should be considered for HEW task forces that are apparently being set up now. In particular, an ETN representative should be provided for HEW task force 5 ("Review of Present Efforts to Reduce Exposure to Nuclear and Other Ionizing Radiation and Recommendation of Additional Measures as Needed").

We hope you find these comments useful, and we look forward to participating with you in this important effort. The ETN points of contact are J. W. Crawford, Ext. 3-4501, and Shelby Brewer, Ext. 3-5026.

Attachment:
Table

cc: (w/attach.)
J. Liverman, EV
W. Weyzen, EV
J. Maher, EV
C. Edington, EV
G. Facer, DP
M. Miles, NR
E. Beckjord, NPD
P. Pettit, NPD

Attachment

RADIATION EXPOSURE OF AEC AND AEC CONTRACTOR PERSONNEL TO WHOLE-BODY PENETRATING RADIATION

YEARS	REM DOSE				
	0-1	1-5	5-10	10-15	>15
1947-54	130,128	5,311	284	32	6
1955	56,708	3,157	286	41	1
1956	38,225	2,312	100	4	3
1957	45,510	2,424	83	6	1
1958	59,455	6,271	159	10	12
1959	71,600	3,912	66	2	1
1960	77,522	4,629	41	2	1
1961	90,651	5,174	40	3	8
1962	122,437	5,707	113	0	8
1963	107,786	5,472	80	0	1
1964	122,711	6,157	86	11	0
1965	128,360	6,671	176	8	0
1966*	131,522	6,242	167	0	2
1967*	102,510	5,767	108	1	0
1968	103,206	4,776	4	0	0
1969	98,625	4,288	4	1	0
1970	92,185	4,464	12	0	0
1971	90,640	3,661	12	1	1
1972	86,077	3,373	10	0	0
1973	89,071	2,903	3	0	0
1974	73,845	2,318	3	0	0
TOTAL	1,918,774	94,969	1,836	121	45