

RADIATION PERSPECTIVE IN THE UNITED STATES OF AMERICA

THE U.S. CONGRESS AND RADIATION PROTECTION

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First of all, I would like to welcome all of you to the United States. I hope that your Third International Conference will be enjoyable and productive as well. We are pleased to be the host country for this important event.

I am particularly pleased to have the opportunity to address you in these opening remarks. I am acquainted in general terms with the structure and objectives of your organization. I believe that it is doing important work and that it will continue to be of importance.

It is clear to all that throughout the world man is utilizing radiation sources to a greater extent each year for a variety of purposes, all of which might be described as being under the umbrella of improving the quality of life. The prime examples under this heading are the utilization of radioisotopes and x-ray machines and other accelerators for diagnostic and therapeutic purposes in clinical practice and in research. More recently there has been public attention drawn to the matter of radiation protection associated with the utilization of atomic energy in the generation of electrical power.

It is perhaps trite to observe, at least to this group, that radiation knows no international borders. It recognizes no differences in man because of his national origin or ethnic group. For this very reason I congratulate you on your foresight in forming this International Association in which you can effectively interchange technical information and pursue your individual objectives with a commonality of purpose.

The Government Structure for Radiation Protection in the United States

In this country there are at least seven separate Federal agencies having jurisdiction in the area of providing protection against significant amounts of radiation exposure. In addition to the Atomic Energy Commission, these agencies include the Department of Defense; the Department of Transportation; the Environmental Protection Agency; the Department of Health, Education, and Welfare; and the Department of Labor. Moreover, most of our States have established their own radiation control programs in this area. In this regard, there has been some concern on the part of the States that the responsibility in the protection of the public and the worker from exposure to radiation has been significantly fragmented at the Federal level. In fact, the States have urged the Congress to consider this problem of fragmentation and to take the necessary legislative action to consolidate the various Federal responsibilities relating to radiation and protection of the public and the worker within a single agency.

The concern of the States over the apparent fragmentation of Federal jurisdiction in this area is understandable. The Joint Committee on Atomic Energy

would, of course, be one of several congressional committees which would have a responsibility in this area. Therefore, the Joint Committee is currently reviewing this matter to determine the best method of obtaining the additional information which would be necessary for any congressional consideration of the problem and of securing concerted action by the various congressional committees which would be involved. I mention this because it is possible that several of you may have the same situation in your own countries.

Role of the U. S. Congress

I would like to tell you a little bit about the role of the U. S. Congress with respect to the establishment and enforcement of radiation protection standards in this country. It is appropriate that the Congress have a role in this matter. The establishment of radiation protection standards involves certain considerations which are sociological in nature, and, therefore, political. In our form of government the public can express its views through its elected officials. Surely, the understanding of the biological effects of exposure of man to ionizing radiation requires background and technical expertise which cannot be obtained overnight. In fact, I feel certain that many members of the lay public would readily admit that as individuals they might never understand such a complex subject. Nevertheless, the views of the lay public concerning these matters are of interest to the Congress. It goes without saying that we also consider as valuable input data the views of trained scientists from outside those agencies charged with the setting of radiation protection standards.

There are a variety of disciplines which are essential to the setting of radiation protection standards. These include biology, genetics, physics, bioradiology, chemistry, and many others. The problem is, of course, complicated by the realization that ionizing radiation, even at very low levels, can change the chemical and physical nature of matter and, thereby, bring about what can be referred to as "damage." We know, of course, that man has always lived with radioactivity and, therefore, has been subjected to continuous exposure at some level. The question, therefore, is whether the additional increment allowable under the protection standard causes any significant change, or "damage" if you like, relative to the benefit anticipated as a consequence of the exposure.

The Congress in the United States does its work through its committees. This is necessary because the matters which come before the Congress are many and varied. By use of the committee system, it is possible for some Members of Congress to develop background in specialized areas and give greater attention to those areas than could be given by the full Congress. The committee then makes recommendations which are acted upon by the full Congress. A committee of Congress which clearly has exercised its jurisdiction with respect to radiation standards, and I believe properly so, is the Joint Committee on Atomic Energy. Other Committees have exercised roles with respect to establishing the organizational structures which are involved in standards setting.

Joint Committee on Atomic Energy

The special interest of the Joint Committee on Atomic Energy was drawn to the area of radiation protection by reason of radioactive fallout which occurred from nuclear weapons tests in the early 1950s. The Limited Nuclear Test Ban Treaty of 1963 brought about a considerable reduction in nuclear weapons testing. As you know, some world powers have not signed the treaty and continue to conduct atmospheric tests.

The Committee started detailed hearings on radiation protection criteria and standards in the fifties. Our hearing records for the past three decades provide a basic source of information in this field.

The subject of employee radiation hazards, including recordkeeping, for example, was given extensive examination by the Committee in 1959 and 1966. The special problems of exposure of uranium miners and problems associated with the accumulation of uranium mill tailings were treated in hearings held during 1959, 1967, 1969, and 1971.

On the subject of possible radiation exposure to the public as a consequence of routine operation of nuclear power generating stations, the Committee held extensive hearings in 1969 and 1970 under the title of "Environmental Effects of Producing Electric Power." Testimony was received on the environmental impact resulting from the operation of all kinds of electric generating stations.

The record of these hearings consists of over 3,000 pages of testimony and pertinent appended material. We have been unable to fill all of the requests for copies of these hearing records. It was brought out in these hearings that the record of operation of nuclear power plants clearly indicates that they can be operated so that routine releases of effluents can be held to quite low levels, in fact, substantially below levels allowable under the Federal exposure guides. Subsequently, the Atomic Energy Commission proposed design criteria for light water nuclear power plants which would have as their objective keeping effluents from these reactors to levels which are "as low as practicable."

The Commission is currently, through an appointed board, conducting a rule-making hearing on this subject. The Commission Staff has prepared and issued an environmental impact statement with respect to the proposed rule. The objective of this action and the concomitant engineering accomplishment of the nuclear industry have been such that there has been no substantive comment or objection to the proposed rule by environmentalists.

While on the subject of nuclear power plants, I would like to point out that the Joint Committee has scheduled public hearings beginning on September 25 on the subject of nuclear reactor safety. We anticipate that during these and subsequent hearings we will be getting into substantive matters concerning the risk of nuclear accidents, and we anticipate a rather complete examination of the Commission's Reactor Safety Research Program. This phase of our hearings will provide an opportunity to the Executive Branch of our Government to put on the public record a concise presentation of all matters related to reactor safety. During a later phase (probably within a month or two) other interested parties will be given an opportunity to present their views. This will include representatives of industry, representatives of environmental groups, members of the scientific community, and the public at large.

A point which I would like to make at this juncture is that the Joint Committee, in the case of each of the aforementioned Committee hearings, has published and made freely available to the public a hearing record which presents the views of witnesses, both pro and con, on these various matters relating to radiation protection. I am sure that many of you are familiar with these publications and that a number of you here today have actively participated in the many hearings which have been held.

History of the Federal Radiation Council

The Federal Radiation Council was established by Executive Order of the President in August of 1959. In September of that same year the Council was

made statutory by an amendment to the Atomic Energy Act. The Joint Committee felt that it was appropriate that this council, as an advisory body to the President, have a charter provided for by statute in order that the importance of its role be firmly established at the outset of its existence. The Council was made up of heads of the Federal agencies of the Government concerned with radiation protection standards. The detailed work of the Council has been performed by a working group drawn from the staffs of the Federal agencies having membership on the Council.

The Council was formed in recognition of the fact that previously there had been no governmental body responsible for the establishment of radiation protection guides. The guides established by a nongovernmental body, such as the National Council on Radiation Protection, were being utilized by the Government in the conduct of its business and other activities where Federal regulation was imposed upon the activities of others relating to radiation.

In the fall of 1970 an Environmental Protection Agency was established within the Executive Branch of the government and charged with the responsibility of advising the President with respect to radiation matters directly or indirectly affecting health, including guidance for all Federal agencies in the formulation of radiation standards and in the establishment and execution of programs of cooperation with the States. We in Congress have heard little from the Environmental Protection Agency concerning the manner in which it is carrying out the functions of the Federal Radiation Council which was absorbed under the 1970 reorganization. It may now well be appropriate for the Committee which I chair to examine the manner in which the perscribed functions of the Council are now being carried out by the new Agency.

National Council on Radiation Protection and Measurements

I feel that it is safe to assume that you are all well acquainted with the work of the National Council on Radiation Protection and Measurements and its forerunner, the National Committee on Radiation Protection and Measurements. The earlier committee began its work in 1929 and has collected, analyzed, developed, and disseminated information and recommendations on radiation protection and measurements throughout the years.

In 1964 the Congress granted the NCRP a Federal charter. My colleague, Congressman Chet Holifield, was probably the one man in the Congress most responsible for bringing about this legislation which provided for the continuing independence of the NCRP while, at the same time, gave an identity to the Council which it had not previously had.

It is certainly an understatement to observe that the work of the NCRP has been invaluable to the establishment of radiation protection guides in this country. We in the Congress are well acquainted with Dr. Lauriston Taylor, President of the NCRP, and many of his colleagues who serve on the Council. We on the Joint Committee have had the benefit of having his testimony and counsel on radiation matters for many years. I feel sure that those in the position of responsibility for establishing Federal radiation protection guides in this country appreciate the information and recommendations of the Council.

As most of you know, in the Fall of 1969 there was considerable questioning of the adequacy of the Federal Radiation Protection Guides. Some members of the scientific community believed that since the conduct of activities involving radiation was quite feasible at radiation exposure levels considerably below the guides then in being, that the guides should automatically be lowered by a factor of 10 or even 100 -- all of this, notwithstanding the fact that no biological data had been produced indicating any unfavorable health effects

resulting from the low levels of radiation exposure allowable under the guides. The NCRP, it turns out, was just completing a 10-year study directed toward reassessing the adequacy of the then current radiation protection guides. The conclusions of the Council were to the effect that on the basis of past and presently available scientific data there existed no reason to modify the guides in any substantive fashion.

It was interesting to me personally to note that in testimony received by the Joint Committee during the Spring of this year, Atomic Energy Commission witnesses pointed out that a scientific experiment to assess any possible biological consequences of exposure of humans to 1700 milliroentgens per year (10 times the amount provided for in the present population protection guide) would require the utilization of 8 billion mice. In other words, an almost impracticable number of experimental animals would have to be observed over several generations in order to bring out any possible somatic or genetic implications.

Even to a layman, the variation in background radiation exposure which exists throughout the world (factors of 10 or more in some places) would suggest that any unfavorable effects resulting from such low levels of radiation would have become evident in man himself. Thus, it would not appear necessary or practical to go to the extremes of examining billions of mice at very low exposure levels and then extrapolating whatever we learn to man. In fact, if there is an effect, we should be able to observe it in the human data which are available to us on longevity, the occurrence of cancer, and other possible adverse effects of radiation.

Proposed Reorganization with Respect to Energy

In June of this year the President sent an energy message to the Congress which had as a principal element a reorganization of the executive agencies of our Government in a manner intended to bring about more centralized control of research and development in the energy field as well as greater control and direction in the utilization of our natural resources. Later, a reorganization plan was submitted in the form of a legislative proposal which is now before the government operation committees of both houses of Congress. My esteemed colleague, Chet Holifield, a member of the Joint Committee on Atomic Energy since its origin in 1946, is the Chairman of the House Government Operations Committee and has already begun the conduct of public hearings on the proposal. In Chairman Holifield's words:

"We . . . will need time to study this proposal in detail. We will have to determine whether it is well-considered and deserving of acceptance. Undoubtedly there will be some modification. The Congress will want to be assured that this is a workable organization, one which will perform with realism and competence."

Briefly, the proposal would create a new Department of Energy and Natural Resources (DENR) based upon the present Department of the Interior. That portion of the Atomic Energy Commission concerned with the raw materials uranium and thorium would be moved to this new Department.

A new agency, the Energy Research and Development Administration (ERDA), would be established as the key government agency for research and development in all forms of energy. It would be founded upon the broad scientific talent and experience of the Atomic Energy Commission and its national laboratories. It would fund and carry out research and development in all forms of energy,

assigning the priorities in a manner which would hopefully achieve the proper balance to solve both our near-term and long-range energy needs.

The licensing of nuclear facilities and related activities of the present Commission would be moved to an independent Nuclear Energy Commission (NEC). This would eliminate the old bug-a-boo of a single agency (as in the present AEC) being responsible for both the development and regulation of nuclear reactors. There are pluses and minuses which can be enumerated for having both functions carried out within a single agency and likewise pluses and minuses with respect to separation of the functions. The Joint Committee has long been aware of the desirability of a separation at the proper time.

In summary, the depth and magnitude of the U. S. Congress's interest and concern in your special area of interest is obvious. I have tried to point out our efforts to obtain every available fact on radiation for our guidance in legislative actions. I think this is obvious from the extensive hearing record the Joint Committee has developed. One of the prime sources of information we have utilized and we must continue to have access to is the specialized talents of your organization. My plea is that you do everything possible to facilitate access of each of your legislative bodies to this information. Only in this way will we get the best laws on radiation protection.

I should not conclude without a few remarks concerning the confrontations and controversy which exist in many fields of activity at the present time. I think we must all bear in mind that this sort of thing should not be unexpected in these days of highly improved communication equipment and communication services. Members of the public, individual scientists, and others have every right to be heard on matters which concern them. If their views have merit, they should be seriously considered, but this does not itself assure them of any right to delay or obstruct development programs or construction projects without good cause.

A special word about critics is in order. Critics are important. Constructive criticism has long had a place in our society, and it should by all means continue to be an integral part of the decision-making process for it is the well-spring of improvement. Informed and responsible critics have made valuable contributions to our social, economic, and political structures, and I am confident that thoughtful and objective citizens will continue to suggest worthwhile concepts and changes. Responsible critics are those who get their facts straight. They insist on satisfactory and complete answers to their concerns. And when such satisfaction is provided, they react with integrity.

I am afraid, however, that some have confused the real thing with its opposite number and have spawned a school of thought which subscribes to the tenet of "criticism for the sake of criticism." In turn, this has enhanced an environment and sensationalism where innuendo and insinuation have then been substituted for reason and rational judgement. Frankly, I believe we can all profit from the adage, "Come, let us reason together."

One problem which is evident in a number of the current controversies is a feeling on the part of some that every determination that is made must be based upon all of the possible data which could be gathered pertinent to the determination. I believe that Judge Arraj put it very well in his decision of March 1970 concerning the Rulison case in the District Court in Colorado when he said:

"The field of radiation protection is constantly changing with the appearance of new scientific knowledge on the biological effects of ionizing radiation. Careful decisions must be made in the context of contemporaneous knowledge. Such decisions cannot be indefinitely postponed if the potentials of atomic energy are

to be fully realized. All that is required to establish reasonableness of the decision setting a standard under the statutory directive to protect the public health and safety is that it be made carefully in light of the best of available scientific knowledge. Absolute certainty is neither required nor possible."

This philosophical point of view is applicable to many human endeavors -- beyond the field of expertise which brings your group together for this conference.