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MINUTES

119th MEETING

ADVISORY COMMITTEE FOR BIOLOGY AND MEDICINE  
U. S. ATOMIC ENERGY COMMISSION

711000

HQ, U. S. Atomic Energy Commission  
Germantown, Maryland

June 8-9, 1967

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The 119th meeting of the AEC Advisory Committee for Biology and Medicine was held on June 8-9, 1967, at the AEC Headquarters, Germantown, Maryland. Those in attendance from the Committee were Drs. Earl L. Green (Chairman), Philip P. Cohen (Vice-Chairman), William F. Bale, Arie J. Haagen-Smit, Lemuel C. McGee, R. D. Moseley, Jr., and James B. Wyngaarden, and Miss Rosemary Elmo (Executive Secretary). Dr. M. B. Russell and Dr. Harvey M. Patt (Scientific Secretary) were unable to attend. The meeting was also attended by Dr. Charles L. Dunham, Director, Division of Biology and Medicine, his successor, Dr. John R. Totter, and various members of the staff of the Division of Biology and Medicine.

Workmen's Compensation Status Report. Dr. William Doran, Division of Operational Safety, brought the Committee up to date on the status of the proposed employer-state federal records and reports system for ionizing radiation workers for Workmen's Compensation purposes. The records system has been modified viz, a) the employer's record indicates personnel identification and occupational radiation dosimetry only; b) the state role remains unchanged; c) the federal record includes an annual report for external radiation for those who have received for a quarterly period 25% of MPE and a body burden for internally deposited radionuclides, and name and Social Security number only for those monitored employees who have received less than these amounts. The employer will maintain a record on those for whom monitoring is required and when a transient worker leaves his employment a record of accumulated radiation would be forwarded to the federal record. In order for states to be eligible for federal assistance to participate in records system it was formerly required that they institute changes in the state compensation laws to bring them in line with a model law. The Atomic Energy Labor-Management Advisory Committee (AELMAC) now recommends that states not be required to change their laws in order to be eligible for federal assistance. Non-agreement states would have a choice of either adopting U.S. American Standards Institute (USASI) recommendations for record keeping or a modified AEC proposal. A meeting of representatives of all organizations (approximately 20) with whom individual meetings have been held will be scheduled before any final action is instituted.

Status of Uranium Tailings Radon Sampling. Dr. Alex Perge, Division of Operational Safety, reported on the status of the uranium tailings radon sampling. He referred to the "Joint Federal Agency Position" of the Department of Interior and the Department of Health, Education and Welfare recommendations that uranium mill tailings piles at inactive mills be stabilized to prevent wind and water erosion. This would preclude the spread of airborne particulate radioactivity. Because the existence and significance of such spread has been a subject of disagreement in the past, the AEC and Public Health Service have agreed to conduct a joint sampling program to evaluate the public health aspects of radon gas near tailings, particularly stabilized tailings. The program will be concentrated at

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three main sites (Grand Junction, Monticello and Durango) and extend over a year to include seasonal variations. Participation of state and local public health officials will be invited, and periodic reports will be issued to them and to the cooperating milling companies.

Radiation Hazards in the Uranium Mines. The long known association between uranium mining and lung disease was reviewed by Dr. Leonard Sagan, of the Medical Branch. More recent data from the Colorado Plateau relating lung cancer of the oat cell variety to air concentrations of radon and daughter products was also discussed. Recent attempts to utilize these data to establish standards of radon and radon daughter concentrations in mines by both the Federal Radiation Council and by the Department of Labor were mentioned. It was concluded that although the relationship between uranium mining and lung cancer is firmly established, quantitation of this relationship is not sufficiently understood to provide clearly safe levels.

The Palomares Incident. Dr. Bruner amplified certain details of his visit to the Spanish JEN (Junta Energia Nuclear) in connection with the Division of Biology and Medicine assuming its responsibility under the Hall-Otera Agreement. A detailed description was given of the contaminated site at Palomares on the Costa Blanca indicating the areas under surveillance and the total pattern of the research program. As of that time no persons had been found to be contaminated with Pu-238. The contaminated material is not re-suspended but spotty particulate contamination of both the soil and certain plants was reported. The problem is complicated by the presence of natural uranium-radium-thorium alpha emitters; the presence of these necessitates specific identification of Pu-238 by means of alpha spectrometry.

The 1967 Resurvey of Bikini Atoll. Messrs. Arnold Joseph, DBM; Tommy McCraw, Division of Operational Safety; and Harold Beck, Health and Safety Lab, New York Operations Office, described a survey of the Bikini Atoll in April-May 1967. The survey was undertaken in response to a request from the High Commissioner of the U.S. Trust Territories to determine whether or not it is feasible and safe to repatriate the Bikini natives. The primary effort of the survey was to measure radiation levels on each of the islands in the Atoll. Mr. Joseph exhibited slides depicting the varieties and amounts of vegetation and animals now existing; Mr. Beck described the HASL instruments used (ion chamber, gamma spectrometer) and some of the preliminary results achieved with them. Mr. McCraw talked about radiation levels and their variation over the Atoll. The answer to the question of feasibility of repatriation awaits further work of calibrating the several different instruments used both to each other and to measured amounts and distributions of nuclides in soil and vegetation.

In response to a question from Dr. Green, this presentation was made for the purpose of informing the ACBM of this development and to make the

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Committee aware that they may be approached at some future date for an evaluation (and perhaps recommendations) on permissible radiological conditions for this special population.

Pions in Cancer Therapy. Dr. N. F. Barr, DBM, discussed the potential advantages of negative pi mesons in cancer therapy. He outlined the status of experimental work with mesons from the 184" cyclotron at Berkeley. He compared physical dose distributions which might be obtainable with protons and other heavy ions, and with distributions obtainable with multipoint applications of neutrons and X-rays. On the basis of physical dose alone, pions appear to be superior to protons and comparable to multiple port X-rays and to neutrons. When some weighting for biological effectiveness is applied, the pion distributions seem to be superior to both. The enhancement ratio (OER) for neutrons has been experimentally determined and is low. It has not been obtained for negative pions. Indications are that the OER for pions should not be as low as for neutrons. This fact may very well overcome the advantage of dose distribution so the choice between pions and neutrons is difficult. Clarification on the basis of experimental work is unlikely with presently available pion beams.

Status of Film Dosimetry Evaluation, BNW. Dr. Lough gave a brief report on the status of the study in progress and almost completed at Pacific Northwest Laboratory which has as its objective the development of a report in which the study group will present recommendations for "The Establishment and Utilization of Film Dosimeter Performance Criteria." A brief outline of the method pursued by the study group was given, and an indication of the number of film dosimeter processors who participated in the study was presented in order to demonstrate that a large fraction of the total industry was involved. It is anticipated that the report will show that the principal cause of difference between film processors probably lies in the reliability of calibration films rather than variations arising during the process of development and interpretation of individual dosimeters. Indeed, if calibration is reliable, considerable variation in processing seems to be acceptable. The Battelle group has concluded tentatively that if one is prepared to allow an exposure of 5 rem/yr over 47 years, which would amount to an accumulated dose of 235 rem, it would be possible to estimate such total dose within  $\pm 69\%$ . Preview of the draft reports suggests that the recommendation of the Battelle group will be one which would lead to very useful practical application. Utilization of the recommendation will be dependent upon the readiness of the regulatory group or groups concerned to establish a laboratory to carry out the function along the lines recommended. The ACBM agreed that any statement from the Committee concerning this study should be withheld pending a review of the report upon its completion.

Follow-up on Harbor Study. Mr. L. Joe Deal, DBM, reported on the Project Harbor Review, a study conducted by National Academy of Sciences-National

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Research Council at Oak Ridge National Laboratory May 23-June 4, 1967, under the direction of Dr. E. P. Wigner. The purpose of the review by the small, select group was to consider the findings of the 1963 Project Harbor study of Civil Defense in light of future developments in offensive and defensive weaponry as they may affect the passive defensive systems for the protection of urban populations. Perhaps the most prominent finding of the review was that the major conclusions of the 1963 study remain valid, i.e., civil defense is technically feasible. A report is being drafted and copies will be made available to the ACBM.

Program of National Center for Radiological Control, USPHS. Mr. James G. Terrill, accompanied by members of his staff, discussed in general terms the interests and programs being developed by the National Center for Radiological Health. He made clear his interest in collaborating closely with the Division of Biology and Medicine where there was evident overlap of interests and responsibilities.

The Minutes of the 118th meeting were approved as circulated. The next meeting of the Committee is scheduled for September 7-8, 1967, at AEC Headquarters, Germantown, Maryland.

Respectfully submitted,



Rosemary Elmo, Executive Secretary  
Advisory Committee for Biology  
and Medicine

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