

TO:

Dr. Rubert S. Anderson
Dr. Austin M. Brues
Dr. V. P. Calkins
Dr. Simeon T. Cantril
Mr. D. D. Cowen
Dr. Lauren R. Donaldson
Dr. Andrew H. Dowdy
Dr. Robley D. Evans
Dr. Titus C. Evans
Dr. G. Failla
Dr. Hymer L. Friedell
Dr. Joseph G. Hamilton
Dr. Alexander Hollaender
Dr. A. H. Holland ✓
Mr. A. Kalitinsky
Dr. Wright Langham
Dr. A. J. Miller
Dr. R. R. Newell
Dr. L. F. Nims
Dr. W. A. Selle
G. Simmons, Jr.
Mr. T. A. Sims
Dr. Robert S. Stone
Mr. Carlton J. Ward, Jr.
Dr. Shields Warren
Dr. Stafford L. Warren
Dr. Raymond E. Zirkle

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MEDICINE, HEALTH & SAFETY

MEDICINE, HEALTH & SAFETY 3

Radiation Isotopes

10/1 1948

May 2, 1949

Dear Sir:

We are forwarding herewith a summary of the meeting of the NEPA Medical Advisory Board held in Washington on April 3.

This summary points out only the highlights of the meeting. The detailed report is being edited and processed for reproduction and will be forwarded to you as soon as it has been completed.

Very truly yours,

W. A. Selle

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Secretary, NEPA Advisory Committee
on Radiation Tolerance of
Military Personnel

Minutes of the Advisory Committee on Radiation Tolerance
of Military Personnel, Carlton Hotel, Washington, D. C.,
April 3, 1949

The second meeting of the NEPA Advisory Committee on Radiation Tolerance of Military Personnel was held at the Carlton Hotel, Washington, D. C., April 3rd, 1949, with Chairman Dowdy presiding and the following present: Regular members - Anderson, Donaldson, Robley Evans, Titus Evans, Friedell, Hollaender, Newell, Nims, Selle, Stone, Shields Warren, and Stafford Warren; NEPA Personnel - Calkins, Cowen, Kalitinsky, Miller, Simmons, Sims and Ward; Special guests - Ellinger, Harbison, Stoeckle, Stratton and Whiting.

Mr. Ward introduced Mr. Harbison of the Travelers Insurance Company, who in turn presented his associates Mr. Stratton and Dr. Whiting. The chair also introduced Dr. Ellinger, of the Naval Research Institute, Bethesda, and Dr. Stoeckle of the Oak Ridge Office of Directed Operations.

The Minutes of the previous meeting of the Advisory Committee, held in Chicago, June 23rd, 1949, were read and approved.

Chairman Dowdy briefed the Committee on the activities of the various committees charged with the collation of data pertinent to the NEPA Project. He discussed the preparation of the Tabulation of Available Data Relative to Radiation Biology, copies of which had been circulated to members of the Committee on March 15th. A general discussion on the data ensued. Dr. Hollaender offered a prepared statement of the minor corrections relating to data he previously submitted.

Dr. Failla's motion "that the available data be accepted, with the addition of a note that the dosage of the Los Alamos cases is subject to revision", was seconded by Dr. Robley Evans and approved on vote of the Committee.

The chairman brought up for consideration the adoption of Article IX, p. 34, on "Acute Exposure - Estimated Results to Humans." In the long discussion which followed, several corrections and additions were recommended.

During consideration of the expression "delayed effects", the Committee approved a motion by Dr. Robley Evans and seconded by Dr. Hollaender "that the words 'to the recipient' be inserted after the word 'effects' appearing at the bottom of page 35, 3 lines from the bottom of the page."

The Committee approved by vote a motion by Dr. Failla and seconded by Dr. Robley Evans referring to qualifying statements under Article IX, Acute Exposure and reading: "The estimates given below apply to the average normal individual. It should be borne in mind that there is considerable variation in individuals' susceptibility to radiation."

Dr. Stone moved "that the figure 'three' appearing in the last sentence under E. reading "Some deaths would occur in 3 to 6 weeks" be changed to 'two'." The motion, seconded by Dr. Titus Evans, was carried.

Upon a motion by Dr. Robley Evans seconded by Dr. Stone, the Committee recommended that the word "might" in the second line under

D, page 35, and the word "would" in the last line under E, page 35; be underlined.

During a discussion concerning the meaning of the word "acute", Dr. Failla made a motion, seconded by Dr. Robley Evans, "that after the word 'Acute', appearing in the first line of page 34, an asterisk be placed for a footnote reading: 'Received within twenty-four hours'."

Dr. Failla's motion "for adoption of Section IX as corrected" was seconded by Dr. Robley Evans and approved on vote of the Committee.

The chair requested Dr. Stone to read the report of the Committee on Human Radiation Tolerance. There followed an involved discussion which lasted until the noon recess. On reconvening at 1:30, Dr. Stone read a revised version of a report which had been dittoed during the recess and later distributed among the members. The final form read as follows:

Report of the Committee on Human Experimentation

"The use of human beings as experimental subjects has been countenanced in the past when information was needed that could not be obtained in any other way.

"The NEPA Medical Advisory Committee on the Radiation Tolerance of Military Personnel is attempting to establish what will happen to humans when necessarily exposed at infrequent times to amounts of radiation that are high relative to the dose set up as the maximum permissible daily (or weekly) dose for workers constantly working where radiation exposure is possible.

"A review of animal experiments has shown that not only do animals of various species differ in their response to given amounts of

radiation, but also that animals of different strains within a given species differ.

"It is therefore impossible to predict with sufficient accuracy what will happen to humans.

"The exposure of some sick humans to radiation to the total body with therapy as the objective has provided some indication of how sick people respond; but such therapeutic trials have shown also that the response varies greatly with the clinical condition of the patient.

"A few accidental exposures, and the mass exposures at Hiroshima and Nagasaki, have provided some information as to how relatively healthy people respond; but the conditions of those exposures are not sufficiently well known.

"The information desired is sufficiently important that we believe the use of humans is justified.

"It is essential that any such experimentation be carried on in accordance with the principles laid down by the Judicial Council of the A.M.A. in 1946 as follows:

1. The voluntary consent of the person on whom the experiment is to be performed must be obtained.
2. The danger of each experiment must have been previously investigated by animal experimentation.
3. The experiment must be performed under proper medical protection and management.

"In view of the above we, the members of NEPA Medical Advisory Committee on the Radiation Tolerance of Military Personnel, hereby recommend that human experimentation be carried out, and advise NEPA

to request the Armed Services to arrange for it; and further recommend that the experiments be unclassified."

"References:

1. Supplemental Report of the Judicial Council of the American Medical Association, J.A.M.A., 132:1090 (Dec. 28) 1946.
2. Ethics Governing the Services of Prisoners as Subjects in Medical Experiments, J.A.M.A., 136:457-58, (Feb. 14) 1948.
3. The History and Ethics of the Use of Human Subjects in Medical Experiments: A. C. Ivy, Science 108:1-5 (July 2) 1948."

Following the reading, the Committee approved a motion by Drs. Stone and Robley Evans that the report on Human Experimentation be accepted as the report and opinion of the entire Advisory Committee. The motion carried unanimously.

The Committee then gave detailed consideration to proposed recommendations for research required to refine the values given in the Report on Available Data which had been recommended to NEPA in the morning session. As a guide to these deliberations the chair earlier had distributed mimeographed sheets suggesting research problems submitted by members of the Executive Committee. These suggestions included: I. Methods for Detecting the Degree of Sensitivity of Individuals to Radiation Exposures; II. Pharmacological Studies of Radiation Reactions; III. Evaluation of Physical Fitness Following Total Body Irradiation; IV. Conversion Factors - N to r Ratio and Additivity; V. Evaluation of Long-Term Effects; VI. Compilation of Available Data as Initiated

by NEPA Advisory Committee on Radiation Tolerance of Military Personnel.

Mr. Simmons reported at some length on the value of the technic in the study of neutron distribution in biological material. Following additional general discussion, the Committee approved by vote a motion by Drs. Stone and Failla "that the application of the Monte Carlo technic of analysis of neutrons in biological media be recommended for study."

Dr. Dowdy brought up for further consideration the assignment of priority of suggested research problems. It was generally conceded that the Monte Carlo calculation be assigned category VII and that it have first priority. Dr. Nims recommended that III be given second priority and Dr. Titus Evans suggested that VI be given third priority. Final action, however, was not taken on the assignment of priority.

After further discussion the Committee approved a motion by Drs. Friedell and Stafford Warren that a subcommittee be appointed to study, in conjunction with NEPA representatives, the character and priority of specific biological problems. The Committee then gave additional, extensive consideration to the matter of r to N ratio. Following paralleling suggestions by Drs. Friedell, Stafford Warren and Titus Evans, it was agreed that a subcommittee be empowered to consider research proposals and that this subcommittee report back to the Advisory Committee as soon as possible. Thereupon, Chairman Dowdy added the names of Drs. Failla and Titus Evans to the Executive Committee and requested that this group be the subcommittee to consider research, and, further, that Drs. Failla, Robley Evans and Titus Evans

hold a conference with NEPA representatives on the r to N ratio and other physical problems confronting NEPA.

There being no further items of business, the chair called upon Mr. Ward and Mr. Sims for closing remarks. A motion for adjournment then prevailed.

W. A. Selle, Secretary
NEPA Medical Advisory Committee on
Radiation Tolerance of
Military Personnel

April 26, 1949