AD-A158 319 STUDIES CONCERNED WITH BASIC RADIATION PROTECTION CRITERIA AND STUDIES CO..(U) NATIONAL COUNCIL ON RADIATION PROTECTION AND MEASUREMENTS BET.. 24 JUL 85 1/1

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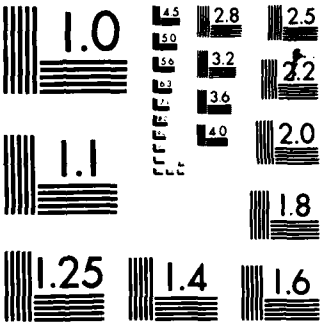

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NCRP

National Council on Radiation Protection and Measurements

7910 WOODMONT AVENUE, SUITE 1016, BETHESDA, MARYLAND, 20814-3095 AREA CODE (301) 657-2652

WARREN K. SINCLAIR, Ph.D., *President*
S. JAMES ADELSTEIN, M.D., *Vice President*
W. ROGER NEY, J.D., *Executive Director*

(2)

July 24, 1985

Scientific Officer
Office of Naval Research
800 North Quincy Street
Arlington, Virginia 22217-5000

ATTN: Dr. Jeannie Majde, Code 441CB
Ref: Contract No. N00014-84-C-0776,
Sequence No. A002

Dear Dr. Majde:

Enclosed is the final report for the above contract which was due on May 30, 1985. Also enclosed are 20 copies of NCRP Report No. 80, whose publication was supported in part by this contract. Full payment of the authorized contract amount has been received.

Sincerely yours,

W. Roger Ney
Executive Director

WRN: TMK/ldg
Attachment

cc: Sandy Alexander, DCAS Production

FINAL REPORT: NAVY CONTRACT NO. N00014-84-C-0776

Studies Concerned with Basic Radiation Protection Criteria

Scientific Committee 1 is a standing committee of the NCRP charged with the formulation of basic radiation protection criteria. The Committee is actively engaged in the development of a radiation protection system based on risk. The average annual risk of mortality associated with employment in "safe industries" is being used by the Committee as the guideline for developing recommendations for the maximum annual risk of mortality for occupational radiation exposure. Levels of risk associated with external whole body exposure, partial body exposure, internal exposure and the methodology for the summation of these risks are also being addressed by the Committee. The Committee plans to draft four reports over the next few years. These will cover: (1) exposure limits, (2) the philosophical basis of a radiation protection system based on risk, (3) site-specific risk coefficients, and (4) implementation of a radiation protection system based on risk. The report on exposure limits, Recommendations On Exposure Limits, will enter the Council's review process during the summer of 1985.

Scientific Committee 40 is a standing committee of the NCRP charged with periodically reviewing radiobiological studies relevant to establishing radiation protection standards. Since no significant human data exist for high LET exposures, the Committee is compelled to make its recommendations for average relative biological effectiveness values ($\bar{Q}$) based on data derived from studies in cell and animal systems that have been performed at doses and dose rates encountered in occupational radiation settings. This is the topic of the current draft report being developed by the Committee. This report is expected to enter critical review during the last calendar quarter of 1985.

Scientific Committee 57 was constituted to develop guidance on protection against radioactive material that may gain entry into the human body. The Committee has produced a report entitled General Concepts for Dosimetry of Internally Deposited Radionuclides, which discusses all of the concepts that have developed since the last report of this type published by NCRP as NCRP Report No. 22, Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure. The new report will be published shortly as NCRP Report No. 84.

The Committee is utilizing task groups to carry out an assessment of the current "status of the art" as far as protection against internal emitters is concerned. The following Task Groups are actively formulating reports in their subject areas:

Task Group 2 - Respiratory Tract Model - A draft report is in advanced stages of preparation and should be ready for review by the summer of 1986.

Task Group 6 - Bone Problems - A draft report is in preparation. Further work is needed.

Task Group 7 - Thyroid Cancer Risk - A report of this Task Group has been published as Report 80 and copies are enclosed.

Task Group 8 - Leukemia Risk - A draft report is in preparation. Further work is needed.

Task Group 11 - Genetic Risk - A draft report is in the advanced stages of preparation and is expected to enter the review stage within the next two months.

Task Group 12 - Strontium - A draft report is in the review stage.

Task Group 13 - Neptunium - A draft report is in the review stage.

Scientific Committee 59 was constituted to collect and evaluate new information from studies of effects attributable to previous human radiation exposure. The Committee is inactive pending the availability of the reassessment of the dosimetry for the Hiroshima-Nagasaki survivors.

Scientific Committee 79 was constituted to provide a critical, comprehensive, and objective appraisal of the world literature on the biological effects due to exposure to low frequency electric and magnetic fields (including those emanating from EHV overhead power lines). This study will focus on the state of knowledge of the potential health effects of exposure to these electromagnetic radiations. The parameters to be studied will include time duration of exposure, nature and level of exposure, and responses and response differences among study subjects. Excluded from the study are those indirect health effects that may result from "electronic interferences" such as cardiac pacemakers, thermometers, etc. A first meeting has been held and drafting assignments have been made.

The Study Group on Comparative Risk is concerned with considering the relationship between radiation hazards and those presented by non-radiation activities and materials. One important aspect of this topic is an assessment of the industrial hazard - radiation and non-radiation: (1) on an average basis and (2) in terms of the minimum and maximum hazard level faced by workers. Previous formulations indicate that the use of an average risk value places the occupational exposure radiation in the category of the so-called "safe" industries. An important part of the work on comparative risk is being carried out by the Task Group on Comparative Carcinogencity of Pollutant Chemicals. This Task Group seeks to compare the carcinogenic risks of radiation with those of chemicals known to be carcinogenic. The Task Group's report is expected to provide important basic information for the work of the Study Group on Comparative Risk. The Task Group's report entered critical review in July of 1985.

Studies Concerned with Guidance and Information

The NCRP has long been a source of guidance and information on matters of radiation protection and measurement and many activities in this area are underway at this time. Several scientific committees are concerned with the development of recommendations on the practical aspects of radiation protection and measurements.

Scientific Committee 46 is concerned with operational radiation safety. The first report of the Committee was published as NCRP Report No. 59, Operational Radiation Safety Program, which provides general requirements for any radiation safety program. A second report was published as NCRP Report No. 71, Operational Radiation Safety -- Training, and it prescribes the elements of an effective training program. The Committee is presently engaged in a new effort utilizing task groups to treat topics of general concern in operational radiation safety. These task groups include:

Task Group 1 Warning and Personnel Security Systems - A draft report has been completed and is ready to enter the review stage.

Task Group 2 Uranium Mining and Milling - Radiation Safety Programs - A draft report is in preparation.

Task Group 3 ALARA for Occupationally Exposed Individuals in Clinical Radiology - A draft report is in the advanced stages of preparation and should enter the review stage in the next 3 to 6 months.

Task Group 4 Calibration of Survey Instrumentation - A draft report is in prepara ion.

Task Group 5 Maintaining Radiation Protection Records - A draft report is in preparation.

Task Group 6 on Radiation Protection for Allied Health Personnel - A draft report is in preparation.

Task Group 7 Emergency Planning - Members are being selected.

Scientific Committee 54 has developed a report that addresses the use of bioassay in assessing and controlling the intake of radionuclides by workers. The

report treats: bioassay techniques, necessity for a bioassay program, interpretation of results, participation, frequency, action points and action, implementation, and evaluation of results. The report is in the final stages of review and is expected to be published in the next six months.

Scientific Committee 65 on Quality Assurance and Accuracy in Radiation Protection Measurements, was established to formulate recommendations on (1) quality control procedures, (2) the level of accuracy appropriate to various types of measurements involved in radiation protection, and (3) traceability requirements for calibration of radiation protection instrumentation. The Committee has an essentially complete draft report that is expected to enter into the critical review process late in 1985.

Scientific Committee 78 is developing a report to provide practical guidance on the measurement needs and techniques appropriate to the control of radiofrequency exposures. The aim is the provision of a practical guide on how to make proper measurements, how to interpret them in light of our knowledge of biological effects, and how to deal with the pitfalls involved in making such evaluations. The complex nature of near field patterns, the importance of polarization and the need to estimate the deposition of electromagnetic energy in tissue are to be treated. Important sections of the report will treat sources of radiofrequency energy, instrumentation, survey techniques and procedures, and interpretation of results. The report is in middle drafting stages.

Scientific Committee 80 on Radiation Biology of the Skin (Beta Ray Dosimetry) will develop a report that will provide information on such topics as the depth or range of depth at which the evaluation of skin dose for ionizing radiation should be made, the variation in sensitivity of the skin for radiation carcinogenesis as a function of anatomical location, energy of the radiation, and etc. Scientific Committee 80 is expected to have their draft report ready for critical review during the first half of 1986.

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