

256

405164

K. D. Nichols, General Manager

November 17, 1953

John C. Bugher, M.D. Director
Division of Biology and Medicine

MONTHLY STATUS AND PROGRESS REPORT, OCTOBER 1953
DIVISION OF BIOLOGY AND MEDICINE

R

BMA:RON

Transmitted herewith is the Monthly Status and Progress Report for this Division covering the month of October 1953.

Enclosure:
Report

CC: J. H. Burchard

~~REPRODUCED DATA~~
~~This document contains restricted data...~~
~~in the interest of national security...~~
~~or the disclosure of information...~~
~~to unauthorized persons is prohibited.~~
DOE 5650.2, III-12

CLASSIFICATION CANCELLED
BY AUTHORITY OF DOE/OC
JOSE DIAZ 4-16-81
REVIEWED BY DATE
Wilove A. STRASER 4-17-81
REVIEWED BY DATE

LANER

BY: DICK ROOGLE 6-10-89

When separated from or removed from this document

as unclassified
(insert appropriate classification)

US DOE ARCHIVES
326 U.S. ATOMIC ENERGY
COMMISSION
RG DOE HISTORIAN (DBM)
Collection 1132
Box 3363
Folder # 23

Distribution of Enclosure:

- #1 - Addressee
- #2 - J. H. Burchard
- #3 - Miss Laner
- #4 - R. Butenhoff
- #5&6 - Files Di

OFFICE	Adm	X-0	Director		
SURNAME	O'NEIL	BROWN	BUGHER		
DATE	11/17/53	11/16	11/18		

RG DOE HISTORIAN (DSM)
Collection 1132
Box 3363
Folder # 23

~~CONFIDENTIAL~~
~~CONFIDENTIAL~~
~~CONFIDENTIAL~~

257

MONTHLY STATUS AND PROGRESS REPORT
Division of Biology and Medicine
MONTH OF OCTOBER, 1953

Weapons Test Activities

Neutron Dosimetry Program-Operation CASTLE. ([redacted]) Arrangements are being made to incorporate neutron measuring techniques developed by the Oak Ridge National Laboratory into the program of neutron radiation measurements being undertaken by the Naval Research Laboratory during Operation Castle. The program will be of benefit to both groups and will involve a minimum of expense and effort.

The Oak Ridge research group has made use of neptunium, uranium and plutonium fission detectors in studies to determine total neutron flux. Neutron measurements made during previous field tests have not covered the wide range of neutron energies of interest to the biophysicists. Such data derived from these fission detector measurements would be of considerable importance in interpreting the total neutron dose.

Research Activities

Cell Free Photosynthesis. (UNCLASSIFIED) Photosynthesis, the process by which the energy of the sun is converted to food stuff, has always been studied in the intact cell.

BEST COPY AVAILABLE

~~CONFIDENTIAL~~
~~CONFIDENTIAL~~

CONFIDENTIAL

CONFIDENTIAL

- 3 -

red blood cell membrane are at a slower rate in sickle cells than in normal cells. The alkaline phosphatase in sickle cell anemia plasma is significantly higher than that in normal plasma. Initial studies on phosphate transfer using metabolic inhibitors indicate the absence of a certain enzyme from the sickle cell anemia blood. One of the most significant observations of this group on the problem is that one of the protein components of the plasma has a different mobility as determined by electrophoresis. This finding is being investigated further with additional electrophoresis equipment and under varying experimental conditions.

This work complements other investigations in which the globin part of hemoglobin in sickle cells is found to be different from that of normal cells.

Shielding Studies. (UNCLASSIFIED) The problem of providing adequate shielding for personnel protection in equipment designed for radiation sources must be coupled with that of economics in operation. For lower energy ranges, shielding is not an expensive factor. However in the use of higher intensity radiations, the problem of personnel protection involves high expenditures. This problem is being investigated under a cooperative project with the National Bureau of Standards to determine design factors of various types of equipment in which savings might be realized, and at the same time to determine with greater accuracy the

CONFIDENTIAL

CONFIDENTIAL

validity of former assumptions so that more reliable calculations may be made in shielding design. The present work is concerned with the attenuation characteristics of a shield when the rays from the source enter the shield obliquely. To a first approximation, the effective thickness of the shield has been assumed to be the length of path of the ray in the shield - that is, the more oblique the direction of incidence, the longer the path and the greater the degree of shielding. In this study it has been shown that while oblique thickness of the barrier may be utilized in designing equipment to shield against the primary rays, the contribution of scattered radiation from within the shield may become appreciable. Scattered radiation increases significantly as the obliquity of the incident ray increases, because of the shorter path length for a number of the scattered rays.

Data obtained from these investigations will be applicable to the design of protective shielding for personnel operating cyclotrons, Van de Graaff generators, or handling Cobalt 60 and radium sources which are used in research and therapy.

Radiation Instruments Program (UNCLASSIFIED)

Recent work under the cooperative ^{agreement} (contract) with the National Bureau of Standards for studies in the radiation instrument field includes:

1. Study of Film Dosimeters. A report has been completed on the evaluation of the several types of film dosimeters in use at the various Commission installations. The work consisted of two parts:

- a. Study of the sensitivity, quality dependence, and maximum range of the film badge; and
- b. Cross-calibration study.

Some 25 different WCC installations participated, and the findings show that most of these installations are able to get a fair degree of precision in measuring and interpreting gamma and x-ray radiation doses over a wide range of energies and intensities. The survey has been important in pointing out areas where improvements may be initiated in order to reduce inaccuracies in film dosimeter measurements.

2. Testing of Radioactive Electric Cells. Tests were made of two Model U-50 electric cells of the radioactive source type manufactured by the Radiation Research Corporation of West Palm Beach, Florida. These are the first cells of this type which have appeared on the market. Preliminary results indicate that the load characteristics are better than those claimed by the manufacturer. However, the voltage of the cells when no load is applied showed some dependence on humidity conditions. It is expected that electric cells of the radioactive source type will find [wide] application in low current devices where long storage and small battery dimensions are required.

General (UNCLASSIFIED)

The Advisory Board on Water Decontamination met at Oak Ridge National Laboratory in October to review the current status of the Oak Ridge project on water decontamination. The Board was set up in 1950 to provide technical advice on the project which is under the nominal supervision of

the U. S. Public Health Service at Oak Ridge. Representatives were present from AEC, U. S. Public Health Service, Department of Defense (AFDP), New York State Waterworks Commission, and the American Waterworks Associations.

The meeting included discussions of the Interim Progress Report submitted by the Oak Ridge research group, and the following subjects were covered: research on the decontamination of radioactive waters, the problem of radioactivity in water courses, reconcentration of radioactivity by natural agents, water decontamination, and instrumentation. The subject report will be revised to include further studies and later issued as an official document for distribution by the Oak Ridge National Laboratory. It contains comprehensive data on decontamination studies and will be of considerable value to all waterworks engineers in the country, in addition to having wide application in AEC operations.

US DOE ARCHIVES 326 U.S. ATOMIC ENERGY COMMISSION	
RG	<u>DOE HISTORIAN (DSM)</u>
Collection	<u>1132</u>
Box	<u>3363</u>
Folder	<u>#23</u>