

PROGRAM - MEDICAL ADVISORY COMMITTEE - AECFriday, May 12, 1950

- 11:15 Adm. Bldg. Rm. 6 - John B. Storer - Pathology. Prophylaxis of Radiation Toxicity.
- 11:22 Lab. F - Herbert D. Landahl - Aerosols.
- 11:29 Lab. C - Kenneth P. DuBois - Toxicity of Radioactive Metals. Toxicity and Biochemical Actions of Beryllium.
- 11:36 Lab. D - Robert N. Feinstein - Factors Involved in X-ray Mortality.
- 11:43 Lab. ~~B~~ - John F. Thomson - Toxicity of External Gamma Radiation.
- 11:50 Lab. A - John H. Rust - Screening Program.
- 11:57 Visit to Animal Quarters, Radiation Room and Chambers for
to External Radiation.
12:15

DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW	
SINGLE REVIEW AUTHORIZED BY: <i>A. A. SINGGALL</i>	DETERMINATION (CIRCLE NUMBER(S))
REVIEWER (APO): <i>5-23-94</i>	1. CLASSIFICATION RETAINED
NAME: <i>D. R. [unclear]</i>	2. CLASSIFICATION CHANGED TO: _____
DATE: <i>5-23-94</i>	3. CONTAINS NO DOE CLASSIFIED INFO
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12 May 1960

CURRENT RADIOBIOLOGICAL RESEARCH IN THE TOXICITY LABORATORY

Julius M. Coon

The following programs are actively in progress.

Pathology. (John E. Storer) Pathologic examination of tissues from animals exposed to external and internal emitters is being carried on.

Prophylaxis of Radiation Toxicity. (John B. Storer) A variety of compounds known to decrease the oxygen tension of the blood or tissues have been tested for prophylactic effect against radiation damage. Of these para-amino-propionophenone is the most effective, increasing the LD-50 for mice from 500 r to 830 r. A similar protective action has been found in rats.

Aerosols. (Herbert D. Landahl and T. N. Tracewell) The study of the effect of various physical properties of air-borne particles on their retention in the human respiratory tract under various conditions is being continued. Particular attention is paid to the effect of various respiratory patterns as well as to the locus of deposition.

Toxicity of Radioactive Metals. (Kenneth P. DuBois, Maurice F. Sullivan, and John Doull) The toxicity of the stable isotopes of tantalum, zirconium, cesium, yttrium, strontium, lanthanum and columbium has been measured. Using tracer doses of the radioactive forms of these metals the metabolism and distribution of these metals has been investigated. Acute and chronic toxicity studies on these radioactive metals are underway using rats to which the materials are being administered orally and parenterally. 6 vno

Studies of the Toxicity and Biochemical Actions of Beryllium. (Kenneth P. DuBois, Kenneth W. Cochran and Marcella Mazur) Toxicity studies on various beryllium salts are being conducted. Studies on the mechanism of acute beryllium poisoning are also being carried out. This investigation has included a systematic examination of the effects of beryllium on phosphatases several of which have been found to be markedly inhibited by low concentrations of beryllium in vitro and in vivo.

Factors Involved in X-ray Mortality. (Robert N. Feinstein and Carrie L. Butler) The mucoproteins of the intestinal mucosa are being investigated with a view toward ascertaining whether changes in these substances are responsible for the bacteremia and intestinal desquamation observed after irradiation. In addition, it is planned to continue work on the effect of irradiation on protein synthesis and degradation particularly in the intestinal mucosa.

External Radiation Toxicity. (John F. Thomson, Magdalene Carttar, and Robert Cox) The effects of continuous irradiation on survival of rats, mice, and guinea pigs have been studied using doses of gamma radiation varying from 20 to 140 r per day. Depending on the dose rate, the animals accumulate between 3 and 30 times the acute x-ray LD-50 doses before succumbing. LD-50 values, as distinguished from survival times, have also been established for some of these rates of irradiation.

2.

Screening Agents Which May Be Useful in Reducing the Effect of Acute Whole Body Radiation in Mice. (Maxwell Dauer, Ann Budy, and John H. Rust)
This group is screening many possible agents which may increase the survival time of mice exposed to 800 r acute whole body irradiation. The present field of search is primarily among the biological materials derived from the nucleic acids, although other organic and inorganic compounds have been tested. The rationale for testing the nucleic acid derivatives is based upon the concept that reaction to injury is due to the release of nucleic acid from damaged cells. So far our results have been equivocal but yet interesting enough to stimulate further study. An intensive study of the effects of rutin and related flavinoids on radiation damage is also proposed.