

**BIOLOGY AND MEDICINE
PROGRAM BUDGET**

728234

May 1970

CONTRACT W-31-109-ENG-38
SUPPLEMENT NO. 16

1. TITLE
Biology and Medicine Program -
Assessment, Evaluation and Control of Radiation Exposure
to Man and His Environment

2. BUDGET ACTIVITY NO.
AEC 06-02 Summary
ANL 63100 through 67300 Summary (RPY, BIM, CHM, AMD)



3. SCIENTIST RESPONSIBLE
R. E. Rowland, W. K. Sinclair, and M. S. Matheson

4. WORK STARTED
FY Continuing

5. RELATED WORK (With Same Contractor or Others)
Numerous other studies at universities and work sponsored by various
government agencies.

6. MANPOWER AND COST DATA

ESTIMATED FOR FISCAL YEARS

	1970	1971	1972
6a. DIRECT MANPOWER (Man Years)			
SCIENTIFIC			
REGULAR	57.1	64.9	78.3
TEMPORARY PAID BY ANL	3.5	1.0	7.0
TEMPORARY PAID BY OTHERS	0.8	3.9	3.5
TOTAL SCIENTIFIC	<u>61.4</u>	<u>69.8</u>	<u>88.8</u>
OTHER TECHNICAL			
REGULAR	8.3	6.0	18.0
TEMPORARY PAID BY ANL	-	-	-
TOTAL OTHER TECHNICAL	<u>8.3</u>	<u>6.0</u>	<u>18.0</u>
TOTAL MAN YEARS	<u>69.7</u>	<u>75.8</u>	<u>106.8</u>

6b. OPERATING COSTS (In Thousands)			
EFFORT-RELATED COSTS	\$2,047	\$2,180	\$3,113
MATERIALS AND SERVICES	513	627	903
MAJOR PROCUREMENTS	74	209	200
TOTAL COST	<u>\$2,634</u>	<u>\$3,016</u>	<u>\$4,216</u>

6c. Cost (Recap of Subactivities) (In Thousands)

06-02-01 Exposure to External and Internal Radiation	\$1,410	\$1,600	\$2,150
-02 Combating Detrimental Effects of Radiation	258	267	341
-04 Land and Fresh Water Environmental Sciences	244	425	849
-06 Atmospheric Sciences	287	364	427
-08 Radiological and Health Physics and Instrumentation	435	360	449
Total 06-02	<u>\$2,634</u>	<u>\$3,016</u>	<u>\$4,216</u>

(over)

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6d. Major Procurements (In Thousands)

	<u>FY 1970</u>	<u>FY 1971</u>	<u>FY 1972</u>
06-02-01 Exposure to External and Internal Radiation	<u>\$ 74</u>	<u>\$209</u>	<u>\$200</u>

6e. Equipment Obligations (In Thousands)

06-02-01 Exposure to External and Internal Radiation	\$ 74	\$109	\$136
-02 Combating Detrimental Effects of Radiation	-	5	5
-04 Land and Fresh Water Environmental Sciences	21	95	145
-06 Atmospheric Sciences	19	25	47
-08 Radiological and Health Physics and Instrumentation	13	47	69
Total 06-02	<u>\$127</u>	<u>\$281</u>	<u>\$402</u>

See individual 189's for detail.

7. Description

(a) The new program - Radium Studies - is underway in a portion of the Radiological Physics Division structured to study the effects of internal emitters on man. This part of the division is called the Center for Human Radiobiology. The transfer of staff from Prof. Robley Evans' laboratory at MIT is now complete. That laboratory at MIT is to be funded as a subcontract from Argonne starting September 1, 1970. This satellite laboratory will function as a Boston field office of the Radium Studies, and will provide the capability of making total body γ -ray measurements and radon breath measurements on those radium patients that are not brought to Argonne for study. Also serving this project in the Boston area are Drs. Melvin H. Chalfen, Samuel D. Clark, and John E. Gary. The physicians will provide medical examinations and skeletal radiographs of the patients in the Boston area.

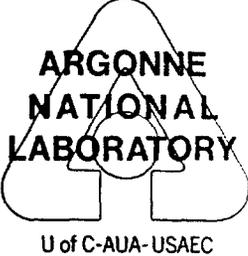
Already a part of the Radiological Physics Division is the New Jersey Field Office located in St. Mary's Hospital, Orange, New Jersey. This office functions to locate patients in New Jersey and to arrange their scheduling and travel to Argonne or MIT.

Although budget and space limitations still prevent adequate staffing of the Center for Human Radiobiology, it is clearly evident that a medical branch must be added to this program. Present plans call for the addition of a Medical Director in FY 1972, and an office and laboratory building to house the expanded staff.

Formal arrangements have been completed for the transfer of the patient records studied in previous years by staff of the Biology and Medicine Division, the Radiological Physics Division, and the Health Service Division of Argonne, to the new Center for Human Radiobiology. It is hoped that this transfer can be completed early in FY 1971.

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(Continuation)

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7. Description (Contd.)

(b) Recent budget restrictions have severely curtailed research efforts in two portions of the Radiological Physics Division. These are Radiation Physics under AEC code 06-02-08, and Radioactive and Trace Element Metabolism under AEC code 06-02-01. Since these two programs provide the basic research effort on which advances in Biology and Medicine are built, it is imperative that they be brought up to an efficient operating level during FY 1972.

(c) The Great Lakes Research Program came into being in FY 1970. The program, which is jointly funded by DBM and RDT, is conducted by personnel from RPY and the Center for Environmental Studies. The program objectives to determine the influence of thermal and radioactive discharges from nuclear power plants sited along Lake Michigan upon the physical and biological environment of the lake. The RPY effort involves the study of radioactivity in the lake and its biota, intensive physical and biological studies at selected sites such as Waukegan and Zion, and the meteorological effects of releasing heat into the lake. The program is expected to grow in FY 1971, and a relatively large field effort will be conducted in conjunction with university investigators in this region.

(d) Emphasis and accomplishments under Terrestrial Ecology continue to expand at a modest pace, with tritium movement in soil and vegetation receiving initial attention. Close liaison with interested university personnel is also maintained in this area.

(e) The Atmospheric Sciences program continues to document relevant parameters on the site and to correlate these with urban measurements as part of the Chicago Air Pollution Program. Urban meteorology and an intensified program in rain scavenging - inadvertent weather modification are essentially new efforts in FY 1970-FY 1971. Research on energy transfer at the air-water interface is being directed to examine energy loss mechanisms on Lake Michigan.

(f) The Micrometeorological Modeling program has been strengthened by the construction of a small wind tunnel facility. A review of the accomplishments and future uses of such a modeling facility will determine the future course of this program.

PUBLICATION

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