

BUDGET-8-Joint Participation with Gov't Agencies

BUDGET-8-Jt. Part with Gov't Agencies

	Date	To	From	Class	Pgs. No.	To	From	Class
1	9-1-59	AEC 445/4 Medical-Health Related Activities Rumphrey, Senator Hubert		also u				

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FIN. DIV.
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Resemble Clinton F. Anderson
Chairman, Joint Committee on
Atomic Energy
Congress of the United States

Dear Senator Anderson:

Enclosed for the information of the Joint Committee on Atomic Energy is a compilation of data on the medical and health-related programs of the U. S. Atomic Energy Commission. This material was compiled for the Subcommittee on Reorganization and International Organizations, Senate Committee on Government Operations, at the request of its Chairman, Senator Robert S. Rayburn.

Included is a copy of Senator Rayburn's letter dated June 16, 1959 to Mr. John A. McCone and a copy of my letter of August 17, 1959 to Senator Rayburn relating to the compilation.

Sincerely yours,

R. E. Hollingsworth, I

Deputy General Manager

(Circulated and EC #45/4)

Compilation
Congress on Medical and Health-
Related Programs of the U.S. AEC
Copies of letters 6/16/59 and
8/17/59

RECEIVED
GENERAL INVESTIGATIVE
DIVISION
U.S. ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545
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Bring it to the attention of the Council



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AEC 445/4 37

September 1, 1959

COPY NO. _____

ATOMIC ENERGY COMMISSION

COMPILATION OF DATA ON AEC MEDICAL AND HEALTH-RELATED ACTIVITIES

Note by the Secretary

The General Manager has requested that the attached report by the Director of the Division of Biology and Medicine be circulated for the information of the Commission.

W. B. McCool
Secretary

DISTRIBUTION

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ATOMIC ENERGY COMMISSION

COMPILATION OF DATA ON AEC MEDICAL AND HEALTH-RELATED ACTIVITIES

Report to the General Manager by the Director
of the Division of Biology and Medicine

THE PURPOSE

1. To inform the Commission of health-related program data which were supplied to the Subcommittee on Reorganization and International Organizations, Senate Committee on Government Operations, upon request of its Chairman, Senator Hubert H. Humphrey.

SUMMARY

2. The Subcommittee on Reorganization and International Organizations, Senate Committee on Government Operations, of which Senator Hubert H. Humphrey is Chairman, is engaged in preparing a series of "prints" as background information upon which to base national and international health legislation. One of these prints is intended to cover certain budgetary and personnel information about medical and health-related programs of the United States Government.

3. A request for information about the medical and health-related activities of the Atomic Energy Commission was received from Senator Humphrey (Appendix "A"). The Division of Biology and Medicine was asked by the General Manager to assume responsibility for the preparation of the requested material. This Division in turn requested assistance and information from the Divisions of Finance and Reactor Development, and from the Offices of Personnel and Industrial Relations, all of whom responded most helpfully.

4. A report entitled "Medical and Health-Related Programs of the U.S. Atomic Energy Commission" was prepared and sent to Senator

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Humphrey's Subcommittee on August 17, 1959, with a covering letter from the General Manager (Appendix "B"). It is understood that the report will go to Mr. I. M. Labovitz, Senior Specialist in the Legislative Reference Service, Library of Congress, who will prepare it for publication in combination with similar reports from other Governmental agencies.

LIST OF ENCLOSURES

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APPENDIX "A"

UNITED STATES SENATE
COMMITTEE ON
GOVERNMENT OPERATIONS

June 16, 1959

Mr. John A. McCone,
Chairman
Atomic Energy Commission
Washington 25, D. C.

Dear Mr. McCone:

I am writing to request certain budgetary and personnel information needed to complete an over-all compilation which this Subcommittee is preparing with reference to medical and other health-related programs of the United States Government.

The broad outlines of the request have been discussed informally with Mr. Howard C. Brown of Mr. Tammaro's office and with Dr. Walter D. Claus of the Division of Biology and Medicine by Mr. I. M. Labovitz of the Library of Congress, who is assisting the Subcommittee.

As you know, under the Legislative Reorganization Act the Committee on Government Operations has a special responsibility in connection with budgeting and accounting aspects of Federal programs. We are preparing tables that will show the magnitude and range of medical and other health-related activities of the Government and, within that area, the expenditures and manpower devoted to health-related research.

The two enclosed memoranda, spelling out our needs, are rather lengthy, but we hope in this way to anticipate many questions that otherwise might arise in the preparation of your reply. The enclosures are as follows:

- a. A statement indicating the extent of the fiscal and budgetary data for the fiscal years 1958, 1959, and 1960, for which tabulations are needed.
- b. A mimeographed statement (H-5-1-59) indicating the categories of research personnel in medical and other health-related fields, as of June, 1958, for which tabulations are needed.

One important special modification of the personnel inquiry would be illuminating in the case of the Atomic Energy Commission, however. At page 4, of the mimeographed memorandum, in the comments on "Extramural research", we have said, "Do not report the number of grantees, contractors' employees, etc., who may be engaged in extramural research." It now appears that in the special case of your Commission, with its extensive use of contractual arrangements, it would be helpful if the number of contractors' employees engaged in medical or other health-related research could be specified or, if necessary, estimated -- assuming the Commission has such information available in its records.

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In both the enclosed memoranda, an effort has been made to build the present request upon compilations previously prepared for other purposes. It is our hope that this will reduce the work required to supply the information.

The Subcommittee would appreciate receiving the Commission's response to these inquiries before July 31, 1959, if at all possible.

In the event that questions arise, they may be taken up with Mr. Labovitz, Senior Specialist in the Legislative Reference Service, Library of Congress (code 173, ext. 566) or with our Project Director, Mr. Julius N. Cahn.

The Subcommittee greatly appreciates your cooperation and that of your colleagues in providing important and essential assistance for our studies.

Sincerely,

/s/ Hubert H. Humphrey

Hubert H. Humphrey
Subcommittee Chairman

Encls: Two as stated

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APPENDIX "B"

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON 25, D. C.

August 17, 1959

Honorable Hubert H. Humphrey
Subcommittee Chairman
Subcommittee on Reorganization
and International Organizations
Committee on Government Operations
United States Senate

Dear Senator Humphrey:

Enclosed is a compendium of data on the medical and health-related programs of the U.S. Atomic Energy Commission. This material has been compiled for the Senate Subcommittee on Reorganization and International Organizations, Committee on Government Operations, according to your letter of June 16, 1959, addressed to Mr. John A. McCone. The problem was also discussed with us by Mr. I. M. Labovitz of the Library of Congress, who is assisting the Subcommittee.

We trust this material will fulfil your requirements as far as the Atomic Energy Commission is concerned, but we shall be pleased to furnish such additional data as may be needed.

Sincerely yours,

/s/ A. R. Luedcke

General Manager

Enclosure:
Compendium on
Medical and Health-Related Programs
of the U.S. Atomic Energy Commission

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ENCLOSURE TO APPENDIX "B"

MEDICAL AND HEALTH-RELATED PROGRAMS
of the
U.S. ATOMIC ENERGY COMMISSION

This report summarizes data on the medical and health-related programs of the U.S. Atomic Energy Commission, as requested by the letter of June 16, 1959 -- Senator Hubert H. Humphrey to Chairman John A. McCone. Effort has been made to assemble the data in the form specified by the attachments to the letter.

The data are presented in the following summary tables:

- Table I. "Fiscal Summary on Medical and Other Health-Related Programs, U.S. Atomic Energy Commission." This table lists the Commission's total health-related costs as actual obligations for FY '58 and '59, and as estimated obligations for FY '60. Similarly, it lists health-related research costs separately, in the last three columns.
- Table II. "Personnel Summary on Medical and Other Health-Related Programs, U.S. Atomic Energy Commission." In this summary, federal and contractor employees are indicated separately. The difference between numbers of persons listed in the first two columns for "Contractors -- On-Site", and the numbers listed in the second two columns, represent persons engaged in the health protection activities of health physics, industrial hygiene and industrial medicine. The cost of these activities is given in the last item of Table I as "costs not identified by activity" -- approximately \$35,500,000 per year.
- Table III. "Financial Summary of Health-Research Program" of the Division of Biology and Medicine, "off-site". This table summarizes the contracts of the Division with universities and other research institutions. The contracts are grouped according to the categories described below, and as specified in the request of Senator Humphrey.
- Table IV. "Financial Summary of Health-Research Program", of the Division of Biology and Medicine, "on-site". This table summarizes the research projects of the Division which are conducted in Commission-owned, contractor-operated facilities, such as national laboratories and several large university laboratories. This table also includes the research conducted in the Commission-operated Health and Safety Laboratory of the New York Operations Office.

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Table V. "Personnel Summary of Health-Research Program" of the Division of Biology and Medicine, "on-site". This table summarizes the numbers of investigators represented by the dollars of Table IV.

Table VI. "Personnel Summary of Health-Research Program" of the Division of Biology and Medicine and of the Division of Reactor Development, both "on-site" and "off-site".

Note: Numbers of personnel are shown in these tables in terms of "man-years" of scientific and supporting effort. Man-years and numbers of individuals are essentially the same in the on-site research program. As indicated in Table II, however, the man-years of research effort and the numbers of individuals involved differ greatly.

The terms "scientific" and "supporting" personnel are used somewhat differently by the various reporting laboratories. In general, "scientific" is taken to mean persons with the A.B. or B.S. degree or higher, who contribute to the intellectual direction of the research. "Supporting" personnel in general provide the technical assistance required by the research, although in some cases all persons on a project, other than scientific, including administrators and secretarial assistants, have been reported as supporting personnel. Separation of such individuals has not been possible for purposes of this report.

Table VII. summarizes the foreign research projects which are supported or participated in by the AEC.

Table VIII. shows the numbers of alien scientists who have studied or participated in research in AEC laboratories for 1-24 months, during the period 1956-59.

U. S. ATOMIC ENERGY COMMISSION
Fiscal Data on Medical and Other Health - Related Programs

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Activity	(Thousands)					
	Total for all medical and other health-related programs			Medical and other health-related research		
	1958 Actual	1959 Est.	1960 Est.	1958 Actual	1959 Est.	1960 Est.
1. Raw Materials	\$ -0-	\$ -0-	\$ -0-	\$ -0-	\$ -0-	\$ -0-
2. Special Nuclear Materials	-0-	-0-	-0-	-0-	-0-	-0-
3. Weapons	-0-	-0-	-0-	-0-	-0-	-0-
4. Reactor Development <u>A/</u>	1,103	1,308	1,835	1,103	1,308	1,835
5. Physical Research	-0-	-0-	-0-	-0-	-0-	-0-
6. Biology and Medicine <u>A/</u>	<u>34,954</u>	<u>41,609</u>	<u>45,927</u>	<u>34,954</u>	<u>41,609</u>	<u>45,927</u>
Operating Expenses	33,709	39,008	42,545	33,709	39,008	42,545
Plant Acquisition & Construction	1,245	2,601	3,382	1,245	2,601	3,382
7. Training, Education and Information	2,481	2,777	3,495	-0-	-0-	-0-
8. Isotope Development	-0-	-0-	-0-	-0-	-0-	-0-
9. Community	<u>4,994</u>	<u>2,283</u>	<u>2,169</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>
Operating Expenses <u>B/</u>	2,247	2,189	2,169	-0-	-0-	-0-
Plant Acquisition & Construction	2,747	94	-0-	-0-	-0-	-0-
10. Program Direction and Administration	960	1,008	1,027	675	709	722
11. Security Investigations	-0-	-0-	-0-	-0-	-0-	-0-
12. Other Costs	-0-	-0-	-0-	-0-	-0-	-0-
Sub-total, AEC	44,492	48,985	54,453	36,732	43,626	48,484
Costs Not Identified by Activity <u>E/</u>	35,500	35,500	35,500	-0-	-0-	-0-
Grand Total Obligations	<u>79,992</u>	<u>84,485</u>	<u>89,953</u>	<u>36,732</u>	<u>43,626</u>	<u>48,484</u>
	\$	\$	\$	\$	\$	\$

(Footnotes on next pages.)

1 - 8
Enclosure to Appendix "B"

- A/ Amounts reported for research costs under "Activity 4. Reactor Development" and "Activity 6. Biology and Medicine" represent obligations for medical and health-related research, including research on the safe disposal of radioactive wastes (Activity 4.). They do not represent the total research effort in either Activity.
- B/ The Richland Hospital was transferred in September 1956 to the Methodist Board of Homes and Hospitals under the provisions of the Atomic Energy Community Act, P.L. 221. The costs shown include assistance payments under the provisions of the above Act.
- C/ New Community Hospital, Oak Ridge, Tennessee (Total estimated cost, \$2,900,000).
- D/ The amounts for Medical and Other Health-Related Research are primarily for directing and administering the Medical and Other Health-Related Research program reported under the Biology and Medicine Activity.
- E/ Amounts are reported for the major program activities of the Commission where information is available on the basis of the Commission's accounting system (amounts reported for Program Direction and Administration are based on an estimated amount for each man-year of employment). The Commission devotes considerable effort to other medical and health-related program and research for which costs are not readily available under the Commission's accounting system in accordance with the above activity breakdown. Much of the work is done at the Commission's various production facilities and includes such functions as industrial medicine, radiological safety, criticality safety, health-physics, monitoring activities, laboratory analysis, etc. A survey of the various radiological health activities carried on by the Commission was made for the Bureau of the Budget in April 1959, and another survey on safety costs was made for the Joint Committee on Atomic Energy in April 1959. These surveys indicate that the Commission's annual costs for these protective activities is approximately \$35.5 million, exclusive of reactor safety activities and plant acquisition and construction.

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BRIEF DESCRIPTION OF "ACTIVITIES" LISTED IN TABLE I.

4. Reactor Development -- environmental research projects conducted jointly with Public Health Service, U.S. Geological Survey, U.S. Coast and Geodesic Survey, etc. on possible radioactive pollution of geological structures, rivers and harbors, Colorado plateau, etc.; control of gaseous effluents, air cleaning, etc.; studies on treatment of low and intermediate level wastes to decrease their potential health hazard.
6. Biology and Medicine -- research projects designed through the use of radiation and radioisotopes:
 - (a) to study diagnoses and control certain diseases of man,
 - (b) to study life processes and other broad fields of science important to disease and health problems,
 - (c) to provide instrumentation, materials and methods for translating research results into improved health control.
7. Training, Education and Information -- support of fellowship programs for training in health physics, industrial hygiene and industrial medicine; special courses for medical and research uses of radioisotopes; lectures, institutes and equipment to assist the teaching of radiation effects in the life sciences; provision of research opportunities for medical and life science personnel (including aliens) in the AEC laboratories.
9. Community -- covers the cost of the new Community hospital at Oak Ridge, Tennessee, and financial assistance to the Methodist Board of Homes and Hospitals which took over the Richland (Washington) Hospital in September, 1956.
10. Program Direction and Administration -- cost of directing and administering the research programs of the Divisions of Biology and Medicine, and of Reactor Development.

Costs not otherwise identified -- costs of broad programs of health protection necessitated by the operation of atomic energy plants and laboratories, including health physics and environmental surveys, industrial hygiene and industrial medicine, but not of incidental first-aid and health units.

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TABLE II

PERSONNEL SUMMARY ON MEDICAL AND OTHER HEALTH-RELATED PROGRAMS

U.S. ATOMIC ENERGY COMMISSION

AEC and Contractor Personnel

as of June 1958

Kind of Personnel	Total for all medical and other health-related programs		Medical and other health-related research	
	<u>Scientific</u>	<u>Support</u>	<u>Scientific</u>	<u>Support</u>
AEC (gov't. employees)				
Full-time	111	149	65	89
Part-time	29	6	11	3
AEC Consultants				
Part-time	34	-	31	-
Contractors				
*On-Site	1,892	1,854	767	1,104
**Off-Site				
Man-years	161	221	161	221
(Individuals)	(1,484)	(1,493)	(1,484)	(1,493)
Mixed	<u>50</u>	<u>22</u>	<u>50</u>	<u>22</u>
Total Man-Years	2,177	2,352	1,085	1,439
Total Individuals	3,500	3,524	2,408	2,711

* Represents man-years for FY '58, but does not differ greatly from actual numbers of persons. Does not include employees of New York Health and Safety Laboratory who are listed here under "AEC (gov't. employees)".

** Represents man-years for FY '58; numbers in parentheses represent numbers of individuals.

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Research classifications used in Tables III-VI

Category (a)

Items in this category consist of studies on the course, diagnosis, treatment, control and prevention of diseases and impairments of man, including mainly cancer and radiation sickness. Items in this category have been limited to studies on man, and do not include studies made on animals whether or not their primary intent is to elucidate the control of disease in man.

Category (b)

Items in this category consist of research which is concerned with contributing to knowledge of life processes and to other broad fields of science important to underlying disease and health problems. Programs included here consist of:

1. Radiobiology - Somatic and genetic effects of exposure to radiation, including normal processes where these must be studied farther to provide background for understanding the perturbations caused by radiation.
2. Environmental - Studies of the environmental situation including background radiation, meteorology, oceanography and marine sciences; ecological and epidemiological responses to the environment; fallout and environmental contamination, but excluding studies made primarily to facilitate weapons testing.
3. Toxicology - Studies of the metabolism and toxicology of radioisotopes to which man and animals are exposed.
4. Protection - Procedures for combating radiation effects, including biological and medical treatments, waste management, shielding against radiation, health physics methods, and pure physics supported for its ultimate application to problems of radiation control.
5. Agriculture - Studies on agriculture insofar as crops and farm animals may be improved by the use of isotopes, or must cope with increasing radiation in the environment.
6. Cancer - Studies on the genesis and diagnosis of cancer; treatment with radioisotopes and teletherapy.
7. Instruments - Development of instruments and methods for the detection and measurement of radiation and of radioisotopes.

Category (c)

Items in this category are designed to translate research findings into improved health, including such activities as preparation and stockpiling of radiopharmaceuticals and human bone marrow, development of special reagents and instrumentation for diagnostic or therapeutic use, evaluation of radioisotopes for teletherapy, etc.

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TABLE III
FINANCIAL SUMMARY OF HEALTH RESEARCH PROGRAM
ATOMIC ENERGY COMMISSION
Division of Biology and Medicine

"Off-site" program (495 contracts in 1958) in universities, research institutes, etc.

<u>Category</u>	<u>Thousands of Dollars</u>		
	<u>FY '58</u> <u>(actual</u> <u>obligations)</u>	<u>FY '59</u> <u>(actual</u> <u>obligations)</u>	<u>FY '60</u> <u>(estimated</u> <u>obligations)</u>
(a) Human diseases	\$ 597	\$ 807	\$ 787
(b) Contributing research	<u>8,784</u>	<u>10,451</u>	<u>10,887</u>
1. Radiobiology	(4,333.2)	(4,959)	(5,253)
2. Environment	(748.3)	(1,927)	(1,976)
3. Toxicology	(844.1)	(917)	(933)
4. Protection	(769.8)	(214)	(215)
5. Agriculture	(579.9)	(835)	(885)
6. Cancer	(528.4)	(541)	(529)
7. Instruments	(980.2)	(1,058)	(1,098)
(c) Translational activity	<u>\$ 804</u>	<u>\$ 1,146</u>	<u>\$ 1,117</u>
*Total	\$10,185	\$12,404 ^(y)	\$12,793 ^(z)

*Total does not include construction costs.

(y) Total is actual obligation for FY '59, but categories, particularly (4.), are defined slightly differently in FY '59 and '60, than in '58.

(z) Total and categories taken from estimates made in 1959.

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TABLE IV
FINANCIAL SUMMARY OF HEALTH RESEARCH PROGRAM
ATOMIC ENERGY COMMISSION
Division of Biology and Medicine

"On-site" program (15 major contractors) in Commission-operated facilities.

<u>Category</u>	<u>Thousands of Dollars</u>		
	<u>FY '58</u> <u>(actual</u> <u>obligations)</u>	<u>FY '59</u> <u>(actual</u> <u>obligations)</u>	<u>FY '60</u> <u>(estimated</u> <u>obligations)</u>
(a) Human diseases	\$ 3,833	\$ 4,562	\$ 5,208
(b) Contributing research	<u>16,445</u>	<u>19,313</u>	<u>21,496</u>
1. Radiobiology	(8,539)	(10,188)	(11,253)
2. Environment	(984)	(1,655)	(1,746)
3. Toxicology	(2,209)	(2,636)	(2,872)
4. Protection	(2,131)	(1,887)	(1,997)
5. Agriculture	(501)	(531)	(618)
6. Cancer	(197)	(188)	(214)
7. Instruments	(1,885)	(2,228)	(2,796)
(c) Translational	<u>1,492</u>	<u>739</u>	<u>806</u>
Total	\$21,770	\$24,614	\$27,510

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TABLE V
PERSONNEL SUMMARY OF HEALTH RESEARCH PROGRAM
ATOMIC ENERGY COMMISSION
Division of Biology and Medicine

"On-site" program (15 major contractors) in Commission-operated facilities.

<u>Category</u>	<u>Man-years of Research Effort</u>					
	<u>FY '58 (actual)</u>		<u>FY '59 (actual)</u>		<u>FY '60 (Estimate)</u>	
	<u>Scientific</u>	<u>Support</u>	<u>Scientific</u>	<u>Support</u>	<u>Scientific</u>	<u>Support</u>
(a) Human diseases	122	629	158	845	169	926
(b) Contributing Research	<u>632</u>	<u>450</u>	<u>721</u>	<u>514</u>	<u>751</u>	<u>635</u>
1. Radiobiology	(309.6)	(245.5)	(345.4)	(292.3)	(357.2)	(307.3)
2. Environment	(49.1)	(16.7)	(93.4)	(22.2)	(95.8)	(26.2)
3. Toxicology	(104.0)	(68.6)	(111.6)	(74.1)	(115.1)	(75.4)
4. Protection	(82.4)	(61.1)	(66.9)	(65.8)	(68.4)	(63.9)
5. Agriculture	(23.1)	(8.8)	(24.3)	(9.3)	(27.8)	(10.8)
6. Cancer	(4.3)	(6.1)	(4.8)	(4.5)	(4.9)	(5.3)
7. Instruments	(59.0)	(43.6)	(74.6)	(45.8)	(81.6)	(45.8)
(c) Translational	<u>33</u>	<u>53</u>	<u>26</u>	<u>17</u>	<u>27</u>	<u>18</u>
Totals	789	1,132	905	1,376	947	1,579

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TABLE VI
PERSONNEL SUMMARY OF HEALTH RESEARCH PROGRAM

ATOMIC ENERGY COMMISSION

Division of Biology and Medicine
and
Division of Reactor Development

Total "On-site" and "Off-site" Programs:

Man-Years of Research Effort

Category	FY 1958 (actual)		FY 1959 (actual)		FY 1960 (estimate)	
	Scien.	Support	Scien.	Support	Scien.	Support
(a) Human Diseases						
On-site (DEM)	122	629	158	845	169	926
*Off-site (DEM)	40	58	55	66	54	64
(b) Contributing Research						
On-site (DEM)	632	450	721	514	751	635
*Off-site (DEM)	63	85	82	88	86	92
Mixed (DEMI)	50	22	62	25	83	31
(c) Translational						
On-site (DEM)	33	53	26	17	27	18
**Off-site (DEM)	<u>58</u>	<u>78</u>	<u>90</u>	<u>96</u>	<u>88</u>	<u>94</u>
Totals	998	1,375	1,194	1,651	1,258	1,860

* Man-Years calculated on average basis of \$15,050 per scientific man-year and \$10,325 per technical man-year in 1958, and \$14,664 and \$12,257 respectively in 1959, for medical research.

** Man-Years calculated on average basis of \$13,900 per scientific man-year and \$10,300 per technical man-year in 1958, and \$12,700 and \$11,900 respectively in 1959, for Biology and Medicine off-site program.

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TABLE VII
RESEARCH CONTRACTS IN FOREIGN COUNTRIES
U.S. ATOMIC ENERGY COMMISSION
Division of Biology and Medicine

<u>Institution</u>	<u>Title</u>	<u>Amount, FY 1960</u>
<u>Supported directly:</u>		
Bermuda Biological Station for Research, Inc. St. George's West Bermuda	Metabolic Changes During Development and Growth in Marine Invertebrates	\$ 7,500
Bermuda Biological Station for Research, Inc. St. George's West, Bermuda	The Plankton Ecology and Related Chemistry and Hydrography of the Sargasso Sea	23,000
Inter-American Institute of Agricultural Sciences Turrialba, Costa Rica	Atomic Energy Applied to Agriculture in Latin America; (a) Use of Isotopes; (b) Gamma Field	125,000
Montevideo, University of Montevideo, Uruguay	A Study of the Origin of Precursors of Desoxyribonucleic Acid Purines and Pyrimidines in Bone Marrow	10,000
University of Pavia Pavia, Italy	Mutation Rates and Mutational Loads in Man	22,000
Naples Zoological Station Naples, Italy	Radiochemical Techniques in Marine Biological Research	10,000
The Weizmann Institute of Science Rehovoth, Israel	Tritium Concentrations in Natural Water Sources in Eastern Mediterranean Area	15,000
New Zealand, Government of Department of Scientific and Industrial Research, Division of Nuclear Sciences Lower Hutt, New Zealand	The Estimation of Sr-90, Ba-140 and Possibly Cs-137 in Every Rain at Gracefield, New Zealand	w/o funds
State University of Chile Santiago, Chile	Genetics, Evolution and Population Studies in Chilean Species of the Genus Drosophila	15,000
State University of Chile Santiago, Chile	Immunogenetic Study of the Mechanisms of Protection Against Radiation Death by Treatment with Bone Marrow	20,000

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<u>Institution</u>	<u>Title</u>	<u>Amount, FY 1960</u>
<u>Supported through International Atomic Energy Agency:</u>		
Catholic University Pecenze, Italy	Studies on the Induction of Genetic Mutations by Irradiation in Plant Species of Economic Importance: Maize, Wheat, Tomato	\$ 3,650
Erwin Baur-Institut Koin-Vogelsang, Germany	Developing of Selection Methods for Induced Small Mutations in Higher Plants with Special Regard to Muta- tions of Yielding Capacity	8,120
University of Pavia Institute of Genetics Pavia, Italy	Investigations on Mutability of Polygenes and on Utiliza- tion of Induced Genetic Varia- bility	22,000
The University of Turku Department of Botany Finland	Mutation Rate at Specific Autosomal Loci in Different Species of Drosophila	9,150
University of Uppsala, The Institute for Medical Genetics Sweden	Genetical Investigations on the Effect of Ionizing Radia- tion on Human Cells Grown <u>in vitro</u>	13,965
Laboratory of Oceanography of CNRN Lerici (La Spezia), Italy	The Study of Uptake, Accumu- lation and Loss of Radio- active Material by Marine Bacteria	14,700
University of Parma, Insti- tute of Zoology, Laboratory of Oceanography of CNRN, Italy	The Ecology of Acantharious (Radiolaria) in Relation to the Circulation of Sr in the Sea	16,174

TABLE VIII

Numbers of alien scientists who have studied or participated in research in AEC laboratories for 1-24 months, during the period 1956-59.

COUNTRY	Health Physics	Medical	Agri- culture	Biology	COUNTRY	Health Physics	Medical	Agri- culture	Biology
Argentina.	1	2			Israel.	1			2
Australia.				1	Italy	3	2		6
Austria.		1			Japan	5	4	1	8
Belgium.	4	2	1	5	Jordan.		1		
Brazil	1				Korea	1			
Burma.	1				Lebanon	1			
Canada	1	10		3	Mexico.		3		1
Chile.		3			Netherlands	2	3		3
China.		2		3	Norway.	1	5	1	
Colombia	1	2	1		Pakistan.	3	3	1	1
Costa Rica		1			Peru.	1			
Cuba		2			Philippines		7	1	
Denmark.		1		1	Portugal.				1
Dominican Rep.		1			Spain	1	3	1	
Ecuador.	1	1			Sweden.				1
France		2		3	Switzerland				1
Germany.	1	3	1	6	Thailand.	2		2	
Greece	1	7			Turkey.	1	1		4
Haiti.		1			Un. of So. Africa		1		
Hungary.		1			United Arab				
Iceland.		2			Rep. (Egypt).				2
India.		3		6	United Kingdom.	2	5	2	11
Indonesia.	2				Uruguay.				1
Iran	1	1			Venezuela	1		1	
Iraq		2			Viet Nam.				1
Ireland.		1	1	1	Yugoslavia.				2
					Totals	40	89	14	74

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Enclosure to
Appendix "B"

Office Memorandum • UNITED STATES GOVERNMENT

TO : W. B. McCool
Secretary

DATE: August 19, 1959

FROM : C. W. Shilling, M.D., Acting Director
Division of Biology and Medicine

SUBJECT: COMPENDIUM OF 14 PAGES ON MEDICAL AND HEALTH-RELATED PROGRAMS OF
THE U. S. ATOMIC ENERGY COMMISSION

SYMBOL: EMSA:WDC

Attached is the subject report by the Director of the Division of Biology and Medicine to be circulated for the information of the Commission.

Also attached is a copy of a letter dated June 16, 1959 from Mr. Hubert H. Humphrey to Mr. McCone and a copy of the General Manager's letter dated August 17, 1959 to Mr. Humphrey.

Attachments as stated.

*circulated
as AEC 445/4*

8-19-59