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# FIRST YEARLY PROGRESS REPORT OF THE SCIENTIFIC COMMITTEE ON THE EFFECTS OF ATOMIC RADIATION TO THE GENERAL ASSEMBLY

The General Assembly, at its tenth regular session, established by resolution 913 (X) the Scientific Committee on the Effects of Atomic Radiation consisting of the following members: Argentina, Australia, Belgium, Brazil, Canada, Czechoslovakia, Egypt, France, India, Japan, Mexico, Sweden, Union of Soviet Socialist Republics, United Kingdom of Great Britain and Northern Ireland, United States of America. The Committee held its first session at Headquarters from 14 to 23 March 1956. The Committee elected Dr. C. E. Eddy of Australia as its Chairman and Professor Carlos Chagas of Brazil as its Vice-Chairman. The discussions at the first session were principally concerned with the scope and organization of the work.

The Committee divided the scope of its work under five main headings as follows:

1. Genetics.
2. The effects of irradiation by internally absorbed isotopes and the effects of external radiation.
3. Natural radiation levels.
4. Exposures during medical procedures and occupational exposure.
5. Environmental contamination.

The conclusions reached at the first session were transmitted to States Members of the United Nations or members of the specialized agencies by the Secretary of the Committee on 9 April 1956.

The Committee decided to invite States Members of the United Nations or members of the specialized agencies to submit certain classes of information, especially those involving physical measurements, under the categories listed above. In response to this invitation twenty-four Governments and one specialized agency submitted fifty reports to the Committee in time for consideration at its second session. These reports are listed by country and title in annex I to the present report.

The Committee, at its first meeting, requested the Secretary-General to arrange for a suitable number of scientists to be added temporarily on a basis of rotation to the Secretariat in order to carry out detailed technical work in preparation for the meetings of the Committee. A small scientific staff was recruited between the first and second sessions of the Committee and was responsible for presenting in a form suitable for the consideration of the Committee at its second session the large body of data submitted by Governments.

The Committee held its second session from 22 October to 2 November 1956. Following the untimely death of its Chairman, Dr. Eddy, the Committee elected Professor Carlos Chagas of Brazil as its Chairman and Professor Zénon Bacq of Belgium as its Vice-Chairman.

At this session the Committee gave consideration to the following aspects of its work:

1. Information already submitted to it by Governments concerning levels of natural irradiation, of environmental contamination and of other man-made sources of radiation exposure.

2. Methods of measuring these levels.

3. Genetic effects of radiation.

4. Biological effects of small doses of radiation.

5. Disposal of radioactive wastes in the seas and oceans.

6. Preparation of letters to the general and radiological medical press, to be distributed as widely as possible, entitled "The responsibilities of the Medical Profession in the use of X-rays and other ionizing radiation".

The Committee's discussions and recommendations concerning the subjects discussed are embodied in the documents listed in annex II to the present report.

The Committee is devoting particular attention at the present stage of its work to the following topics:

1. In view of the tendency of the long-lived radioactive isotope of strontium (strontium-90) resulting from tests of nuclear weapons or from radioactive wastes to become deposited in human bone, the quantitative measurement and significance of the levels of strontium-90 in:

(a) The stratosphere;

(b) Deposited radioactive fall-out;

(c) Air, water, soil and herbage;

(d) Bones, especially those of children;

(e) Human urine;

(f) Principal calcium contributors to human diet.

2. Levels of natural calcium and strontium in soils and foodstuffs, especially the principal calcium contributors to human diet, as these may influence the uptake of strontium-90.

3. Measurement of the levels of caesium-137 in the stratosphere, in the lower atmosphere, in water, on the ground, in foodstuffs, and in man.

4. Levels of shorter-lived radio-isotopes in fall-out, as assessed by present procedures.

5. Measurement of natural levels of irradiation, and corresponding human surveys.

6. Measurement and evaluation of the doses received by the germinal tissue of persons irradiated during medical procedures, as in certain countries these are known to constitute one of the largest artificial contributions to the irradiation of these tissues.

7. Programmes of research on the genetic effects of radiation.

8. Biological effects of small doses of radiation and related fundamental radiobiological research.

9. Aspects of oceanography and marine biology relevant to possible sea disposal of radioactive wastes, and present disposal practices.

In appropriate fields of its work, the Committee is co-operating closely with the Food and Agriculture Organization, the United Nations Educational, Scientific and Cultural Organization, and the World Meteorological Organization, with the International Commission on Radiological Protection and with the International Commission on Radiological Units and Measurements.

ANNEX I

REPORTS RECEIVED FROM GOVERNMENTS AND SPECIALIZED AGENCIES IN TIME FOR CONSIDERATION AT THE SECOND SESSION OF THE COMMITTEE 1/

| Country | Title |
|---|---|
| UNITED STATES OF AMERICA | The biological effects of atomic radiation |
| UNITED KINGDOM | The hazards to man of nuclear and allied radiations |
| BELGIUM | Preliminary report on modern methods for the evaluation of the biological effects of small doses of external radiation or absorbed radioactive materials |
| JAPAN | Report consisting of eight parts, as follows: |
| | Part 1 - Researches on the effects of the H-bomb explosion at Bikini Atoll 1954 on animal industry and sericulture in Japan |
| | Part 2 - The radioactive contamination of agricultural crops in Japan |
| | Part 3 - A preliminary report of recommendations on the modern methods of estimating the biological activity of small radiation dose |
| | Part 4 - The airborne radioactivity in Japan |
| | Part 5 - Report on the systematic observations of the atmospheric radioactivity in Japan |
| | Part 6 - On the distribution of naturally radioactive nuclides in Japanese Islands |
| | Part 7 - Radiochemical analysis of radioactive fall-out observed in Japan |
| | Part 8 - Fission products in water area and aquatic organisms |
| MEXICO | First report on the studies of radioactive fall-out |
| UNION OF SOUTH AFRICA | Preliminary report on radioactive fall-out |
| UNITED STATES OF AMERICA | Radioactive fall-out through September 1955 |

1/ Reports are listed in the chronological order of receipt by the United Nations.

| Country | Title |
|---|---|
| CHINA | Reports by the Atomic Energy Council of the Executive Yuan of the Republic of China |
| CANADA | Report on waste disposal system at the Chalk River Plant of Atomic Energy of Canada Limited |
| CANADA | The Canadian programme for the investigation of the genetic effects of ionizing radiation |
| UNITED STATES OF AMERICA | Pathologic effects of atomic radiation |
| CANADA | Levels of strontium-90 in Canada |
| NEW ZEALAND | Information submitted by New Zealand |
| NORWAY | Report consisting of three parts, as follows:<br><br>Part 1 - Radioactive fall-out measurements in Norway<br><br>Part 2 - Methods of estimating the biological activity of small doses of radiation<br><br>Part 3 - Disposal of radioactive wastes at the Norwegian Radium Hospital and Norsk Hydro's Institute of Cancer Research |
| SWEDEN | Report consisting of 15 parts, as follows:<br><br>A. Radiation doses to human gonads:<br><br>Part 1 - Levels of ionizing radiations originating from natural and artificial sources, with special reference to irradiation of the human gonads<br><br>B. Natural radiations:<br><br>Part 2 - Variations in natural gamma radiation in Sweden<br><br>Part 3 - Calculation of the ionization due to radioactive substances in the ground<br><br>Part 4 - Studies on naturally occuring ionizing radiations |

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| Country | Title |
|---|---|
| SWEDEN (cont'd) | Part 5 - Weekly doses from some natural radioactive sources |
| | C. Whole body radiation: |
| | Part 6 - Measurements of gamma radiation from the human body |
| | Part 7 - Measurements of low-level radioactivity particularly the gamma radiation from living subjects |
| | Part 8 - Measurements of gamma-rays of the human body |
| | D. Environmental contamination: |
| | Part 9 - Radioactive fall-out from atomic weapon tests |
| | Part 10 - Products of simultaneous fission |
| | Part 11 - Energy distribution of the gamma-dose from mixed-fission-products from $Pu^{239}$ |
| | Part 12 - Records of gamma radiation from the ground and beta radiation from radioactive debris in Sweden |
| | Part 13 - Increase in gamma radiation from powdered milk and beef 1953-1956. |
| | E. Occupational exposure and dose-meters: |
| | Part 14 - Measurements on radiation protection required in the walls of Roentgen diagnostic rooms |
| | Part 15 - A versatile instrument for the measurement in r units of radiation doses received by individuals and populations |
| FRANCE | Report consisting of twelve parts, as follows: |
| | Part I.1 - Methods of measuring the radioactivity produced by nuclear explosions and nuclear industry |

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| Country | Title |
|---|---|
| FRANCE (cont'd) | Part I.2 - Method of monitering for natural or artificial radioactivity in human beings |
| | Part I.3 - Measurement of radon |
| | Part II.1A - Report on the distribution of the natural radioactivity of rocks |
| | Part II.1B - Work of the Nancy Radiogeological Laboratory in the study of soil and water radioactivity |
| | Part II.2 - Radioactivity of the waters of French mineral springs |
| | Part III.1 - Genetic effects of radiation |
| | Part III.3A - Summary of the principal measurements of the radioactivity of air, water and soil |
| | Part III.3B - Study of the radioactivity of the air |
| | Part III.4 - Study of occupational radiation exposure in France in 1955 |
| | Part III.1B - Addendum: Study of the offsprings of patients treated by pelvic radiotherapy |
| | Biological methods used for detection of effects of small doses of ionizing radiation |
| CZECHOSLAVAKIA | Natural radioactivity of water, air and soil in the Czechoslovak Republic (Review of studies) |
| KOREA | Report concerning the request for information on natural radiation background |
| AUSTRIA | Information prepared by the Austrian Government relating to the effects of atomic radiation |
| UNITED KINGDOM | The radiological dose to persons in the United Kingdom due to debris from nuclear test explosions prior to January 1956 |

| Country | Title |
|---|---|
| UNITED STATES OF AMERICA | Project Sunshine Bulletin No. 12 (University of Chicago, The Enrico Fermi Institute for nuclear studies) |
| UNITED STATES OF AMERICA | Summary of analytical results from the Hasl strontium programme to June 1956 |
| ARGENTINE | Preliminary report on possible methods of estimating the biological effects of small doses of radiation |
| UNITED STATES OF AMERICA | The effect of exposure to the atomic bombs of pregnancy termination in Hiroshima and Nagasaki |
| HUNGARY | Unusual radioactivity observed in the atmospherical precipitation in Debrecen between 22 April - 31 December 1952 |
| BELGIUM | Report consisting of five parts, as follows:<br><br>Part 1 - Clinical effects of radiations<br><br>Part 2 - Report on studies of atomic radiation effects, made at the "Laboratoire de physique nucleaire de l'Universite de Liege"<br><br>Part 3 - Resistance and protection of living organisms against radiations<br><br>Part 4 - Measurement of radioactivity in rain and surface waters<br><br>Part 5 - Measurement of radioactivity in atmospheric dust |
| SWITZERLAND | Letter from the "Service federal de l'hygiene publique", Bern |
| ARGENTINA | Information summary on the preliminary work carried out in Argentina for the measurement and study of radioactive fall-out |
| AUSTRALIA | Report consisting of six parts, as follows:<br><br>Part I - Human genetics<br><br>Part II - Plant genetics |

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| Country | Title |
|---|---|
| AUSTRALIA (cont'd) | Part III - Radio-biological unit in the University of Adelaide |
| | Part IV - Natural radiation background and environmental contamination |
| | Part V - Occupational exposure in Australia |
| | Part VI - Health and safety precautions in uranium mining and milling in Australia |
| UNITED KINGDOM | Radio-strontium fall-out in biological materials in Britain |
| GERMANY, FEDERAL REPUBLIC OF | Report consisting of two parts, as follows: |
| | Part 1 - Findings and conditions of organizations in the field of atomic radiation |
| | Part 2 - Long-term research tasks in the fields of biology and medicine |
| INDIA | Procedure used in India for collection of fall-out samples and some data on fall-out recorded in 1956 |
| INDIA | External radiation dose received by the inhabitants of monozite areas of Travancore-Cochin, India |
| BRAZIL | On the intensity levels of natural radioactivity in certain selected areas of Brazil |
| WORLD METEOROLOGICAL ORGANIZATION | Summary of comments of W.M.O. on procedures for collection and analysis of atmospheric radioactivity data |
| BRAZIL | Measurements of long-range fall-out in Rio de Janeiro |
| UNION OF SOVIET SOCIALIST REPUBLICS | On the methods of finding changes arising in the organism under the influence of small doses of ionising radiation |
| BRAZIL | Absorption curve of fall-out products |

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| Country | Title |
|---|---|
| UNION OF SOVIET SOCIALIST REPUBLICS | Content of natural radioactive substances in the atmosphere and in water in the territory of USSR |
| UNION OF SOVIET SOCIALIST REPUBLICS | Study of the atmospheric content of Strontium-90 and other long-lived fission products |
| UNION OF SOVIET SOCIALIST REPUBLICS | On the behaviour of radioactive fission products in soils, their absorption by plants and their accumulation in crops |
| MEXICO | First studies on radioactive fall-out |
| JAPAN | The effect of momentary X-ray exposure in a small dose upon the peripheral blood picture |
| JAPAN | Hematological effects of single exposure to small doses of X-rays |
| JAPAN | Morphological changes of platelets in chronic radiation injuries |
| EGYPT | Preliminary report on environmental iodine-131 measurement in sheep and cattle thyroids, in Cairo |
| UNION OF SOVIET SOCIALIST REPUBLICS | Preliminary data on the effects of atomic bomb explosions on the concentration of artificial radio-activity in the lower levels of the atmosphere and in the soil |
| UNION OF SOVIET SOCIALIST REPUBLICS | A programme of scientific research into the effects of ionizing radiations on the health of the population and future generations |
| UNION OF SOVIET SOCIALIST REPUBLICS | Summaries of reports presented at the Conference on the long-term effects of ionizing radiation |
| UNION OF SOVIET SOCIALIST REPUBLICS | Paper dealing with the question of the exchange of cesium, strontium and a mixture of betta emitters in cows |

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ANNEX II

REPORTS PREPARED BY THE COMMITTEE DURING ITS FIRST AND SECOND SESSIONS

First Session

Natural Radiation Background

The Effects of Irradiation by internally absorbed Isotopes - The Effects of External Radiation

Exposure during Medical Procedures - Occupational Exposure

Environmental Contamination

Genetics

Conclusions of the First Session

Second Session

The responsibilities of the Medical Profession in the Use of X-rays and Ionizing Radiation (Statement by the Committee - long version)

The Responsibilities of the Medical Profession in the Use of X-rays and Ionizing Radiation (Statement by the Committee - short version)

Memorandum on the Biological Effects of Small Doses of Ionizing Radiation and their possible Uses as Biological Indicators

Report on Radiological Data

Report on Measurement Methods

Report on Genetics

Ocean Disposal of Radioactive Wastes

Conclusions and Resolutions adopted by the Committee at its second Session

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