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EFFECTS OF ATOMIC RADIATION

Report of the United Nations Scientific Committee  
on the Effects of Atomic Radiation

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## I. INTRODUCTION

1. The United Nations Scientific Committee on the Effects of Atomic Radiation <sup>1/</sup> held its twenty-third session from 14 to 17 October 1974 at the headquarters of the International Atomic Energy Agency in Vienna. Professor L. R. Caldas (Brazil), Professor F. H. Sobels (Belgium) and Dr. C. B. Guzmán Acevedo (Peru) served as Chairman, Vice-Chairman and Rapporteur, respectively.

## II. CONSIDERATION OF GENERAL ASSEMBLY RESOLUTION 3154 C (XXVIII)

2. The Committee noted with satisfaction that by resolution 3154 C (XXVIII) of 14 December 1973 the General Assembly had broadened the Committee's membership. It also noted that the same resolution added to its responsibilities by authorizing it, in response to a request by the Government of a country which was situated in an area of nuclear arms testing or which considered that it was exposed to atomic radiation by reason of such testing, to appoint a group of experts from among its members for the purpose of visiting that country, at the latter's expense, and of consulting with its scientific authorities and informing the Committee of the consultations.

3. The Committee considered that the terms of reference and composition of such a group could only be determined in the context of a specific request from a Member State, and accordingly deferred the establishment of the group until such time as a request was received. However, the Committee established an interim procedure for setting up such a group, this procedure to apply until the next meeting of the Committee. This interim procedure is outlined in the annex to the present report. The Committee underlined that the task of the group would be to carry out scientific consultations about the radiation exposures that might be incurred in the inviting country as a result of the nuclear arms tests. The group would submit a report on its consultations to the Committee for review at the next meeting of the Committee.

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<sup>1/</sup> The Scientific Committee was established by the General Assembly at its tenth session in 1955. Its terms of reference are set out in resolution 913 (X). It was originally composed of the following Member States: 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 and United States of America. By resolution 3154 C (XXVIII) the General Assembly decided to increase the Committee's membership by up to five additional members. The following Member States were appointed members of the Committee by the President of the General Assembly in consultation with the Chairmen of the regional groups: Germany (Federal Republic of), Indonesia, Peru, Poland and Sudan.

### III. REVIEW OF RADIO-ACTIVE CONTAMINATION BY NUCLEAR TESTS

4. The Committee received new information on radio-active contamination from nuclear explosions since the period covered by its report to the General Assembly at its twenty-seventh session. <sup>2/</sup> The data available to the Committee now covered adequately the years up to and including 1973; a few extended into 1974. A number of nuclear explosions were reported to have been carried out in the atmosphere in both hemispheres in each year up to and including 1974.
5. The cumulative deposits of strontium 90 had only slightly changed since 1965. In the northern hemisphere the slow decrease started in 1966 continued, the annual deposition being insufficient to compensate the loss of strontium 90 from the ground due to radio-active decay. A slight decrease in the cumulative deposit was also noted in the southern hemisphere in 1973.
6. In both hemispheres the annual depositions of strontium 90 and caesium 137 in 1972 and 1973 had been the lowest recorded since the beginning of systematic measurements. Dietary levels have tended to level off after the steady and steep decrease that had taken place, particularly in the northern hemisphere between 1963 and 1967.
7. The new information did not make it necessary for the Committee to revise its 1972 estimate of that component of the total dose commitment from nuclear explosions which is due to long-lived radio-nuclides. This was because the estimated increase in the doses was small and less than the uncertainties in the estimates of the total doses.
8. As noted in the Committee's report to the General Assembly at its twenty-eighth session, <sup>3/</sup> levels of iodine 131 had been detected at a number of sites in both hemispheres in 1972 and 1973. The more complete information on levels observed in 1973 that was now available to the Committee did not require changes in the conclusions of its previous report, i.e. that the levels observed in 1973 were of the same order of magnitude as in 1972 and were equal to, or lower than, those observed in the southern hemisphere in 1970 and 1971.
9. The Committee noted that in 1973 in the northern hemisphere and in 1974 in the southern hemisphere iodine 131 had been detected at a number of sites. The thyroid doses from iodine 131 already assessed in 1974 for the southern hemisphere were higher than those observed in that hemisphere in 1972 and 1973 and were approaching the level of doses observed in the years 1967, 1968, 1970 and 1971. The thyroid doses from iodine 131 in 1973 in the northern hemisphere were higher than those observed in that hemisphere in 1972 and were approaching the levels observed in the years 1965, 1966 and 1967. The monitoring of iodine 131 was still in progress and additional data were anticipated.

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<sup>2/</sup> Official Records of the General Assembly, Twenty-seventh Session, Supplement No. 25 (A/8725 and Corr.1).

<sup>3/</sup> Ibid., Twenty-eighth Session, Annexes, agenda item 103, document A/9349.

10. The Committee noted that radio-active contamination from nuclear explosions needed to be kept under review in the light of both future data and of increased knowledge of the mechanisms through which radio-active material spreads in the environment and is distributed in the human body.

IV. CONSIDERATION OF DECISION 9 (II) OF THE GOVERNING COUNCIL  
OF THE UNITED NATIONS ENVIRONMENT PROGRAMME AND RELATED  
MATTERS

11. The Committee noted decision 9 (II) of 22 March 1974, by which the Governing Council of the United Nations Environment Programme (UNEP) decided that the Programme, in co-operation with the Scientific Committee and other relevant bodies of the United Nations system, should assign high priority in its Global Environmental Monitoring System to the monitoring of radio-nuclides resulting from nuclear tests and report regularly on this matter to the Governing Council. In this connexion, the Committee recalled that it had no operational responsibility for monitoring radiation, but that since its establishment in 1955 it had actively sought, and kept under continued review, data on levels of radio-activity in the environment collected by Member States. While paying special attention to the assessment of radiation doses resulting from radio-active contamination by nuclear tests, the Committee had always evaluated these doses and the attendant risks along with those due to other, and in many cases quantitatively more important, sources of radiation exposure.

12. As indicated in paragraph 19 below, the Committee planned to continue in the future its activity of review and assessment of doses, effects and risks of radiation from all sources, and felt that its work could contribute significantly to UNEP. It expressed the hope that active co-operation with the Programme in these matters could be firmly established and maintained in the future, thus helping to ensure the continued effectiveness of the programmes of the two bodies and avoiding unnecessary duplication.

13. The Scientific Committee also considered the list of those pollutants that the intergovernmental meeting on monitoring, held at Nairobi in February 1974, had recommended to be monitored as a matter of priority in the framework of UNEP.

14. The Committee did not regard it as appropriate to comment on the ranking within the list, but noted that the monitoring of strontium 90 and caesium 137 in food, at both "impact" and regional level, had been assigned the highest priority. The Committee considered that, as long as the contamination of food by these nuclides was overwhelmingly due to atmospheric nuclear tests, measurements of strontium 90 and caesium 137 in food were still valuable when part of a continued series of measurements going back several years, as was the case with many of the surveys still currently being carried out. These surveys made it possible to observe the trends in food levels and to verify the consistency with actual observations of the values predicted on the basis of transfer models and the estimated inventories of the relevant nuclides.

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15. However, as indicated above, the depositions of strontium 90 and caesium 137 produced by recent atmospheric tests in both hemispheres less than balanced the decreased availability of older deposits of strontium 90 and caesium 137 released during earlier series of tests, resulting in a world-wide levelling off of the concentrations of these nuclides in food at values far lower than those that had been observed in the past. In the circumstances, the Committee felt that it would be unfortunate if the ranking given to those measurements by the intergovernmental meeting on monitoring were to encourage the establishment of new surveys of strontium 90 and caesium 137, thus diverting resources that could be applied to more pressing monitoring needs.

16. The Committee would rather recommend that, among the nuclides to be monitored after atmospheric nuclear tests, priority be given to iodine 131 in milk in areas exposed to fresh fall-out and where fresh milk is an important component of the infants' diet, and to selected gamma emitters in air and precipitation. Short-lived gamma emitters, in particular, can be important contributors to the external radiation dose that may be received by the populations exposed to fall-out in the few weeks following an atmospheric test. At the same time, the global inventories of strontium 90, caesium 137 and other long-lived radio-nuclides should continue to be kept under surveillance, as is currently being done.

17. With regard to the contamination of food with strontium 90 and caesium 137 from controlled uses of nuclear energy, the Committee was of the opinion that the contribution to current food levels from these uses was too low to be detected except at special locations in the vicinity of nuclear energy facilities and that the priority to be given to surveys of strontium 90 and caesium 137 from these sources in food should accordingly be very low but would have to be determined and justified in the light of local situations.

18. The Committee requested that the attention of the Governing Council be drawn to this report and to the detailed information that the Committee is seeking in order to continue its assessment of radiation levels.

#### V. FUTURE ACTIVITIES OF THE COMMITTEE

19. The Committee planned to continue its assessment of doses, effects and risks of radiation from all sources and to submit to the General Assembly at its thirty-second session a report reviewing the following subjects: genetic and somatic effects of ionizing radiation, environmental radio-activity, occupational exposure and medical irradiation. The Committee also planned to report annually to the General Assembly on its progress and decided on the data on dose contributions from various sources that the Secretariat would seek to obtain from Member States in order to continue the Committee's assessment of radiation exposure.

20. The Committee considered that, in view of the decision made since its last session that its secretariat be moved to Vienna, adequate facilities for the secretariat should be provided in Vienna at an early date in order that the work of the Committee may be effectively maintained. It furthermore requested that, if such adequate facilities cannot be quickly supplied, the General Assembly should consider moving the offices of the Committee to a site where they can be made available.

#### VI. ELECTION OF OFFICERS

21. The Committee elected Mr. F. H. Sobels (Belgium), Mr. M. Klimek (Czechoslovakia) and Mr. A. Baiquni (Indonesia) to serve as Chairman, Vice-Chairman and Rapporteur, respectively, at the twenty-fourth and twenty-fifth sessions of the Committee.

#### VII. SESSIONS OF THE COMMITTEE

22. The Committee expressed its gratitude to the International Atomic Energy Agency for having been host to the twenty-third session of the Committee. It decided to hold its twenty-fourth session in September 1975 at United Nations Headquarters.

ANNEX

Interim procedure for the appointment  
of groups of experts

1. In the event of a request to the Scientific Committee for the appointment of a group of experts as defined under paragraph 4 of General Assembly resolution 3154 C (XZVIII), the Chairman of the Committee shall by correspondence:

(a) Notify members of the Committee that such a request has been received and inform them of the circumstances of it;

(b) Ask members whether they agree to the appointment of such a group and that it should be set up prior to the next meeting arranged for the Committee;

(c) Propose the names of up to five States members of the Committee each of which might be asked to provide one member of such a group;

(d) In the light of the expertise required in the particular situation, suggest the names of individuals from such States members who might valuably form such a group.

2. In the event of a majority of the Committee replying in support of the appointment of a group (as in para. 1 (b) above) and of a majority agreeing to the proposed names of States members to form this group (as in para. 1 (c) above), the Chairman shall proceed with the appointment of this group. In view of the importance of an appropriate balance of expertise the Chairman may, if he deems necessary, discuss with these States members the fields of expertise of members to be appointed.

3. If no majority for the selection of members can be obtained, he shall circulate alternative proposals for membership until a majority is obtained for the membership of the group.

4. After its consultation the group shall submit a report on its consultations to the Committee for review at the next meeting of the Committee.

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