UNITED NATIONS

A

General Assembly

Distr.
GENERAL

A/45/643
29 October 1990

ORIGINAL: ENGLISH

Forty-fifth session
Agenda item 12

REPORT OF THE ECONOMIC AND SOCIAL COUNCIL

International co-operation to address and mitigate the consequences of the accident at the Chernobyl nuclear power plant: activities currently under way or planned within the United Nations system relating to the accident at the Chernobyl nuclear power plant and its consequences

Report of the Secretary-General

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I. INTRODUCTION

1. By their letter of 26 April 1990, 1/ the Governments of the *Union* of Soviet Socialist Republics, the Byelorussian Soviet Socialist Republic and the Ukrainian Soviet Socialist Republic requested the inclusion of an additional item, entitled "International co-operation in the elimination of the consequences of the accident at the Chernobyl nuclear power plant", in the agenda of the first regular *session* of 1990 of the Economic and Social Council. By its decision 19901211, the Council deferred consideration of the item to its second regular session of 1990 and requested the Secretary-General to provide all relevant information on the activities of the United Nations system in order to assist it in the consideration of the item.

2. The Secretary-General submitted a report to the Council 2/ which contains a brief description of current and planned activities of the United Nations system related to the Chernobyl accident, including their terms of reference and progress achieved, based upon contributions and replies received from the organizations and programmes of the United Nations system.

3. At its second regular session, the Council adopted resolution 1990150 on international co-operation to address and mitigate the consequences of the accident at the Chernobyl nuclear power plant. Pursuant to operative paragraph 4 of the resolution, the Secretary-General has prepared the present comprehensive report on the activities currently under way or planned within the United Nations system relating to the accident at the Chernobyl nuclear power plant and its consequences. The report makes particular reference to agreements between the Government of the USSR and organizations of the United Nations system, notably, the World Health Organization (WHO), the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the International Atomic Energy Agency (IAEA). It is based upon contributions submitted by the organizations and programmes of the United Nations system to supplement the information contained in the above-mentioned report of the Secretary-General to the Economic and Social Council on this subject. It also includes a report of the United Nations mission to the areas of the USSR affected by the Chernobyl accident, undertaken by representatives of a number of programrnes of the United Nations irom 22 to 29 September 1990. As requested by the Council in resolution 1990150, the report also contains recommendations for further action within the United Nations system.

II. UNITED NATIONS SCIENTIFIC COMMITTEE ON THE EFFECTS OF ATOMIC RADIATION

4. The United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) was established in 1955 by the General Assembly. Its terms of reference are set out in Assembly resolution 913 (X) of 3 December 1955 and are, inter alia:

(a) To receive and assemble in an appropriate and useful form radiological information furnished by States Members of the United Nations or members of the specialized agencies:

(i) Reports on observed levels of ionizing radiation and radioactivity in the environment:

(ii) Reports on scientific observations and experiments relevant to the effects of ionizing radiation upon man and his environment already under way or later undertaken by national scientific bodies or by authorities of national Governments:

(b) To recommend uniform standards with respect to procedures for sample collection and instrumentation, and radiation counting procedures to be used in analyses of samples.

5. The Committee is composed of 21 Member States as follows: Argentina, Australia, Belgium, Brazil, Canada, China, Czechoslovakia, Egypt, France, Germany, India, Indonesia, Japan, Mexico, Peru, Poland, Sudan, Sweden, Union of Soviet Socialist Republics, Uniteti Kingdom of Great Britain and Northern Ireland and the United States of America.

6. As part of its mandate to assess the sources and effects of ionizing radiation, UNSCEAR has evaluated the world population's exposure to radiation resulting from the Chernobyl accident. This evaluation was included in its 1988 report to the General Assembly. 3/ Numerous detailed measurement results were available from 34 countries. These were used to compute the first year doses and to establish the general patterns of exposures. The results were then extended to all other areas of the northern hemisphere, based on a deposition-distance relationship, and the doses from continued exposure to deposited radionuclides were estimated. The Committeo's work has established a general methodology to evaluate exposures from this type of radiation source and has contributed to more comparable results between countries. This experience will be used to help corroborate doses to individuals in the region of the accident and to estimate the health risks that could be associated with these exposures.. The Committee could contribute a basic radiation science component to all longer-term programmes of the United Nations and the specialized agencies dealing with the consequences of the Chernobyl accident. There is a need to communicate understanding of radiation sources, effects and risks to government officials and to the general public. The scientific reports of UNSCEAR have been adapted to promote wider understanding and could be further utilized for this purpose.

III. THE INTER-AGENCY COMMITTEE FOR THE RESPONSE TO NUCLEAR ACCIDENTS

7. In the immediate aftermath of the Chernobyl accident, in spring 1986, inter-agency consul tations were convened at Vienna, involving in particular the organizations dealing with health and food questions: the Food and Agriculture Organization of the United Nations (FAO), IAEA, UNSCEAR and WHO.

8. Durinq a special session of the IAEA General Conference, which was held in September 1986, two conventions were adopted: the Convention on Early Notification oi a Nuclear Accident and the Convention on Assistance in the Case of a Nuclear

Accident or Radiological Emergency. Following the adoption of the Conventions, *inter-agency* co-operation was expanded to other organizations and the Inter-Agency Committee for the Response to Nuclear Accidents (IAC/RNA) was formed. The following organizations have participated in the work of this Committee: the Economic Commission for Europe (ECE), FAO, the International Labour Organisation (ILO), the International Maritime Organization (IMO), the Office of the United Nations Disaster Relief Co-ordinator (UNDRO), the United Nations Environment Programme (UNEP), the United Nations Educational, Scientific and Cultural Organization (UNESCO), UNSCEAR, WHO and the World Meteorological Organization (WMO).

9. IAC/RNA meets twice a year, and on an ad hoc basis, if circumstances require it. The topics thet are discussed in the meetings can be divided into two major categories : follow-up of activities concerning previous accidents (the Chernobyl accident, the Goiánia accident, etc.) and the planning and preparation of joint and co-ordinated actions to be taken in case of a future accident.

10. In the discussions on the follow-up activities, Committee members provide information on reported accidents, incidents and rumours, on assistance rendered to member States, on projects and studies carried out by the various organizations, on data bases and on various other related activities.

11. In the area of activity regarding future potential accidents, IAC/RNA has discussed, inter alia, intervention levels, monitoring networks and the reporting of monitoring results, channels of communications and the general structure of the implementation of the two Conventions. In addition, questions of public information and its co-ordination during accident situations were taken up. The participation of the international organizations *in* emergency exercises is encouraged, discussed and, following the exercise, evaluated.

12. A special session of IAC/RNA was convened on 29 May 1990 to discuss the response to recent r-equests and appeals for assistance to mitigate the effects of the Chernobyl accident in the affected Republics of the USSR. In that session, it was recommended that the Committee be entrusted with the additional task of harmonizing the implementation of Chernobyl-related projects dealing with the elimination of the consequences of the accident, with the purpose of strengthening international co-operation and fostering co-ordinated national efforts.

13. On 5 September 1990, IAC/RNA held a meeting to discuss co-ordination of the Chernobyl assistance projects. It was noted that the Economic and Social Council resolution recognized the role of the IAC/RNA as the existing co-ordination mechanism for activities within the United Nations system to address and mitigate the consequences of the Chernobyl accident, and requested the Secretary-General to consider, facilitate and co-ordinate any further efforts, as well as to prepare a comprehensive report for submission to the General Assembly at its forty-fifth session on actions currently under way or planned

14. The representative of IAEA reported on the status of the assessment organized by IAEA and executed by a team of international experts, including participants from FAO, UNEP, UNSCEAR, WHO and the Commission of the European Community (CEC). Since the presentation of the provisional results of the project is planned for

December, the contribution to the Secretary-General's comprehensive report to the General Assembly would therefore be a progress report.

15. The representative of FAO informed the meeting about the agricultural seminars being organized with farmers in October following the training of Soviet experts in Norway. The representative of WHO reported on the progress of the programme designed to establish an international centre for radiation health concerns at Obninsk, with branches at Kiev, Minsk and Bryansk. The Scientific Advisory Committee for the programme held its first meeting at Hiroshima, from 22 to 26 October 1990, to elaborate the programme of the work.

16. The representative of ECE, in response to an inquiry concerning a possible United Nations mission, informed the group that the Secretary-General had asked the Executive Secretary to explore with other United Nations programmes whether there would be an interest in visiting the affected areas in order to consider ways in which the United Nations could contribute to ameliorating the consequences of the accident. A number of positive replies had been received, inter alia, from UNDRO, the Department of Technical Co-operation for Development, the United Nations Office at Vienna and the United Nations Ccntre for Human Settlements. UNEP and the United Nations Children's Fund (UNICEF) raised questions about the timing, scope and nature of such a visit. There was general agreement that social, economic and political responses would be required to resolve the problems facing the affected Republics and that United Nations programmes should assist in areas of their expertise. IL0 was also interested in the social and economic aspects of the accident. Any projects agreed upon, however, should take into account the scientific work already done in the area and should avoid unnecessary duplication of efforts.

IV. ACTIVITIES OF THE ORGANIZATIONS OF THE UNITED NATIONS SYSTEM

Food and Agriculture Oraanixation of the United Nations

17. FAO has established a Standing Committee on Radiation Effects on Natural Resources and Agricultural Products. FAO is also a member of IAC/RNA.

18. In December 1986, FAO convened an expert consultation on radionuclide contamination of foods, which recommended interim international radionuclide action levels for foods moving in international trade. Subsequently, in July 1989, at its eighteenth session, the FAO/WHO Codex Alimentarius Commission adopted, for use in international trade, guideline levels for radionuclides in food following accidental nuclear contamination. The subject remains under constant review. The guideline levels have been discussed at the Codex Regional Co-ordinatinq Committees for Asia and Europe in January and June 1990, respectively.

19. In response to government requests, FAO is currently involve3 in organizing regional training workshops for food control officials covering sampling techniques and analytical methodology for determining levels of radionuclide contamination of foods. The first two-week workshop was held at Bombay, India, in May 1989. A total of 18 chemists from 14 Asian countries were trained in theoretical principles

and did practical work. Another workshop was organized at Abu Dhabi in November 1989 for representatives of 10 countries in the region, and another one is scheduled for November 1990 at Mexico City for Latin and Central America. Training is also planned for the African region in 1991.

20. FAO Soils Bulletin No. 61 entitled "Radioactive Fallout in Soils, Crops and Foods" was published in 1989. It provides advice to member Governments on implications with respect to agricultural land and water supplies.

21. FAO is following developments regarding the establishment by IAEA of a research centre for on-site post-Chernobyl accident international studies, as proposed by the Soviet Union in June 1989. FAO has an interest in the activities of the proposed centre, particularly in the area of rehabilitation of soil, post-accident effects on crops and livestock, and food contamination.

22. FAO collaborates actively in the project developed by IAEA entitled "The Radiological Consequences in the USSR from the Chernobyl Accident: Assessment of Health and Environmental Effects and Evaluation of Protective Measures". FAO experts joined the international experts' preparatory mission to the affected areas in both Phase I and Phase II of the project. FAO and IAEA have recently had further consultations to strengthen co-operation in their future work related to this project.

23. As part of this IAEA project, an FAO-led fact-finding mission visited the affected areas between 12 and 24 August 1990 in prepsration for a series of practical agricultural seminars. The mission met witn scientists from radiological institutes and with farmers and elaborated programmes for the seminars. A seminar on Methods and applications of caesium binding covered theoretical aspects, socio-economic aspects and soil management and was held at the Kiev Institute of Agricultural Radiology on 15 and 16 October 1990. The seminar on Practical countermeasures for agricultural products will focus on the application of caesium binders to reduce contamination in cattle, sheep, horses and poultry. It was held in six different locations in the Russian Soviet Federative Socialist Republic, the Ukrainian SSR and the Byelorussian SSR between 18 and 29 October 1990. The lecturers were six Soviet experts who underwent preliminary training in Norway in September.

International Atomic Energy Agency

24. In October 1989, the Government of the USSR requested IAEA to organize assessment by international experts of the concept which the USSR has evolved to enable the population to live safely in areas affected by radioactive contamination following the Chernobyl accident, and an evaluation of the effectiveness of the steps taken in these areas to safeguard the health of the population.

25. A project on the radiological consequences in the USSR from the Chernobyl accident: assessment of health and environmental effects and evaluation of protective measures, has been organized by IAEA, and is being executed by a team of international experts, including participants from CEC, FAO, VNEP, VNSCEAR and WHO.

26. The project goals are the corroboration of the relevant radiological data and the impartial evaluation of the efficiency of continuing measures taken by Soviet authorities for the protection of the population and the environment. The affected areas are located in the Byelorussian SSR, the Russian Soviet Federative Socialist Republic, and the Ukrainian SSR, and include some 2,700 settlements with a combined population of about 1 million people.

27. Following an official request in October 1989 from the Government of the USSR, IAEA initiated the project at a planning meeting with concerned officials of the USSR held in Moscow from 7 to 9 February 1990. From 25 to 30 March a W-person international experts preparatory mission visited the affected areas of the three Republics. The interdisciplinary team included specialists in medicine, psychology, nutrition, and radiation protection from four IAEA member States and four intergovernmental organizations. 4/ To determine the level of information available, the experts reviewed the information provided by Soviet scientific organizations, hospitals, clinics and agricultural centres located in these areas and at Kiev, Gomel and Moscow. They also met with local village populations, with their political representatives and with non-governmental organizations, in order to introduce the international project to the population and to learn at first hand about their concerns. From this basis, the international experts defined the project's goals and drafted a tentative work plan for the implamentation,

28. As a next step, a 19-member International Advisory Committee was set up to monitor the project and to prepare the final report on the scientific findings. The Committee is chaired by Dr. Itsuao Shigemateu, Director of the Radiation Effects Research Foundation at Hiroshima, Japan, and at its first meeting, was composed of scientists from 10 IAEA member States and 5 intergovernmental organizations. 5/ The members' expertise encompasses multiple disciplines, including medicine, radiopathology, radiation protection, nutrition, radioepidemiology, radiology and psychology. The Commitee met for the first time at Kiev and at Minsk from 23 to 27 Apri1.1990, at which time it discussed, revised and approved the workplan.

29. Project implementation began in May and will be completed by the end of October. Over this period, more than 100 independent experts from 25 IAEA member States and 7 intergovernmental organizations will have undertaken some three dozen technical missions to the Soviet Union. 6/ A temporary IAEA office at Gomel, Byelorussia, is facilitating the implementation.

30. The international project will be completed by the end of 1990. Subsequently, the International Advisory Committee will review the draft reports on the work of each of the tasks and will finalize the report. IAEA will publish the Committee's final report in early 1991 and hold open meetings in the Soviet Union and at Vienna to discuss the scientific findings and explore follow-up actions.

31. The project is organized into five major tasks; their objectives and status are as follows:

Task 1: Historical portrayal of events leading to the current radiological situation

32. Two project teams visited some three doaen Soviet institutions that participated in the post-Chernobyl accident response and subsequent efforts. Based on information they collected and on a review of the international literature, the experts are preparing a historical account of the major events leading to the current radiological situation. The issues addressed include the accident at the Chernobyl station and its immediate impact on emergency personnel, the measures taken for the protection of public health and the environment, such as evacuation, decontamination and radioactive waste management, and the socio-economic and political factors contributing to the current situation. The history will provide a context for understanding the analytical findings of the project.

Task 2: Corroboration of environmental contamination assessments

33. Other technical missions focused on corroborating the Soviet assessments of the environmental contamination in the affected areas. As part of the work of corroboration, project teams reviewed the officially recorded environmental contamination data for caesium, strontium, plutonium and hot particJ.es and evaluated the field sampling techniques, analytic methods and laboratory instrumentation used for the Soviet assessments.

34. Field work in independently selected villages supplemented these efforts. The experts took some 2,000 measurements of external gamma dose rates in indoor and outdoor locations and collected over 1,000 samples of the soil-grass ecosystem and of milk from private and collective farms. A specially equipped van, provided by the Research Centre Jülich of Germany, monitored the environment for radioactive hot spots in a 500-kilometre area and in and around three towns in each of the three Republics. The IAEA laboratories at Seibersdorf-Austria have been heavily involved in the sample collection and analyses. Independent analyses are also under way at laboratories in participating countries.

35. As a complementary activity, IAEA is organizing a series of information-exchange seminars on the management of contaminated agricultural environments, including soil management and caesium binding in farm animals. The seminars will acquaint local agricultural specialists with effective Norwegian methods for animal decontamination. The series began in October with a theoretical seminar, to be followed by one-day practical seminars in six agriculturally contaminated areas. Preparatory to the series, the mobile team of six scientists and administrators from each of the three Republics received training at the Norwegian National Institute of Radiation Hygiene in the application of these methods.

Task : Corroboration of individual and collective dose assessments

36. Other project teams are corroborating Soviet assessments of the indiviaual and collective radiation doses to the affected population. *Given* time and resource constraints, it would have been impossible for the international experts to evaluate the individual doses received by all of the inhabitants of the affected

areas. Thus, a key element of the task was the review of the criteria, methods and input parameters used by the Soviets to calculate past, present and future radiation doses to the inhabitants from the accident.

37. In parallel, project teams monitored the external and internal exposures received by nearly 18,000 inhabitants of the affected areas. Monitoring equipment provided by the French Service Central de Protection contre les Rayonnements Ionisants (SCPRI) aided the work. For example, nearly 8,000 radiation dosimeters were distributed to inhabitants of selected villages in both affected and non-affected areas. The individual monitoring results are being read independently in France, and will be communicated to the inhabitants. Over a lo-week period, project teams used a SCPRI mobile laboratory equipped with four whole-body counters to measure the internal caesium contamination in some 10,000 inhabitants of nine villages in the three Republics. The results of the individual measurements are being systematically validated at the IAEA laboratories at Seibersdorf-Austria.

Task 4: Clinical health effects from radiation exposure and evaluation of the general health situation

38. The initial work centred on clarifying the general health situation of the population in the affected areas and on understanding endemic problems, such as goiter and anaemia, that Soviet medical authorities had identified prior to the Chernobyl accident, This understanding is important because of media reports attributing certain observed illnesses and malformations to radiation exposure from the accident and because these observations do not correlate with the available radioepidemiological data, such as those from the 40-year follow-up studies of the atomic bomb survivors in Japan.

39. Thus, a project team met with the local medical profession and inhabitants of the affected areas and reviewed officially recorded patient data for haematology, immune system disorders, thyroid diseases,, cataracts, and other factors relevant to both radiation-induced and non-radiation-induced illnesses. As medical data before 1986 are sparse, the experts compared the health status of inhabitants both from affected and non-affected areas.

40. Nutrition studies were conducted in several villages, in order to gain insight into lifestyle and dietary habits and how this might affect the health of the population. Project teams surveyed the people as to their eating patterns, alcohol and cigarette consumption, and other health-related factors. They collected biological and total diet samples from 35 families residing in the affected areas. Sample analyses for radioactivity, trace elements and heavy metals are currently under way at the IAEA laboratories at Seibersdorf-Austria and at laboratories in participating countries.

41. Independent medical examinations and clinical analyses of nearly 1,600 inhabitants of seven contaminated, and six non-contaminated, villages began in September and will be completed by the end of October. Members of the three project teams are specialists in such areas as thyroid diseases, paediatrics, oncology, haematology, psychiatry, and radiology. Children are of primary interest for the study of such concerns as malignancies, thyroid disorders, anaemia,

disorders of the immune and the clotting systems, anxiety, stress and other psychological effects. Equipment provided by organizations in Germany, France and the United States of America is assisting the project teams in their work.

42. A team of international physicians held a series of three-day medical seminars in three towns of the affected areas, which broadened the local medical community's understanding of medical problems reported in the affected areas. Over 1,200 Soviet general practitioners ettended the sessions, which addressed radiation protection principles, the diagnosis, prognosis and treatment of radiation-induced illnesses, and related topics.

Task 5: Evaluation of protective measures

43. Project teams are also evaluating the efficiency of continuing protective measures (including intervention criteria, action levels and countermeasures) for the population and the environment. The evaluation includes the criteria used for enforcing such severe and lift-disruptive countermeasures as the evacuation of people and the confiscation of contaminated foods, as well as the levels of radioactive contamination and of radiation doses that triggered such countermeasures. Specifically, the USSR authorities' concept of a "lifetime (70-year) dose limit" for accident exposures received by the population is being examined from the perspective of other proposed alternative concepts relevant to future protective measures.

44. In related work, project teams are concentrating on promoting a better understanding of the complex issues involved in making policy decisions about future protective measures. The groundwork is now in place for the series of four decision-aiding seminars which the IAEA and CEC will conduct in October in the three Republics. Groups of officials from each of the Republics and central Soviet authorities with responsibility for the decision process will explore with international experts quantitative techniques for decision-making. The discussions will cover not only the radiological health and environmental consequences but also socio-economic and political factors relevant to the future decisions on protective measures.

45. An agreement setting a framework for international research on the consequences of the accident at the Chernobyl nuclear power plant was signed on 21 September 1990 at Vienna by the Governments of the USSR, the Ukrainian SSR and the Byelorussian SSR and IAEA.

46. The agreement establishes the basic principles governing the conduct of international research at the "Pripyat" Scientific Centre (Chernobyl Centre), defines the facilities and services to be provided by the Governments of the USSR, the Byelorussian SSR, and the Ukrainian SSR, and specifies the role of IAEA in the development and co-ordination of research there and in the dissemination of project results.

47. The Chernobyl area affords unique possibilities for carrying out scientific research under post-accident conditions, including some areas where radiation levels have subsided but are still above normal background levels, This led the

IAEA secretariat to help to develop the proposal, made by the Soviet Union last year, to set up the Chernobyl Centre for International Research and to provide assistance to the Soviet Union and the interested parties in establishing the Centre.

48. Representatives from member States, CEC and IAEA visited the Chernobyl nuclear power station, the sealed reactor Unit 4, and adjoining areas including locations of laboratories and research sites, in July 1990. They discussed with Soviet scientists possibilities of on-site research activities and available facilities for carrying out such work. The group felt that it would be very beneficial for all concerned, and for nuclear science in general, if research work could be carried out jointly by Soviet and foreign participants in several areas under the auspices of the Chernobyl Centre.

49. A series of specific collaborative projects are expected to take shape in the coming months. Examples include: work on the development of decontamination techniques suitable for large areas: the movement of radionuclides, their uptake in vegetation, and their effects on plant biology: and consolidation of a shared data base on the health of populations living and working in the area.

International Labour Organisation

50. Following the Chernobyl accident, an IL0 General Observation was formulated concerning the application of the Radiation Protection Convention (No. 115) of 1960 in the case of abnormal conditions of operation which invited Governments to provide information concerning criteria and standards for the protection of workers in interventions after a radiological accident. The meeting of experts, which convened in September 1986, included specific provisions on the limitation of radiation exposure (abnormal conditions) in the IL0 Code of Practice on Radiation Prevention of Workers (Ionizing Radiations). The demolition of nuclear power plants involves, in addition to experienced professionals, many groups of workers with no experience in the hazardous operations required. It is envisaged to study the occupational safety and health problems related to decommissioning, after normal operations or after an accident, in co-operation with IAEA and WHO with a view to planning operations in such a way as to ensure the protection of workers and of the environment.

51. The IL0 contribution to the elimination of the consequences of the Chernobyl accident would be the protection of workers involved in recovery operations. Radiological accidents, as well as chemical and other accidents, usually result from a chain of events in which technical, human and organizational factors play a role. IL0 standards and technical guidance on occupational safety and health in general, and on radiation protection in particular, are as relevant to nuclear industry and recovery operations as to other branches of economic activity.

52. IL0 is co-operating with IAEA and other bodies, proqrammes and agencies of the United Nations system within the framework of IAC/RNA and is following up the progress of the international assessment organized by IAEA concerninq the radiological consequences of the accident at the Chernobyl nuclear power plant.

United Nations Educational, Scientific and Cultural Organization

53. UNESCO immediately responded to the call of the Government of the USSR by organizing, together with the World Scout Bureau and, in the USSR, the USSR Children's Fund, vacations in 15 different European countries for 1,231 children from the Chernobyl disaster area. This operation started on 1 July and was completed on 15 September 1990. Its success was reflected in the special thanks expressed to the Director-General of UNESCO by His Excellency Mr. E. Shevardnadne, Foreign Minister of the USSR, during his address to the forty-fifth session of the General Assembly of the United Nations.

54. Following the initial agreement signed on 1 June 1990 between UNESCO and the USSR regarding the establishment and implementation of a programme of action within the fields of competence of the Organization, several missions were sent to the Soviet Union to pursue the preparation of the UNESCO Chernobyl Programme. These consultations have made it possible to reorient the efforts of UNESCO as indicated below.

55. A UNESCO Chernobyl programme has been identified within the UNESCO secretariat, working under the supervision of the Co-ordinator for the Environment. The proposed programme, now nearing completion, covers the following areas where UNESCO has demonstrated repeatedly its competence and experience.

(a) Education: School construction, curriculum design, educational textbook production, formal and popular science education, environmental education, reinforcement of family structure and support for small children's care and early education, adult education, training and higher education programmes, co-operation through the Associated Schools programme, etc.;

(b) Sciences: Development of research programmes in ecology, hydrology, geology, etc.; training programmes in the most critical fields of sciences for Chernobyl (radio-biology, radio-ecology, etc.); participation in the establishment of (a) permanent centre(s) of research and network(s) of data collection;

(c) Social sciences: Analysis of the social impacts of the catastrophe on families, rural and urban communities, displaced populations including the "liquidators", development of special pilot resettlement projects, development of special youth programmes, development of training programmes, economic analysis, study of the moral and ethical issues related to the management of science and technology and their implications;

(d) Culture: Preservation of the cultural fabric which ties together the populations living in, or originating from the disaster area; survey of the zone with a view to the preservation of the local and national heritage and traditions;

(e) Communication: Contribution to the development of a communication plan for the disaster area, and of the appropriate infrastructures, activities and programmes to cope with existing communications and public information problems, training of specialists, etc.

. . The Programme proposed to the USSR authorities finally includes a series of project6 designed to promote the culture of the three Republics, to offer an opportunity to the general public and the media to participate, and to raise funds.

57. The UNESCO Chernobyl Programme will be submitted in October 1990 to the Soviet authorities for approval. Upon receipt of their agreement, the final document will be forwarded to IAEA and the United Nation6 agencies involved with Chernobyl matters for co-ordination; all necessary measures will be taken to seek appropriate funding and implementation. Several steps, meanwhile, are immediately undertaken in this direction.

United Nations Industrial Development Organization

58. Were funding available, UNIDO assistance would most likely be in the rehabilitation or possible relocation of affected or damaged industries to safer areas, and in the control of industrial pollution, etc. An exploratory mission would be necessary to assess more precisely the extent of damage to industry and to determine the scope of technical assistance required.

59. Since March 1990, UNIDO has received three high-level delegations from the Ryelorusoian SSR, the Ukrainian SSR and the Georgian SSR on the subject and has been requested to send an exploratory mission Lo the affected region to assess damage to existing industries with a view to making recommendations. Owing to its limited financial resources, UNIDO is not able to finance such a mission from its regular budget. It has, however, approached potential sources of funding, including UNDF, on the possibility of financing projects and activities in the affected region, in co-operation with UNIDO.

World Health Organization

60. WHO has played an active role with regard to the health implications of the accident at the Chernobyl nuclear power station. This has ranged from international assessment6 of the possible health impacts immediately following the accident to collaborative efforts with the authorities of the USSR, the Byelorussion SSR and the Ukrainian SSR in investigating the effects on the health of the exposed populations. WHO also participated in the IAEA co-ordinated project concerned with the assessment of health and environmental effects and the evaluation of protective measures. In addition, continuous practical support has . been provided to the Government to implement measures to combat the potential adverse health effects.

61. In April 1990, the scope of collaboration was expanded through a memorandum of understanding signed between the Ministry of Health of the USSR and WHO to establish an International Programme on the Health Effects of the Chernobyl Accident, which would monitor and mitigate the health consequences of the occident over the long term. The programme, when fully implemented, will encompass epidemiological studies; the diagnosis, treatment and prevention of radiation-induced thyroid disease; carcinogenic, teratogenic and genetic effects: the contribution of radiation and non-radiation causes of mortality; the social and psychosocial aspects of the accident and their health implications; retrospective

analysis of the radiation exposure levels end projected dose; international expertise for independent, evaluations of the radiation contamination situation, measures on radiation protection and health of the population: and radiation health data banks.

62. The agreement calls for the establishment, in the city of Obninsk, USSR, Of an international centre for radiation health concerns with branches at Kiev, Minsk and Bryansk. The centre will co-ordinate the work of research dnd medical institutions involved in programme implementation. Other Governments, institutions and individual experts are being invited to participate in the international programme by providing expertise, equipment and resources. It is expected that other international organizations will contribute to the work in their areas Of competence.

63. A meeting of representatives of WHO Collaborating Centres in Radiation Emergency Medical Preparedness and Assistance, which convened at Leningrad from 21 to 24 May 1990, commented on the first draft of the Programme and explored the possible contribution of the Centres. The International Programme on the Health Effects of the Chernobyl accident has been outlined and its aims and direction will be discussed at a meeting of a special Scientific Advisory Committee to be held at Hiroshima in October 1990.

64. With the assistance of the International Telecommunication Union Centre for Telecommunicat ions Development., a video conference studio donated by Germany will form the basis of an international video link for the International Centre at Obninsk, essential for the transmission of high resolution data and images, as well as rapid access to consultation with foreign medical experts in uniquely specialized fields.

65. The International Agency for Research on Cancer, assisted by CEC, is exploring ways of including data from the contaminated Republics into a current European childhood leukaemia study.

66. A meeting of interested international scientists, to discuss the implementation and funding of specific projects, is planned for early 1991 at Obninsk.

67. Other act ivit ies supporting this new initiative concerned with the health et fects of the Chernobyl accident include the work of the network of WHO Co I laborating Centres on Radiation Emergency Medical Preparedness and Assistance. The networ k promotes the strengthening of preparedness of member States for I adiat ion emergencies and can provide medical assistance to people affected by I adiat ion exposure. I t also includes the development and operation of the WHO/UNEP Global Environment Radiat ion Monitoring Network (GERMON), the purpose of which is to col lect data on environmental radiation throughout the world and to facilitate t he exchange of information in the case of major radioactive releases (see para. 122 below).

68. The WHO Regional Office for Europe, in collaboration with the All Union Research Centre for Radiation Medicine at Kiev, is implementing activities with emphasis on epidemiological surveys and psychological effects of nuclear accidents. A number of expert meetings are being held in 1990 and 1991 on subjects such as psychological effects of the Chernobyl accident, effects of radionuclides on the thyroid gland and prospective investigations of the effects of the Chernobyl accident on the health of the population,

World Meteorological Organization

69. WMO was among those organizations which responded quickly to the Chernobyl accident. In close co-operation with IAEA and other international organizations, WHO was actively involved in establishing an international emergency response system to nuclear accidents.

70. By agreement with IAEA, the World Weather Watch Global Telecommunication System of WMO is used to transmit radioactivity data and relevant meteorological data in support. of the IAEA Convention on Early Notification of Nuclear Accidents. The WMO Executive Council Working Group on Accidental Releases of Haeardous Materials has dealt with the lessons learned from the Chernobyl accident and is co-ordinating the efforts of the members in monitoring radioactivity and predicting the atmospheric transport, deposition and dispersion of radionuclides.

71. Within the scope of activity of WMO, the Hydrology and Water Resource6 Programme is relevant to alleviating the longer-term consequences of past accidents, as radioactive water pollution is among the most serious long-term consequences. Ongoing WMO activities within the hydrology field include the preparation of a manual on hydrological aspects of accidental pollution of water bodies. The aim is to provide guidance to hydrological services and water authorities on the role they might play in minimizing the impact of accidental pollution, in particular, where an emergency response is called for in the case of the accidental release of hazardous materials. Two meetings of experts on the subject were held in this connection, at Kiev in April 1989, and at Vienna in April 1990. The timetable, as agreed at those meetings, foresees the publication of a manual on the subject in time for the Eleventh WMO Congress (1991).

72. A new project on transport, dispersion and retention of hazardous materials in the aquatic environment, is designed to investigate problem6 relating to monitoring, prediction and retention of pollutants. It will involve, in conjunction with IAEA, an evaluation of models for the transport and dispersion of hazardous materials in soils and water bodies and will also promote the study of operational methods for sediment transport measurement particularly through training act-.ivi ties. It will review new methods of examining the exchange of pollutants between water and sediment.

73. Within the framework of the inter-agency co-ordinated action on Chernobyl-related projects, an expert nominated by WMO took part in an IAEA-organized mission to the Chernobyl accident affected areas (Jv r/August 1990). Along similar lines, WMO is ready to contribute, as app.opriate, to the work of IAC/RNA.

V. REPORT OF THE UNITED NATIONS MISSION TO THE AREAS OF THE USSR AFFECTED BY THE CHERNOBYL ACCIDENT

74. In response to the appeals addressed to the United Nations by the Governments of the USSR, the Byslorussfan SSR and the Ukrainian SSR for assistance in addressing and mitigating the consequences of the accident at the Chernobyl nuclear power plant, the Secretary-General decided to dispatch a United Nations mission to the affected areas. It was a fact-finding mission, designed to assist interested programmes of the United Nations to determine through first-hand experience their contribution to the comprehensive report that the Secretary-General was requested to submit to the General Assembly at its forty-fifth session. The mission, which took place from 22 to 29 September 1990, was headed by Mr. Gerald Hinteregger, Executive Secretary of ECE, in his personal capacity, as designated by the Secretary-General, and was comprised of nine members representing the secretariats of the following programmes of the United Nations! United Nations Centre for Human Settlements (Habitat), UNDRO, UNEP, UNICEF, the United Nations Office at Vienna, the Department of Technical Co-operation for Development and ECE.

75. The mission took careful note of the work nearing completion in the project organized by IAEA and executed by a team of intrrnational experts on the radiological consequences in the USSR from the Chernobyl accident, assessment of health and environmental effects and evaluation of protective measures. While the mission was primarily concerned with economic and social issues - thus complementing the work of the above-mentioned project - it agreed to receive new requests for assistance from the organizations of tl.e United Nations system presented by governmental and community agencies in the three Republics relating to other issues and to submit them to the Secretary-General for transmittal to the competent United Nations organization. It also received information about the missions sent to the region earlier in the year by the League of ked Cross and Red Crescent Societies and the World Council of Churches. It also took careful note of the talks held immediately prior to the mission between representatives of the USSR, the Ukrainian SSR and the Byelorussian SSR and the United Nations Centre for Human Settlements (Habitat).

76. The mission was received by high-level government representatives in Moscow, Kiev and Minsk. Although it was of short duration, it held talks with many sections of the community in the areas contaminated by radiation in the Ukrainian SSR, the Byelorussian SSR and the Russian Soviet Federative Socialist Republic. Hone the less, taking into account the complexity of the consequences of the Chernobyl accident and of the measures required to mitigate the resulting problems, the mission considered its findings to be of a preliminary nature,

77. The mission held talks in Moscow with representatives of the State Commission for Emergency Situations of the USSR Council of Ministers. The meetings were chaired by the Deputy Prime Minister of the USSR, Mr. Vitaly Doguzhiev. At Kitv, the mission met with representatives of the Council of Ministers of the Ukrainian SSR, chaired by Mr. Konstantin Masyk, First Deputy Prime Minister, and at Minsk with representatives of the Council of Ministers of the Byelorussian SSR chaired by Mr. Ivan Kenik, Deputy Prime Minister. In both Moscow and Novozybkov it met with representatives of the Council of Ministers of the Russian Soviet

Federative Socialist Republic, chaired by Mr. Igor Gavrilov, Deputy Prime Minister. Participants in the meetings were senior government officials from various ministries, including the chairmen of the State committees recently set up in the three Republics concerned to manage the results of the Chernobyl accident. Members of Parliament also took an active part in the discussions at both the Union and Republic levels. A summary of the major issues raised during the discussions is contained in paragraphs 83 to 89 below.

78. The mission began its work in the affected areas with a visit to the Chernobyl nuclear power plant, situated in the Ukrainian WSR, close to the borders of the Byelorussian SSR and the Russian Soviet Federative Socialist Republic. The mission visited the immediate vicinity of the power plant and heard explanations of measures taken to "liquidate" the accident, to evacuate in the immediate aftermath of the accident the neighbouring township of Pripyat with a population of 50,000 and other settlements of the area, to construct the "sarcophagus" encapsulating Block 4 in which the accident occurred, and to reduce radiation in the Vicinity by processes of decontamination. The mission also visited areas affected by varying degrees of radioactive contamination, including Pripyat and Opachichi, both within the 30-kilometre closed sector, as well as Ovruch (Ukrainian SSR), Gomel and Svertilovichi (Byelorussian SSR) and Novosybkov in the Bryansk region (Russian Soviet Federative Socialist Republic). It held talks with community leaders, representatives of the medical profession, the scientific community, the church and non-governmental organizations, as well as with the local population. At Gomel, it held talks with the District Council of Peoplr's Representatives and at Ovruch, with community leaders. In other areas it visited hospitals, a scientific institute and a state farm.

79. The mission received information concerning state machinery established recently in the USSR and the three Republics to deal with the consequences of the Chernobyl accident, with a view to co-ordinating activities at the national, regional and district levels. In response to the resolution of the the Supreme Soviet of the USSR on a concerted programme to cope with the consequences of the Chernobyl accident and the situation which has arison as a result of that accident, adopted on 25 April 1990, the respective Councils of Ministers of the USSR and the three Republics have set up the following: USSR State Committee on Matters pertaining to the Management of the Chernobyi Accident; The State Committee of the Ukrainian SSR for the Defence of the Population against the Consequences of the Chernobyl Accident; The State Committee of the Byelorussian SSR on Problems of the Consequences of the Catastrophe at the Chernobyl Nuclear Power Plant: The State Committee of the Russian SFSR for the Elimination of the Consequences of the Accident at the Chernobyl Nuclear Power Plant. Parliamentary machinery and legislation tc promote action to mitigate the consequences of the Chernobyl accident hat, also been set in motion. The mission was of the view that these new committees responded to the need felt by United Nations organizations for a focal point within the Government for matters concerning the Chernobyl accident. It also considered that the creation of this machinery four years after the accident was to be seen in th. context of the recent dissemination of more complete information about the accident, increased awareness of the scope of its consequences and growing public concern.

80. As background information concerning the above-mentioned machinery, the mission was provided with considerable documentation, including the following:

(a) The State Programme for the Elimination in the Byelorussian SSR of the Consequences of the Accident at the Chernobyl Nuclear Power Plant for 1990 to 1995:

(b) The appeal of the Presidium of the Supreme Soviet and the Council of Ministers of the Byelorussian SSR;

(c) The appeal of the Council of Ministers of the Ukrainian SSR;

(d) The resolution of the Supreme Soviet of the USSR on a concerted programme to cope with the consequences of the Charnobyl accident, and the situation which has arisen as a result of that accident;

(e) The Decree of the Supreme Soviot of the Byelorussian SSR concerning measures to expedite the implementation of the State Programme for the Elimination of the Consequences of the Catastrophe at the Chernobyl Nuclear Power Plant;

(f) The Decree of the Council of Ministers of the Byelorussian SSR concerning the State Committee of the Byelorussian SSR on Problems of the Consequences of the Catastrophe at the Chernobyl Nuclear Power Plant.

Al. The authorities of the Russian Soviet Federative Socialist Republic also provided the mission with documentation and maps relating to actions taken within the Republic since the accident and measures foreseen in this regard.

82. The mission paid due attention to the need for an integrated approach to action required to cope with the consequences of the Chernobyl accident. Such action must be of an interdisciplinary nature since it also requires the participation of many government departments, notably agriculture, health, construction, transport, communications, environment, industry and energy. It also requires the participation of the Academies of Science and professional institutions, Parliaments will also wish to participate in the process. The mission noted the active role that non-governmental organizations had already played in the matter, namely, the Red Cross, the World Council of Churches, Greenpeace and local non-governmental organizations such as Chernobyl Help and Chernobyl Union.

83. While the mission noted differences of emphasis in their discussions with government representatives, members of parliament and community leaders reflecting prevailing conditions in each Republic, a number of common concerns of high priority were identified.

84. There was general agreement that the Chernobyl nuclear accident was of unprecedented dimensions, and could not be viewed as the problem of one nation. It had contaminated 104, 200 km^2 of the territory of the three Republics, with a population of 3,870,000. 7/ In the Byelorussian SSR, which had sustained proportionally higher radioactive contamination on its territory, 18 per cent of its land and 20 per cent of its people had been affected. It was in the interest

of the international community to learn the lessons of Chernobyl and to undertake concerted action to overcome the complex situation to which the accident had given rise.

85. Special mention was made of the tact that, while initial efforts in dealing with the Chernobyl accident had focused on Scientific and technical problems, insufficient attention had been paid to informing the public about radiation contamination and its potential health effects. Failure to inform the population in a clear and timely fashion of the nature and the magnitude of the disaster had resulted in anxiety and stress among the population and a lack of confidence in official pronouncements, generally referred to by the authorities as "socio-psychological" problems.

86. To resolve those problems, it was strongly advocated that a scientifically justified concept tur safe living in the contaminated areas, including the definition of an admissible dosage of radiation, be elaborated as a matter of urgency. 'This would entail not only radiological measurements but also questions of health care and nutrition. In this context, the highest priority Should be accorded to the protection of children, the country's future and to other vulnerable groups of society, such as mothers, pregnant women, and the elderly and disabled population.

87. In addition to evaiuations of radiation doses received and projected, it was deemed essential to provide life-long health care and protection and to determine the long-term effects of low-level radiation exposure. Although measures had been announced to prohibit the consumption of local food produce in the more highly contaminated areas, the supply and range of "clean" food from outside the area was limited and uneven. Nutritional imbalances were said to have increased susceptibility to illness, particularly among children. Measures had also become necessary to restrict the movement of children in the contaminated areas, particularly in forests which had accumulated relatively higher levels of radioactive materials. Attention was also drawn to the chronic shortages of medical supplies and equipment, as well as medical personnel.

88. Statistical data provided indicated that 116,000 people had been evacuated from contaminated areas in 1966 and that a second phase of resettlement had begun in 1990 and was to continue until completion in 1991. Resettlement of people living in zones contaminated above 40 Ci/km^2 was mandatory; in areas of contamination from 15-40 Ci/km^2, families with children under 14 and pregnant women were resettled as a priority; resettlement of those living in areas below 15 Ci/km^2 was on a voluntary basis. Resettlement planning and policy were however complicated by the lack of clear criteria for safety levels of radiation and risk analysis. The elderly, who constituted a high proportion of the population in the contaminated areas, were generally reluctant to leave their homes in the face of an invisible danger. While the younq adapted more easily to a new environment , their integration, including that of children, into new communities was not always made easy by existing residents.

89. In the Ukrainian SSR concern was voiced about the country's water supply, noting that 32 million people depended upon the waters of the Dnieper River. International assistance was called for to guard against the possibility of rivers carrying contaminated particles into the Kiev water reserve, which in turn might lead to contamination of the Black Sea, with international consequences.

90. The mission received written proposals from the Governments of the three Republics concerned for programmes of co-operation with the United Nations organizations. These covered four areas of activity, as follows:

(a) Scientific and technological co-operation for the study, forecasting and elimination of radioactive contamination of the region (in co-operation with ILO, FAO, UNESCO, WHO, WMO, IAEA, UNEP, UNSCEAR, the United Nations Centre for Human Settlements (Habitat), the Department of Technical Co-operation for Development and ECE);

(b) Co-operative research into the effects of the consequences of radioactive contamination on the human organism, animals and the elaboration of effective methods for their reduction (in co-operation with UNESCO, WHO, IAEA, UNEP, UNSCEAR and UNICEF);

(c) Technical assistance in building industrial plants, in the use of new technologies, materials and food products (in co-operation with FAO, UNESCO, WHO, WMO, UNIDO, ITU, IAEA, UNEP, UNICEF, the United Nations Centre for Human Settlements (Habitat), UNDP, UNDRO, the Department of Technical Co-operation for Development, ECE and the League of Red Cross and Red Crescent Societies);

(d) Training programmes for experts in radio-ecology, and an educational programnne for the population on the principles for observing radioactive Safety (in co-operation with ILO, UNESCO, WHO, UNIDO, IAEA, UNSCEAR, UNICEF, the Department of Technical Co-operation for Development and ECE).

91. In the case of the Byelorussian SSR, proposals were received from a number of government agencies for co-operative action for the care and protection of the disabled, in the field of agriculture and forestry, housing, settlement planning and health care.

92. The Gomel District Council of People's Representatives (Byelorussian SSR) submitted a written request for the creation within the framework of the United Nations of an expert committee for the elaboration of a concept of safe living in contaminated areas.

93. In addition to the above-mentioned proposals, in the course of discussions, government and community representatives stated that assistance from United Nations organizations would be welcome in a wide range of activities, including the following:

(a) The organization of a public information campaign to raise awareness among the population of the effects of radiation on health and to increase public confidence;

(b) To train medical personnel in the use of new equipment for the diagnosis and monitoring of radiation symptoms;

(c) To study the long-term effects of low-level dosages of radiation exposure;

(d) To train social workers to assist in the rehabilitation of the population, particularly the socially disabled:

(e) To develop new technology for the protection of water supplies against radioactive nuclides:

(f) To develop new technologies for decontamination of large tracts of agricultural land removed from production:

(g) To procure equipment and supplies in many sectors, notably for health care;

(h) To promote joint ventures for the production in the region of such items as baby foods, high-quality equipment for the disabled, etc.

(i) To develop new concepts and revise the existing territorial plans which will address issues such as housing, community services, building design and materials and planning and management.

94. The mission noted that the Chernobyl accident had adversely affected nutritional standards in the affected areas, with potentially harmful consequences for children in particular. Many of those areas already had nutritional problems, with higher than average levels of thyroid complaints and anaemia. These have now been exacerbated by the restrictions placed on consumption of local foods.

95. In theory these deficiencies are to be met from supplies of "clean" food from uncontaminated areas. In practice these deliveries are inadequate, chiefly because of a general shortage of well-organized transportation and distribution. A more fundamental difficulty concerns food packaging and storage if people are no longer able to consume some of the local produce. The production of prepared infant foods is insufficient to meet this increased demand. A similar problem seems to exist for fruit juices, condensed milk and vitamin tablets. There are not enough refrigerated lorries to deliver food supplies to remote rural areas nor enough home refrigerators to preserve foods between erratic deliveries. The nutritional problems created by the Chernobyl accident, however, should be set in the context of general food supplies throughout the USSR.

96. In considering health care, the mission noted that health ministers and local doctors cited increased levels in children of thyroid disorders and anaemia. attributing these to a weakened immune system caused either by radiation directly, or as a result of the stress under which parents and children are living.

97. Officials also pointed to what they classed as "socio-psychological" problems. While the mission received some indication of increased levels of general anxieties, it was not offered evidence of widespread psychiatric problems.

Families were certainly under stress, but this was more often the result of rational concern for the health of their children than neurosis, which was described as "radiophobia".

98. The mission noted that the USSR State Committee for Chernobyl was about to launch a "Children of Chernobyl" programme. which would involve a close monitoring of the children affected. Unfortunately there is a shortage of medical personnel and equipment for this task. Many doctors in the contaminated areas, especially those with young children, have moved to safer locations; one hospital the mission visited had lost one third of its doctors. The lack of modern equipment for radiological and other health monitoring purposes is also of great concern to the authorities and to the affected population,

99. The mission found that much of the anxiety felt by families is a result of a lack of confidence in local and national officials and experts. Public information on the disaster was both late and inadequate, resulting in a high level of public distrust and anxiety. While this can be attributed in part to what were called "the mistakes of the past", the mission believed that it was also due to some extent to the lack of unanimity among scientists as to acceptable levels of radiation dosage.

100. A popular information campaign, possibly bearing the United Nations emblem, and pitched at a number of different levels appropriate to different audiences, could help to resolve some unnecessary anxieties. Such information, if it is to be credible, however, should make very clear what the current limits of international scientific understanding of radiation issues are.

101. A disaster on this scale causes great distress both in its immediate impact and its longer-term consequences. The history of many other disasters has shown that a great deal of social counselling is needed if people are to come to terms with their situation and the changes that will be demanded of their lives in the future. The mission found that the authorities had not been in a position to offer such counselling on the necessary scale. While in other countries this gap might be filled by non-governmental organizations, these had not yet developed to the same extent in the Soviet Union. There is a clear need for the training of social workers who can provide such counselling services, to be offered either through international organizations, such as the United Nations Centre for Social Development and Humanitarian Affairs, or non-governmental channels.

102. The mission found little evidence of special measures for the protection of disabled persons. While the accident itself had not produced any significant increase in the physically disabled among the population in general (apart from those persons involved in the "liquidation" of the accident), the increase in the susceptibility to disease and accidents, particularly among the elderly, brought about by exposure to radiation, inadequate nutrition and the lack of equipment for the disabled, had certainly increased the incidence of disability in the region. This was borne out by data made available by the Ministry for Social Security of the Byelorussian SSR.

103. The mission also concluded that the reference to "socio-psychological problems" was to be interpreted in many cases as referring to person6 who, as a result of the Chernobyl catastrophe, had been rendered socially disabled. Such people were in need of guidance and assistance in order that they might take their place again in society. Such symptoms of social disability were commonly found among the victims of disasters and social upheavals,

104. The mission found that little progress had been made since the initial resettlement efforts of 1986 in term6 of planning and technology for the construction of new housing and community services. While it viewed with sympathy the effort6 made in the immediate aftermath of the accident to resettle large number6 of people on an urgent basis, it felt that there was much that could be done to ensure greater acceptance of resettlement by the population living in contaminated areas. In particular, more information about the need and advantage6 of resettlement should be provided. In the area of planning, it was noted that resettlement must provide not only housing but also schools, jobs, hospitals, shops, transportation and other social services if it is to be successful. The use of new technologies for housing construction could also help to ensure a more rapid and lasting construction, including the use of safe building materials.

105. The nutritional problem6 for resettled families are likely to be less than those in the contaminated areas, since most of them will have been relocated to place6 where local food can be freely consumed. They will, however, be affected by prevailing shortage6 in each area. The health of these families will also need to be closely monitored, despite a shortage of the necessary health monitoring equipment.

106. The chief health problems in resettled area6 are likely to be stress related; the stress effect6 on the immune system of both adults and children will have been compounded by the relocation. The effect6 must not be allowed to exceed the anticipated health effect6 that are presumed saved by the relocation measures. Continued evaluation6 will be needed to analyse and optimize this trade-off. While the mission wa6 not shown any resettlement areas, there wa6 concern by people about to be resettled that they would find inadequate facilities in their new homes, particularly in terms of education or health care for their children.

107. The information problem6 connected with resettlement seem to be of two kinds, The first is a lack of systematic consultation between the authorities and the families to be moved. The political Change6 under way in the Soviet Union as a whole, including progress in the democratization of institutions at all levels, may well be a further factor conducive to stress. The mission found that a second information problem arose where families had been resettled in existing communities. General misunderstandings about the effects of radiation on health result, for example, in parents instructing their children not to sit next to "contaminated" children in school. In this regard, an information campaign directed at the community as a whole could be of great value.

108. The relocation of tens of thousand; of people is an enormous logistical task, and the Soviet authorities are to be commended for the willingness with which they have accepted this challenge. However, it seems that relatively little attention

has been paid to the social aspects of such an undertaking, as mentioned above, there has often been relatively little prior consultation. Just as there is a lack of social counselling for those who have stayed in the affected areas, a similar lack exists for those who have been relocated. They too require counselling both to help them cope with the traumatic experience of exposure to a vague and uncertain danger, and to rebuild their lives in new surroundings. A programme of training for such counsellors could be of great help in alleviating this problem.

109. In considering the economic aspects of the accident, the mission noted that the removal of 144,000 hectares of highly contaminated agricultural land from production had not only resulted in unemployment but had also disrupted the economy of the region. The closure of 492,000 hectares of forest constituted a I.066 of economic activity and imposed hardship on people used to spending much time there. Resettlement hsd also resulted in the loss of skilled labour from certain industries in the contaminated areas. In total, the mission was informed that measures to overcome the consequences of the accident between 1986 and 1989 had cost 9.2 billion roubles.

110. Taking into account the many requests, both written and oral, addressed to it (see paras. 90-93), the mission explained at some length the ways in which United Nations organizations function, the extent of their mandates and the restraints upon their financial resources, including the fact that the three Member States in question were not included in the list of countries eligible for UNDP financial assistance. In general, the mission drew attention to four types of assistance that the United Nations organizations might provide. These were:

(a) Expertise, as represented by intergovernmental bodies, the secretariat, consultants, etc., including experience and facilities for international operations and appeals:

(b) Material aid, in the form of equipment and supplies;

(c) Training, particularly that of local trainers;

(d) Information, to promote understanding of radiation and to increase public confidence in safety measures.

111. In conclusion, the mission wishes to draw attention to the deep appreciation of the Governments and peoples of the region for the decision of the Secretary-General to send a mission to the affected areas on the eve of the General Assembly's consideration of the question, The mission also wishes to underscore the importance that government officials and community leaders attach to a role for the organizations of the United Nations system in assessing and mitigating the consequences of the accident at the Chernobyl nuclear power plant. taking into account the unprecedented scale of the accident and the lessons to be learned by the international community.

VI. ACTIVITIES OF THE UNITED NATIONS

Department of International Economic and Social Affairs

112. In its studies on global economic and social issues, the Department takes into consideration the social and economic effects of natural disasters and man-made environmental disasters, such as the reactor explosion at Chernobyl. The World Economic Survey 1990 includes a chapter on the economic and social effects of disasters.

Department of Technical Co-operation for Development

113. While the Department is not in a position to deal with the radiological effects of the accident and does not have ongoing projects in the region, it possesses expertise in spheres which could be helpful in the broader context of redressing the severe economic and social dislocations that have resulted. In this regard, the Department could co-operate in an international co-operation programme envisaged in Economic and Social Council decision 19901211 in substantive fields within its competence, such as overall water resources planning, management and development formulation of economic development plans for the region and population affected, supporting local and regional government institutions in administering rehabilitation and mitigation programmes, assisting in the evaluation of public infrastructure needs in the period ahead, and in the application of the latest surveying and cartographic techniques for physical planning. The Department participated in the United Nations mission to the areas of the USSR affected by the Chernobyl accident (22-29 September 1990) and stands ready to participate in an international programme of co-operation,

Economic Commission for Europe

114. In response to the request received by ECE from the Governments of the USSR, the Byelorussian and the Ukrainian Soviet Socialist Republics for assistance in the elimination of the consequences of the Chernobyl accident, a number of ECE subsidiary bodies have considered proposals for activities on this subject, as follows:

(a) The Committee on Housing Building and Planning received a proposal from the delegation of the Byelorussian SSR on behalf of itself, and the delegations of the USSR and the Ukrainian SSR concerning work on the resettling of populations as a consequence of the Chernobyl accident. The proposal was suggested in principle and the delegation of the Byelorussian SSR was invited to submit a precise description of work to be done for consideration by the Committee's working parties;

(b) The Chemical Industry Committee received an appeal from the delegations of the Byelorussian SSR and the Ukrainian SSR to provide available technical information on the decontamination of radioactive wastes and soil, and on the treatment of radioactive waste-water, as well as information about research institutes active in this area:

(c) In response to an appeal by the delegation of the Ukrainian SSR on behalf of itself and the delegations of the USSR and the Byelorussian SSR, the Joint FAO/ECE Working Party on Mechanization of Agriculture was requested to look for possibilities of individual and joint efforts related to the practical solution of such problems as treatment of soil and radioactive wastes by means of deep ploughing, agrochemical operations and soil tillage; working out and practical use of proper agricultural technologies and techniques in contaminated areas: returning these areas back to the economic turnover, etc.:

(d) The Conference of European Statisticians agreed to include in the next Compendium of Environment Statistics a study on the health consequences in the USSR of the Chernobyl accident for publication in 1991;

(e) In response to a proposal by the delgation of the Ukrainian SSR on behalf of itself and the delegations of the USSR and the Byelorussian SSR, the Timber Committee agreed to include work designed to mitigate the consequences of the Chernobyl accident in the priorities of its programme of work;

(f) It is foreseen that the Working Party on Engineering Industries and Automation, at its next session in February 1991, may wish to consider aspects of its work on food-processing machinery and rehabilitation engineering of relevance to the consequences of the Chernobyl accident. ECE participated in the United Nations mission to the areas of the USSR affected by the Chernobyl accident (22-29 September 1990).

United Nations Centre for Human Settlements (Habitat)

115. In response to the specific request by the Governments of the Ukrainian and Byelorussian Soviet Socialist Republics, the Centre undertook a mission to the latter Republic from 9 to 15 September 1990. The mission reviewed the territorial plan prepared for the Republic before the accident and assessed the required assistance for the revision of this plan in view of the Chernobyl accident.

116. The Centre also participated in the United Nations mission to the areas of the USSR affected by the Chernobyl accident, from 22 to 29 September 1990, contributing to the mission's work in the area of resettlement of affected population.

117. The Centre has previously provided technical assistance in disaster prevention and mitigation measures, including post-disaster evaluation and assessment of impact and pre-disaster site evaluation to the Armenian Soviet Socialist Republic. An International Symposium on the Mitigation of the Effects of the Seismic Activity on Human Settlements, a joint Centre-USSR project, was also held at Tbilisi in the Georgian SSR, in November 1989.

Office of the United Nations Disaster Relief Co-ordinator

118. In response to the appeal made by the Governments of the Byelorussian and Ukrainian Soviet Socialist Republics in March 1990 to help in launching an international relief effort to cope with the after-effects of the disaster, UNDRO contacted United Nations agencies concerned with a view to establishing a concerted

response. Data were gathered on ongoing and planned activities of other United Nations agencies. Further discussions were held with the Permanent Representatives of the Byelorussian and Ukrainian SSRs on the contents and specifications of the appeal. UNDRO has received from the *Government* of the Byelorussian SSR a more detailed list of equipment and medical supplies required. The Office participated in the United Nations mission to the areas of the USSR affected by the Chernobyl accident (22-29 September 1990). It also stands ready to collaborate in an inter-agency relief effort by providing its expertise and facilities in needs assessment, evaluation of priority needs and informing the international community (appeal).

119. On the eve of the fourth enniversary of the accident, the Co-ordinator called upon the international community to extend maximum support to the two Soviet Republics in the efforts to combat the consequences of the disaster. He noted that, although the United Nations General Assembly had proclaimed the 1990s an International Decade for Natural Disaster Reduction, no such global effort existed to fight technological and industrial disasters. Yet, an accident such as the one at Chernobyl could have the most serious, wide-ranging and long-lasting consequences on society and on the environment on an international scale. Drawing from the lessons of Chernobyl, and in line with its mandate to promote mitigation measures for natural as well as man-made disasters, UNDRO is collaborating with the United Nations agencies concerned in planning and elaborating a preparedness strategy for nuclear and other industrial installations, not only in the immediate vicinity of the plants, but also in surrounding regions which may be et risk. The immediate aim is a preparedness and prevention planning exercise around one or more of the other still operational installations of the Chernobyl type. This would include an inter-agency mission to such sites.

United Nations Environment Programme

120. From the time of the Chernobyl accident UNEP has expressed concern over possible environmental consequences. It has, therefore, been an active member of IAC/RNA, has expressed its approval in principle for the proposed Chernobyl Centre for International Research, and has offered the geographical information system expertise of its Global Resource Information Database to those concerned with establishing a suitable international response and tracking mechanism, should a similar nuclear accident occur.

121. UNEP has also continued to provide administrative support to the secretariat of UNSCEAR. The Executive Director of UNEP also provides continuing advice and guidance to the Secretary of UNSCEAR on relevant environmental concerns and issues, UNEP, through the Global Environmental Monitoring System (GEMS), has also made available financial support to enable the first UNSCEAR assessment of the long-term impact of the Chernobyl accident to be prepared.

122. A:; a consequence of the Chernobyl accident, UNEP, in co-operation with WHO, has been active in developing proposals for a Global Environment Radiation Monitoring Network (GERMON) to be implemented as part of GEMS. Expert meetings were held culminating in a meeting of the GERMON Scientific Advisory Committee held in Moscow Lrom 28-30 May 1990. This meeting decided that the concept of GERMON was

now sufficiently well advanced for initial data gathering to begin, if possible in the fourth quarter of 1990 through implementation of the Network, Forty countries have participated actively in GERMON from the start end it is expected that a further 20 countries would participate if the appropriate technical assistance were made available to enable them to do so effectively.

123. UNEP is presently developing a longer-term environmental project for the Chernobyl area to be carried out in co-operation with the USSR authorities end those of the three Republics affected by the accident. The project will be based on the findings of the international mission organized by IAEA in co-operation with WHO, FAO, UNSCEAR, UNEP and CEC.

124. UNEP also agreed to participate in the forthcoming international assessment of Chernobyl's radiological consequences, which is being led by IAEA end which will be carried out in mid-1990. It was also represented in the United Nations mission to the areas of the USSR affected by the Chernobyl accident (22-29 September 1990).

United Nations Children's Fund

125. With a view to identifying appropriate weys and means of contributing to activities designed to mitigate the consequences of the Chernobyl accident, with particular regard to the health end welfare of children, UNICEF was represented in the United Nations mission to the areas of the USSR effected by the Chernobyl accident (22-29 September 1990).

United Nations Office at Vienna

126. The Special Representative of the Secretary-General for the Promotion of the United Nations Decade of Disabled Persons has responded to the Chernobyl accident through the provision of advice to the Governments concerned. In his contacts with representatives from the Permanent Mission of the USSR at Vienna, he discussed potential activities for the rehabilitation of persons disabled by the accident., as well as for community-based provision of services for victims and their families. It. is expected that several concrete proposals will be provided as a result of follow-up activities.

127. The Centre for Social Development and Humanitarian Affairs could also foresee the provision of advisory services to the authorities concerned regarding the proper relocation and appropriate reintegration of aged persons forced to leave the immediate vicinity of the accident. Such reintegration would stress the active participation of the elderly in developing appropriate solutions to the problem:; caused by the accident. Elderly citizens should be able to respond in a positive way and contribute to solving some of the problems brought on by the accident, rather than remain passive victims of the after-effects.

128. With a view to assessing more accurately the required assistance, the Special Representative of the Secretary-General for the United Nations Decade fot Disabled Persons and a representative of the programme for the aged, participated in the United Nations mission t.o the areas of the USSR affected by the Chernobyl accident (22-29 September 1990).

129. The Centre for Social Development and Humanitarian Affairs also has an active interest in investigating environmental crime and pollution and in identifying problem areas and proposing measures to avoid potential future accidents. Al though a special seminar on the subject of environmental crime which was scheduled to be held at Minsk has had to be postponed this interest remains strong and the Centre is eager to participate *in* future initiatives.

VII. ACTIVITIES OF THE LEAGUE OF RED CROSS AND RED CRESCENT SOCIETIES

130. Although not a part of the United Nations system, the League has made an important contribution to international efforts to assist in the elimination of the consequences of the Chernobyl accident. In response to a request from the Alliance of Red Cross and Red Crescent Societies of the USSR, the League sent a mission to the affected areas in January 1990. The terms of reference of the mission were to appraise the current situation and to recommend future actions for the Red Cross/Red Crescent in the USSR. The report of the mission was issued in February 1990.

131. On 25 June 1990, the League launched an appeal, entitled Chernobyl (USSR) - Humanitarian Assistance and Rehabilitation Programme. The appeal defines short-term and medium-term priorities for assistance to the population of the three Soviet Republics - Byelorussia, Bryansk District of the Russian Federation and Ukraine - affected by the long-term consequences of the Chernobyl nuclear power pl ant accident. In the short and medium term, the progranune will concentrate on assistance in facilitating daily life in the disaster-affected zones with a total population of approximately 4 million people, health education for the population living in marginally contaminated areas, and participation in upgrading the health and social institutions which provide assistance to the affected population.

132. On 8 August 1990, the League established its office and permanent delegation at Kiev, Ukrainian SSR, with the main task of co-ordinating activities of the League and of the National Red Cross and Rod Crescent Societies in the affected areas of all three Republics.

133. In November and December 1990, the League will supply the affected regions with a minimum of 400 portable dosimeters, which will allow the Red Cross information network to start settling. Training courses for the Red Cross staff and volunteers on the utilization of these instruments are scheduled for the first half of November 1990.

134. According to the assessment made by the League delegation in Kiev, food contamination measuring and whole body monitoring equipment has a growing priority. The League will be looking for funds for a certain number of such instruments.

VIII. SUMMARY

135. From the preceding sections of the present report, it can be seen that a number of activities have been undertaken within the framework of the United Nations system to assist the three Governments in question to mitigate the consequences of the accident at the Chernobyl nuclear power plant. IAC/RNA has, since its establishment in 1986, dealt with follow-up activities concerning accidents, including Chernobyl, and the planning and preparation of joint co-ordinated action to be taken in the case of future accidents. A number of specialized agencies and departments of the United Nations participate in the work of IAC/RNA, which is serviced by IAEA. At the meeting of the Committee on 5 September 1990, there was general agreement that social, economic and political responses would be required to resolve the problems facing the affected Republics and that United Nations programmes should assist in areas of their expertise.

136. IAEA also launched a project earlier this year on the radiological consequences of the Chernobyl accident, with the participation of FAO, WHO, UNSCEAR, UNEP and CEC. A preparatory mission of international experts was sent to the region in March 1990. The project will be completed by the end of 1990 and the final report will be made available in early 1991.

137. The Secretary-General dispatched a United Nations fact-finding mission to the areas of the USSR affected by the Chernobyl accident from 22 to 29 September 1990. The mission focused primarily on the socio-economic problems facing the three Republics concerned.

138. The League of Red Cross and Red Crescent Societies also undertook a mission to the affected areas in January 1990. On 25 June 1990, the League launched an appeal for a programme of humanitarian assistance and rehabilitation for the population of the affected zones. The World Council of Churches also undertook a fact-finding mission to the affected areas of the Eyelorussian SSR from 23 June to 4 July 1990.

139. In addition to their participation in the work of IAC/RNA, FAO, WMO and WHO have undertaken activities designed to assist in the elimination of the consequences of the Chernobyl accident. IL0 has taken steps to apply its Convention on Radiation Protection to the Chernobyl situation.

140. WHO has expanded its activities through an agreement with the Government of the USSR to establish a long-term international programme to nonitor and mitigate the health effects of the Chernobyl accident. UNESCO has also signed an agreement with the Government of the USSR as a basis for a programme of scientific research policy and assistance. On 21 September 1990, IAEA signed a further agreement with the Governments of the IJSSR, the Ukrainian SSR and the Pyelorussian SSR to establish the Pripyat Scientific Centre for international research on post-accident conditions.

141, In addition to its relief operations to assist the three Governments in question and to provide material aid, UNDRO has underlined the need for measures designed to prevent- similar accidents at other nuclear power plants in the region.

IX. RECOMMENDATIONS

142. The Chernobyl nuclear accident was of unprecedented dimensions requiring the concerted action of the international community and cannot be viewed as the problem of one nation. In addition to the short-term and medium-term problems identified in the present report, experts have yet to determine the long-term effects on the environment and human health of the radioactive material released by the accident and their possible international consequences as well as the lessons to be learned by the international community.

143. In response to the appeals for international assistance made by the Governments of the USSR, the Ukrainian SSR and the Byelorussian SSR, efforts have already been made by Governments and non-governmental organizations, business and scientific groups and individuals to address and mitigate the consequences of the Chernobyl accident. Activities are being carried out by organizations and bodies of the United Nations system, including IAC/RNA, and those carried out within the framework of agreements between United Nations organizations and the Government of the USSR. In general, these activities focus on the scientific and technical, as well as the socio-economic aspects of the situation in the affected areas. The scientific and technical activities include radiological measurements, environmental impact assessment, health assessments and epidemiological studies, meteorological and hydrological studies, measurement of soil contamination. The socio-economic activities deal with such questions as the provision of social services, health care and protection, an information campaign to restore public confidence, resettlement practice and policies, a concept of safe living in contamf nated zones. Some of these activities are carried out by individual agencies or programmes, while others are the product of joint ventures between a number of organizations. Yet others, carried out individually, interact with or depend upon the results of projects executed by other organs. As the number of activities increases, there is a growing need for closer co-operation between the organizations involved to ensure the optimal use of resources and more effective programme delivery.

144. It is recommended that a United Nations progranune of international co-operation to mitigate the consequences of the accident at the Chernobyl nuclear power plant be established by the General Assembly. The programme wouid provide the framework for the further elaboration and development of current and planned activities of the United Nations system, taking into account the proposals for both short-term and long-term programmes of co-operation with the United Nations organizations submitted by the Governments of the USSR, the Byelorussian SSR and the Ukrainian SSR, as well as requests for assistance and material aid and agreements signed by United Nations organizations and the Governments of the USSR, the Byelorussian SSR and the Ukrainian SSR. The specialized agencies and other organs, organizations and programmes of the United Nations system would be requested to contribute actively to the programme and to provide all appropriate assistance.

145. It is also recommended that a special fund be set up to receive voluntary contributions to finance the substantive and administrative costs of the programme. Member States of the United Rations, funding organizations,

non-governmental organizations and the business community should be invited to contribute to the special fund. Contributions in kind should also be sought.

146. A co-ordinator for the programme could be designated, to be in charge, inter alia, of co-ordination, awareness-raising and fund-raising. A core secretariat commensurate with the needs of the programme would also be required.

147. The Assembly may wish to appeal to all States Members of the United Nations or members of the specialized agencies and to organs, organisations and programmes of the United Nations system to provide all appropriate assistance, to ensure full co-ordination and co-operation with ongoing or planned activities of the United Nations programme of international co-operation to mitigate the consequences of the accident at the Chernobyl nuclear power plant.

148. At the inter-secretariat level, while there is a correlation between the results of the scientific and technical projects and the activities designed to remedy the socio-economic problems of the population in the affected areas, the various activities call for different forms of expertise and treatment. With that in view, it is recommended that IAC/RNA be requested to continue its work on the co-ordination of activities and projects which deal with the scientific aspects of the situation in the affected areas. This would include, inter alia, work undertaken as a follow-up to the radiological assessment results of the project organized by IAEA, the health studies carried out by WHO and the meteorological and hydrological studies of WMO.

149. Should the General Assembly establish the proposed programme, the Secretary-General intends to recommend to the Administrative Committee for Co-ordination the establishment as soon as possible of a task force to address and mitigate the consequences of the Chernobyl accident. The task force would provide a forum in which to consider, facilitate and co-ordinate the comprehensive measures of the United Nations system to address the problems, particularly those relating to the socio-economic aspects of the situation in the affected areas. The task force would also review in detail the proposals for programmes of co-operation with the United Nations organizations submitted by the Governments of the USSR, the Byelorussian SSR and the Ukrainian SSR, as well as requests for assistance, and formulate appropriate responses. The specialized agencies and other organs, organizations and programmes of the United Nations system would be requested to participate in the work of the task force and to provide all appropriate assistance. The task force would also pay special attention to the activities carried out within the framework of related agreements signed by United Nations organizations and the Government of the USSR. It would closely co-ordinate its work with that of IAC/RNA. In order to ensure a regular exchange of information, joint meetings of these two bodies should be held as necessary.

150. The Secretary-General would report through the Economic and Social Council to the General Assembly on the implementation of the decision of the General Assembly in this regard.

Notes

1/ E/1990/64.

2/ E/1990/97.

3/ Official Records of the General Assembly, Forty-third Session, Supplement No. 45 (A/43/45).

4/ The International Experts' Preparatory Mission participants were from Austria, Japan, the United Kingdom of Great Britain and Northern Ireland, the United States of America, and from CEC, FAO, IAEA and WHO.

5/ The International Advisory Committee members are scientists from Austria, the Byelorussian SSR, Canada, Finland, France, Japan, the Ukrainian SSR, the Union of Soviet Socialist Republics, the United Kingdom, the United States of America; CEC, FAO, IAEA, UNSCEAR and WHO.

6/ Project team members are from Argentina, Australia, Austria, Belgium, the Byelorussian SSR, Canada, Cuba, Denmark, Finland, France, Germany, Hungary, Israel, Italy, Japan, the Netherlands, Norway, Sweden, the Ukrainian SSR, the Union of Soviet Socialist Republics, the United Kingdom, the United States of America, Yugoslavia: CEC, FAO, ILO, IAEA, UNSCEAR, WHO and WMO.

7/ Statistics are taken from the introduction to the State Union-Republic Programme of Emergency Measures for 1990 for the Elimination of the Consequences of the Accident at the Chernobyl Power Plant. The figure is higher than that cited in paragraph 26 of the present report, since it refers to population living in area6 with 1 ci/km^2 and above.
