ENVIRONMENTAL HEALTH

ACTION PLAN FOR EUROPE

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ENVIRONMENTAL HEALTH ACTION PLAN FOR EUROPE

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ABBREVIATIONS

CE	Council of Europe
CCEE	Countries of Central and Eastern Europe
EAP	Environmental Action Programme
EBRD	European Bank for Reconstruction and Development
EC	European Commission
EEA	European Environment Agency
EEB	European Environment Bureau
EEHC	European Environment and Health Committee
EHAPE	Environmental Health Action Plan for Europe
EPE	Environmental Programme for Europe
ESF	European Science Foundation
EU	European Union
FAO	Food and Agricultural Organization of the United Nations
IAEA	International Atomic Energy Agency
ICC	International Chamber of Commerce
ILO	International Labour Organisation
IPCS	International Programme on Chemical Safety
ICRC	International Committee of the Red Cross
IUCN	World Conservation Union
NIS	Newly Independent States of Former USSR
OECD	Organisation for Economic Co-operation and Development
PHARE	Poland and Hungary Assistance for Reconstruction of the Economy
PPC	Project Preparation Committee
TACIS	Technical Assistance to the Commonwealth of Independent States and Georgia
UN/ECE	United Nations Economic Commission for Europe
UNCED	United Nations Conference on Environment and Development
UNCHS	United Nations Centre for Human Settlements
UNDHA	United Nations Department of Humanitarian Affairs
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNHCR	United Nations High Commissioner for Refugees
WB	World Bank
WFP	World Food Programme
WHO/ECEH	World Health Organization European Centre for Environment and Health
WHO/EURO	World Health Organization Regional Office for Europe
WTO	World Tourism Organization

NOTE

When the term "governments" ("countries") is used, it will be deemed to include the European Community within its areas of competence.

FOREWORD

VOLUME 1

THE FRAMEWORK FOR ENVIRONMENTAL HEALTH ACTION IN EUROPE

CHAPTER 1. THE ROAD TO HELSINKI

1. Over the past two decades it has been increasingly recognized that success in protecting and promoting human health is closely dependent on, among other factors, the quality of the environment in which people live and will continue to live for generations to come. The road towards sustainable development was first marked out in 1972, when representatives of 113 nations gathered for the Stockholm Conference on the Human Environment. This was followed by a number of international initiatives aimed at protecting the environment.

2. In May 1977, the Thirtieth World Health Assembly laid the foundations of a global strategy on health when it decided that "the main social target of governments and WHO in the coming decades should be the attainment by all citizens of the world by the year 2000 of a level of health that will permit them to lead a socially and economically productive life" (resolution WHA30.43).

3. In 1983, the United Nations created a World Commission on Environment and Development. Four years later, the Commission's report entitled "Our common future" urged that all human activities should follow a path of sustainable development, which was defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (1).

4. In 1984, the Member States of WHO in the European Region adopted the health for all (HFA) strategy, for the first time endorsing a common health policy, both in individual Member States and in the Region as a whole, and setting themselves a number of targets to be met by the year 2000. Recognizing the dependence of human health on a wide range of environmental factors, the Member States defined the priority areas in environment and health within this strategy and formulated eight environmental health targets. Environmental health comprises aspects of human health that are determined by the environment. It includes both the direct pathological effects of environmental factors, such as physical, chemical and biological agents, and the indirect effects on health and wellbeing of broad psychosocial factors, including housing, urban development, land use and transport. The HFA targets were updated in 1991 (2).

5. In response to growing concern about the state of the environment and health, WHO's First European Conference on Health and the Environment (referred to throughout this Action Plan as the First Conference) was held in December 1989 at Frankfurt, Germany, bringing together ministers and other senior representatives from the environment and the health administrations of 29 European Member States, as well as from the then Commission of the European Communities (now the European Commission – EC). The Conference unanimously approved the European Charter on Environment and Health (3), which extends the European HFA strategy in its relation to the environment and represents a major step

forward in the joint development of public health and environmental policies. The Charter recognizes that every individual is entitled to an environment conducive to the highest attainable level of health and wellbeing; it underlines the shared responsibilities of individuals, public authorities and economic sectors in society for protecting such an environment; and it outlines principles for public policy (see Annex 1).

6. In 1989, the United Nations began planning a Conference on Environment and Development (UNCED). In preparation for the Conference, WHO established a Commission on Health and Environment whose report, entitled "Our planet, our health" (4), was endorsed by the World Health Assembly in May 1992 and provided UNCED with a comprehensive review of the world health situation in relation to the environment and development.

7. The Conference itself, held in Rio de Janeiro, Brazil, in June 1992, brought together the heads or senior officials of 179 governments and international organizations and many representatives of nongovernmental organizations. In addition to issuing a declaration and a statement of principles, the Rio Conference endorsed Agenda 21 (5), a blueprint for how to make development socially, economically and environmentally sustainable for the twenty-first century. Agenda 21 reflects the growing awareness that sustainable development requires changes in approach by both governments and people. Without such changes, further burdens would be placed on the environment, ultimately affecting the quality of life and health. The WHO Commission's report was decisive in shaping the environmental actions for the protection and promotion of health envisaged in Agenda 21.

8. In response to the Rio Conference and based on the recommendations of the WHO Commission, WHO formulated a new global strategy for health and environment which was endorsed by the World Health Assembly in May 1993 (6). That strategy establishes a unifying framework for WHO's work plans and the activities that are needed to achieve, at global, regional and country levels, the objectives defined in Agenda 21.

9. In parallel with the preparatory work for the Rio Conference, the United Nations Economic Commission for Europe (UN/ECE) and the Organisation for Economic Co-operation and Development (OECD) initiated in 1990 a process that led in 1993 to a Conference of Ministers of the Environment held at Lucerne, Switzerland, and will continue to provide, through cooperation in the environmental field, a strong integrating force in construction of the new Europe. Through its Ministerial Declaration, the Lucerne Conference endorsed the broad strategy contained in its Environmental Action Programme for Central and Eastern Europe (EAP) as a basis for action by national and local governments, the EC and international organizations, financial institutions and private investors active in the Region. It also endorsed the UN/ECE plan to develop an Environmental Programme for Europe (EPE) with participation by the European Community, the United Nations Environment Programme (UNEP) and other organizations.

10. Within the European Community, now the European Union (EU), impetus for the adoption of environmental legislation was given by a declaration of heads of state and government in Paris in October 1972. Immediately afterwards, the first Community action programme (1973–1976) on the environment was adopted in 1973; this has since been followed by four others. Although the European Community had been very active in environmental matters,

implementing its action programmes through the adoption of a considerable body of legislation, it was not until the Single European Act (a revision of the then existing Treaties), which entered into force in 1987, that the Commission's competence in the area of the environment was formalized. A resolution on health and the environment, which was adopted in November 1991 by the Council and the Ministers of Health of the European Community (7), reflected the basic principles and strategies outlined in the European Charter for Environment and Health and invited the Community and its Member States to take steps to gather knowledge and experience of the relationship between health and the environment.

11. "Towards sustainability" – an EU programme of policy and action in relation to the environment and sustainable development, for the period 1993–2000, also called the Fifth Environmental Action Programme – was adopted in 1992 (8). It is being used by the EC as the main tool for the implementation of Agenda 21 in its area of competence. That Programme aims at the broad involvement of all sectors of society, in a spirit of partnership and shared responsibility, in working to achieve sustainability. The Treaty on European Union, which came into force in November 1993, includes among theEU's main objectives the promotion of sustainable economic growth and markedly strengthens the EC's legal basis for implementation of the Fifth Programme. Significantly, the Treaty provides that considerations related to the protection of health (article 129) and the environment (article 130r.2) should be integrated into the definition and implementation of other policies of the European Union.

12. In the European Region of WHO, the European Centre for Environment and Health (WHO/ECEH) had been set up within the structure of the WHO Regional Office for Europe (WHO/EURO), pursuant to a request made by the First Conference "with a view to strengthening collaboration on the health aspects of environmental protection, with special emphasis on information systems, mechanisms for exchanging experience and coordinated studies". The Centre has produced a comprehensive review of the state of environmental health in Europe in its report entitled "Concern for Europe's Tomorrow" (9). It has thus provided the basis for the present Environmental Health Action Plan for Europe (EHAPE) and will also be of use to countries in developing their own environmental health action plans.

13. Hosted by the Government of Finland and held in Helsinki, the Second European Conference on Environment and Health was organized by WHO/EURO in collaboration with the European Community, in response to the recommendation made at the First Conference that: "The European Ministers of the environment and of health should meet again within five years to evaluate national and international progress and to endorse specific action plans drawn up by WHO and other international organizations for eliminating the most significant environmental threats to health as rapidly as possible."

14. The Second Conference was held in a Region very different from that of 1989. Major political events had occurred in the European Region during the intervening five years, bringing the number of its Member States from 29 to 50. These events took place while the European population was undergoing significant changes in its demographic and social structure, and they were followed by widespread economic recession characterized by rising

unemployment, especially among the young. Wars, civil unrest and ethnic conflicts in Europe had given rise to untold destruction and created a huge number of refugees.

15. Most of the countries of central and eastern Europe and the newly independent states (CCEE/NIS), currently in transition from planned to market economies, are faced with major economic difficulties. They also have special environmental health problems which are the legacy of the policies of previous regimes, and they often lack the services needed to solve them. Other parts of Europe are also dogged by the limits that the current economic recession places on their ability to cope with their own problems and to assistneighbouring countries in solving theirs.

16. In such circumstances, it is essential to make the best use of limited resources, both nationally and internationally. The EHAPE, endorsed by the Second Conference, aims to give purpose and direction to environmental health activities within countries, without interfering with the priorities that each country must set itself. It recognizes the need to avoid duplication of efforts by international bodies and suggests coordinated actions by WHO and all other organizations with responsibilities for protecting human health and wellbeing and the quality of the environment.

CHAPTER 2. LONG-TERM ENVIRONMENT AND HEALTH OBJECTIVES

17. The Helsinki Conference should be seen as an important landmark on the path towards achieving the long-term environment and health policy objectives that are defined in WHO's European HFA strategy and are consistent with the principles laid down in the European Charter on Environment and Health. The health policy for Europe, as expressed in the HFA targets, unites the 850 million people of the European Region of WHO, an area whose borders are marked by the western shores of Greenland, the Mediterranean, and the Pacific shores of the Russian Federation. The policy sets out the improvements in the health of Europeans that are expected by the year 2000. It also describes the strategies for achieving them through healthier lifestyles, improvements in the environment and the provision of high quality services for prevention, treatment, care and rehabilitation. The targets are intended to stimulate debate on the formulation of health policies and their implementation in Member States.

18. Among the 38 European HFA targets, which were updated in 1991, eight are concerned with the interrelationship between aspects of the environment and of health. These targets (18–25) are concerned with the contribution of the environment to health and draw on the philosophy and strategies set out in the European Charter on Environment and Health and on the report of the World Commission on Environment and Development. They reflect the emerging commitment to environmental policies that lead to ecologically sustainable development, the prevention and control of risks, and equitable access to environments which promote health and wellbeing. The targets' aim is to provide opportunities for people to live in communities with socially and physically supportive environments. As Target 11 on accidents has an environment and health dimension, it is also included below. The following are the environment and health targets which express the long-term policy objectives for Europe:

Target 18 Policy on environment and health

By the year 2000, all Member States should have developed, and be implementing, policies on the environment and health that ensure ecologically sustainable development, effective prevention and control of environmental health risks and equitable access to healthy environments

Target 19 Environmental health management

By the year 2000, there should be effective management systems and resources in all Member States for putting policies on environment and health into practice

Target 20 Water quality

By the year 2000, all people should have access to adequate supplies of safe drinking-water and the pollution of groundwater sources, rivers, lakes and seas should no longer pose a threat to health

Target 21 Air quality

By the year 2000, air quality in all countries should be improved to a point at which recognized air pollutants do not pose a threat to public health

Target 22 Food quality and safety

By the year 2000, health risks due to microorganisms or their toxins, to chemicals and to radioactivity in food should have been significantly reduced in all Member States

Target 23 Waste management and soil pollution

By the year 2000, public health risks caused by solid and hazardous wastes and soil pollution should be effectively controlled in all Member States

Target 24 Human ecology and settlements

By the year 2000, cities, towns and rural communities throughout the Region should offer physical and social environments supportive to the health of their inhabitants

Target 25 Health of people at work

By the year 2000, the health of workers in all Member States should be improved by making work environments more healthy, reducing work-related disease and injury, and promoting thewellbeing of people at work

Target 11 Accidents

By the year 2000, injury, disability and death arising from accidents should be reduced by at least 25%.

CHAPTER 3. A NEW APPROACH TO ENVIRONMENTAL HEALTH

19. The policy objectives defined under the concept of sustainable development underline the interrelationship of human activities and their impact on the biosphere and, in turn, the interdependence of human beings and the environment. Therefore, the WHO Commission on Health and Environment concluded that:

> "... if the future of the human race is to be safeguarded, its manner of dealing with the environment must change drastically ... and ... if the human race continues to ignore this fact its improved health and well-being will not be an attainable goal" (4).

20. The interdependence of health, development and the environment is complex, but there are three principal objectives:

- to protect human health and wellbeing
- to protect other forms of life and conserve biological diversity
- to protect the physical environment.

21. In other words, prevention of adverse effects on human health is part of sustainable development. Furthermore, each citizen in the Region should be able to look forward to an environment which promotes and maintains health and wellbeing. The goals promulgated by UNCED expand on, but are basically consistent with, the environmental health targets defined in WHO's HFA strategy and the principles laid down in the European Charter on Environment and Health.

22. Although a number of countries have made major progress in implementing key international agreements, including the European Charter on Environment and Health and UNCED's Agenda 21, in no country of Europe is the task finished. Achieving the objectives of sustainable development is a long-term process which will require a change in human behaviour and in the pattern of economic development. Faced with a major recession, political and social upheavals and wars, most European countries are finding it difficult to carry forward such commitments.

23. The extensive survey of the present environment and health situation in the European Region carried out by WHO/ECEH in collaboration with national focal points, and presented in the report "Concern for Europe's tomorrow" (9), clearly indicates the need for further efforts to mitigate existing and prevent future adverse environmental impacts on health, and to promote health and wellbeing through environmental improvements. The survey also demonstrates major differences within the Region. These inequalities in environmental health status clearly conflict with the principle of equity contained in the HFA strategy and call for regional solidarity in resolving them.

24. There is therefore a need to adopt an environmental health approach that will restore the momentum, translate declarations into actions and offer new opportunities for solving current environmental health problems. Experience with WHO's HFA strategy, as well as the knowledge gained from other organizations' activities in environmental protection in the Region, particularly the UN/ECE's Environmental Programme for Europe (10) and the EU's Fifth Environmental Action Programme (7), have helped to define WHO/EURO's new approach to environmental health, now embodied in the EHAPE (5). Its main elements include:

- developing action plans at country level that use a stepwise approach to achieve long-term policy objectives;

- identifying the actors in the context of shared responsibility and subsidiarity;
- ensuring the joint participation of the public health and the environmental protection departments in policy development;
- improving policy tools;
- sharing responsibility among all relevant economic sectors;
- promoting international concerted priority actions.

25. All these elements are interdependent and should not be undertaken in isolation, since each plays an essential role in the efforts to improve the environmental health situation.

3.1 The step-wise approach in developing action plans at country level

26. Improvement in environmental health can only be obtained by developing action plans at country level which take into account all relevant national interests and priorities and include the commitment of resources adequate for the tasks and a framework of laws and controls. Such plans should aim for realistic targets and interim milestones, against which progress towards achieving country objectives can be measured.

27. This planning process follows the same general pattern as in the HFA strategy, but includes important additional elements:

- the definition of targets at country level, using a step-wise approach based on the assessment of achievable health benefits in relation to the costs of possible environmental interventions and the resources available for carrying them out;
- the management of the actions by key and complementary actors;
- the monitoring and evaluation of progress;
- the review and, when appropriate, the reformulation of objectives and approaches and the rescheduling of targets.

3.2 Identifying the actors in the context of shared responsibility and subsidiarity

28. Health protection involves, among other things, the preservation of the environment and its restoration whenever human activities have adversely affected it. To do this, not only must those responsible for the environment and for health work closely together, but those responsible for economic activities impinging on the environment, such as agriculture and industry, must also be closely associated in both preservation and restoration, at local as well as central levels. In addition, it must be understood that no-one in society is without responsibilities for achieving an environment supportive of health and that everyone should have access to the education and information needed to meet these responsibilities.

29. Because the wide range of environmental health problems facing individual Member States, as well as the major cultural and economic differences between them, are also to be found at local level within countries, action plans at country level will have to take account of varying local needs. These should be met by developing capabilities at local level for identifying and assigning priorities to environmental health problems, for planning and

implementing prevention and control measures, and for monitoring compliance, etc. Subsidiarity is thus an essential requirement; where it does not already exist, it cannot be achieved quickly or without support, including financial support, from central government since it requires the development of a range of infrastructural components from training of personnel to provision of appropriate institutional arrangements and structures.

30. Participants in the efforts to improve environmental health should include:

- competent authorities at all levels, including the local level; in addition to departments of the environment and of health, the participation of those concerned with agriculture, defence, education, employment, energy, finance, food, housing, industry, land use and transport is necessary;
- nongovernmental bodies, including trade associations, trade unions, professional and technical bodies, advocacy groups and consumer associations, especially those concerned with environment and health, and members of the public;
- public and private sector businesses, including those, whether large or small, involved for example in water resource management, farming and food production, processing and distribution, waste management, manufacturing, energy production, transport and tourism;
- the media, public relations and information services;
- universities, research centres and scientific associations.

31. Therefore many actors, including those in the various economic sectors and the general public, have a role to play in achieving the objective of an environment supportive to health. Their respective responsibilities in the decision-making process should be clearly identified, with three overall goals in mind:

- better collaboration at all levels between those responsible for public health and environmental protection, and between these two lead actors and other essential players, such as the economic sectors;
- better collaboration between national, regional and local authorities, to ensure that responsibilities are discharged at the appropriate level and in a coordinated manner; and
- participation of the public in the decision-making process wherever possible and at all appropriate levels.

3.3 Ensuring joint participation in policy development by the public health and environmental protection departments

32. As indicated in Agenda 21 and in the WHO global strategy on health and environment, these two departments should act jointly to promote health in the context of environment and development. Organizational and operational structures are necessary in each country to ensure that this joint role is actually performed. Some countries already have successful working arrangements, while in others mechanisms and structures will need to be developed or strengthened. This joint responsibility should also be recognized by all economic sectors and other actors.

3.4 Improving environmental health management tools

33. In addition to political commitment, there are practical prerequisites for developing and implementing environment and health strategies. Many countries urgently need to create or improve the main tools available to decision-makers for environmental health management. To be effective, this requires a shift from the traditional approach (involving the separate consideration of, say, water, air and food quality control and of waste management) to an integrated approach that, consistent with those endorsed at the Lucerne Conference and in the EU's Fifth Environmental Action Programme, improves the ways and means of preventing and controlling environmental hazards andfavours actions directed at controlling the sources of these hazards.

34. Such tools require an administrative framework that reflects the partnership between authorities in environment and health and other relevant sectors at all levels of management. Partnership with finance departments is particularly important, since it permits the use of economic and fiscal instruments.

35. The main environmental health management tools are:

- an environmental health information system
- the identification and assessment of environmental health hazards and risks
- a framework of enforceable legislation
- additional control measures, including economic and fiscal instruments
- environmental health services
- professional education and training
- public information and health education
- public participation
- research and technological development.

These tools are considered in greater detail in paragraphs 65–72 below.

3.5 Sharing responsibility among all economic sectors

36. The European Charter on Environment and Health and the HFA strategy, as well as the report of the WHO Commission on Health and Environment,UNCED's Agenda 21 and the EU's Fifth Environmental Action Programme, all recognized that economic sectors should share responsibility for achieving an environment supportive to health, mainly because the environment and health problems that they frequently cause cannot be resolved unless measures are taken by these sectors themselves. Therefore, the departments of the environment and of health should be recognized as key partners in the planning of policies related to agriculture, energy, industry, tourism, transport and others, in order to ensure that appropriate advice is given and that mistakes, which are often very costly to rectify, are avoided. The principle that prevention is better than cure has already been endorsed in the European Charter; prevention may also be much cheaper.

37. However, it would be naïve to suppose that such intersectoral partnerships are easy to achieve. It has to be recognized that the constitutional reasons for the separate existence of different departments will be reflected in different and, indeed, sometimes conflicting interests and priorities in the environment. These issues will have to be confronted and resolved if real and lasting improvements in environmental health are to be achieved.

3.6 Promoting international concerted priority actions

38. Broader action and collaboration among Member States, and stronger cooperation with other international and nongovernmental organizations in environmental health, are among the main components of the WHO global strategy. The importance of international collaboration is also emphasized by the European Charter:

> "Member States of the European Region should ... strengthen collaboration among themselves and, where appropriate, with the European Community and other intergovernmental bodies on mutual and transfrontier environmental problems that pose a threat to health" (3).

39. Accordingly, much bilateral and multilateral collaboration already exists in Europe (some with the participation of WHO/ECEH), especially among particular economic or geographical groupings of countries, or related to important international environmental health issues.

40. With the substantial increase in the number of Member States of the European Region of WHO, it is now possible to extend cooperative initiatives throughout the Region, using, where appropriate, existing treaties, conventions and other types of agreement or internationally binding instrument. UNCED's Agenda 21 emphasizes the importance of international cooperation to achieve sustainable development, and this is also recognized in the EU's Fifth Environmental Action Programme, which points out that no single nation, or even group of nations, can effectively solve such problems as those arising from the transboundary transport of pollutants.

41. Furthermore, even where problems are perceived as local issues, collaboration between governments and with international organizations can result in sound decisions for using available resources most effectively, by sharing experience and by coordinating joint efforts in research and development. International actions should therefore be seen as an effective tool in supporting Member States in their efforts to achieve their long-term environmental health policy objectives.

42. Scientific, technological and funding support in the interest of equity in environmental health and solidarity within the European Region is an important element of the strategy for moving towards a better European environment. And there is, too, an element of enlightened self-interest for those countries providing support for actions to improve the environment and health in other Member States.

43. In selecting the international actions proposed in the section headed International Action as part of the EHAPE, emphasis has been given to solving those priority environmental health

problems which have a strong international dimension and to filling gaps in existing international programmes and projects. A key instrument for effective implementation of the EHAPE is the partnership of international organizations that share responsibility for achieving environmental health objectives in Europe. The proposed actions are not, therefore, restricted to WHO, or the health sector alone, and are based on foreseen partnerships between international organizations and collaboration by all relevant sectors.

44. The success of this Action Plan will be dependent on the commitment of all Member States to developing and implementing their own environmental health action plans and to achieving the objectives of related international conventions and agreements. As indicated above, these efforts by countries should be supported by international organizations within the framework of their mandates and programmes. The multisectoral nature of environmental health actions requires the coordination of international as well as of national efforts.

VOLUME 2

ACTION IN COUNTRIES

CHAPTER 1. INTRODUCTION

45. Planning of action in countries is a complex process, as it presupposes the existence of support activities and infrastructures without which no plan for the promotion of environmental health can be realized. The scale of the activities and infrastructures required will depend on the scale of the environment and health problems to be tackled, but no country can expect to deal with environmental health problems effectively without creating an adequate support basis.

46. In terms of scope, the actions proposed below are aimed at the prevention and control of exposure to environmental agents or circumstances capable of direct adverse effects on health or wellbeing, and of the activities that give rise to them. Factors that interact with environmental agents in determining the state of health of a population, such as smoking, alcohol and drug abuse, eating a poorly balanced diet, and socioeconomic and demographic conditions, are not considered.

47. While the interactions of environmental health policy with, and its dependence on, economic policies are acknowledged, they will not be considered here except to note that protection of the environment, and of health as related to it, may be expensive in monetary terms but is often less so than remedial measures: thus prevention, at the planning stage, followed by appropriate maintenance, will generally be less costly than, for example, the repair of old plants or the clean-up of a contaminated environment. In addition, economic activity creates the wealth that provides the resources for environmental protection and the improvement of health and wellbeing. In setting priorities and earmarking resources commensurate with the health gains to be achieved, decision-makers will be faced with difficult choices.

48. Taking into account the diversity of European countries in terms of their economic, political and social development and cultural background, it is obvious that environmental health action plans have to be formulated at country level as a set of short-, medium- and long-term objectives to be met within a realistic time-frame, based on identified priorities and the technical and financial resources available. This approach will enable Member States at different stages of development, with different environmental health priorities and different economic and technical capacities, to achieve the agreed long-term European targets within realistically determined time-scales.

49. The actions can be classified in three groups according to the following criteria, which can be used to identify problems in environment and health and to determine the time sequence of the actions proposed:

- the nature and extent of the environmental health hazard,i.e. the nature and severity of the health effect and numbers of people at risk, including those in vulnerable groups;
- evidence of a worsening trend in the severity of an environmental health problem;

- the technical feasibility and affordability of solutions (at national or international level);
- likely health benefits in relation to the inputs required for effective environmental intervention.

50. The timing of actions is also an important consideration; those that can be carried out reasonably soon are likely to take precedence over those that can only be undertaken after longer delays, because they require time-consuming planning and the development of special infrastructures.

51. Group 1 actions concern the basic requirements for environmental health. They aim at preventing or mitigating conditions whose environmental causes are well established and can give rise to widespread and often acute health effects. The conditions would worsen with time if not brought under control. Control may yield immediate benefits, roughly in proportion to the magnitude of the investment, that will be easily recognizable by the public. In addition, most such control measures are technically feasible at reasonable costs.

52. The main objectives of actions in this group are to prevent the clearly attributable health effects of environmental factors, to prevent accidents and to limit disaster damage.

53. Effective measures for attaining these objectives include:

- provision of easy access to an assured supply of safe water for every home;
- control of microbial contamination of food and water supplies;
- regular collection and safe disposal of community waste;
- control of air pollution "hot spots" (e.g. urban areas prone to winter or summer smog; lead emissions from industry and motor vehicles);
- prevention of accidents in the home, at work and on the road;
- land-use planning and control, as a means of preventing exposure of communities to pollutants in air, soil and water;
- development of plans for prevention of and response to natural disasters and major industrial and nuclear accidents.

54. Group 2 actions concern the prevention and control of medium- and long-term environmental health hazards. Causal relationships may be more difficult to establish at existing environmental concentrations, but the potential for adverse effects on health is recognized. They include long-term effects from both chronic and shorter-term exposures; some of these may be irreversible effects, associated, for example, with increased cancer risks. The benefits of the action may only appear after many years, although when the actions lead to rapid and marked reductions of air and water pollution, their value will be rapidly appreciated by the public.

55. Decisions on what actions to take may involve consideration of a number of environmental factors potentially capable of adversely affecting health. The essential elements in the selection process are hazard identification, health risk assessment and the setting of priorities based on health impact and the timeliness, feasibility and affordability of the intervention.

56. The measures envisaged may be very complex and impinge on many different fields. Thus, the control of air pollution to accord with WHO's air quality guidelines could involve the control of emissions from industry and from energy sources; control or reduction of vehicle emissions; reduction or at least stabilization of traffic density; technical development of motor vehicles and adoption of low-energy engines; and balanced development of transport options, including public transport. Intersectoral partnerships are essential not only for dealing effectively with such problems but also for preventing such environmental health risks in the long term, by achieving changes in production technologies and consumption patterns (see para 66).

57. The following actions may be included in Group 2:

- monitoring ambient and indoor air pollution to identify where preventive or corrective action should be taken;
- improvements in municipal and industrial wastewater treatment;
- water management to achieve accordance with WHO's drinking-water quality guidelines;
- improvements in occupational health and safety;
- improvement of degraded urban environments;
- measures to ensure safe use of agricultural chemicals;
- control of chemical and radiation hazards with potential long-term effects;
- protection against marine algal blooms;
- building partnerships between environment and health and economic sectors, and improving public participation, to achieve changes in production and consumption patterns, with the objective of preventing environmental hazards to health in the interests of sustainable development (see paras 69–71).

58. Group 3 actions concern the promotion of human wellbeing and mental health rather than the prevention of disease. Perception of the environment as unpleasant imposes stress on the affected population. Different factors may be perceived as unpleasant by different groups of people, and so considerable expense could be entailed in attempting to satisfy everybody. Thus, even more than with Group 2 actions, priority-setting is crucial here to ensure the most effective investment of resources. Since such priority-setting will involve considerations of public perception, public education and information are essential if the limited funds available are to be invested appropriately. Public willingness to pay is also relevant. On the other hand, a good environment can enhance the quality of life. Environmental planning can support the formation of local social networks. Involvement of communities in planning and maintaining their surroundings will increase awareness of the long-term benefits for health and wellbeing of measures to protect the environment.

59. Tasks would include the control of or protection from environmental nuisances such as:

- noise;
- odours;

- unsatisfactory recreational water quality, including formation of freshwater algal blooms;
- deterioration of landscapes and of urban recreational and green areas.

60. Common to all groups is the consideration that, because some environmental improvements may be expensive and their impact on health uncertain or difficult to quantify, countries need to consider carefully how far they can afford each element, having regard to its cost and its likely yield in terms of gain to health or wellbeing. Some environmental measures may give rise to health benefits of value greatly in excess of their costs, even in the short term, but require technical competence not readily available in the country, or developments of infrastructure not yet in place. In drawing up and implementing policy on environment and health, it is vitally important that the effectiveness and affordability of an intervention are carefully considered in each case and that, for pollution, priority is always given to interventions aimed at controlling its source rather than the ambient level to which the source gives rise.

61. Given the limited resources available for environmental health improvement in many countries in the Region, the purpose of this grouping of actions is to suggest where the best "value for money" is likely to be obtained, in terms of health benefits in relation to the inputs needed for different options for environmental intervention. In addition, its aim is to encourage Member States to identify and categorize their own environmental health priorities and strategies, recognizing the differences between the three groups and the effects these differences are likely to have on costs and time-scales for targets in their own action plans. In this way countries will be able to determine their own short, medium and long-term priorities.

62. Groups 1, 2 and 3 are not intended to be prescriptive about the order in which strategies should be implemented. But no country can afford not to take steps to deal with group 1 problems, and many are already doing so effectively. Likewise, it would be unreasonable from a public health point of view to divert resources to group 3 actions if severe group 1 problems remained unsolved.

63. Finally, this arrangement in groups applies mainly to corrective action. However, even countries still struggling with the problems dealt with in group 1 would be wise, and would find it cost-effective, to achieve prevention by, for example, installing new refineries away from populated areas to avoid exposure to unpleasant odours, by planning new urban road networks so as to minimize future exposure to traffic noise, and by ensuring the protection of water sources through land-use planning. The necessary infrastructure and management tools must be available in order to carry out any of the actions mentioned under the groups above.

64. Country environmental health action plans should be developed jointly by departments of environment and of health by 1997, based as relevant and appropriate on the actions outlined in this and the following chapters. These action plans should have realistic targets and interim milestones for monitoring progress. They should be coordinated, where possible, with any existing country programmes for environmental protection or sustainable development.

CHAPTER 2. INSTITUTIONAL FRAMEWORK

2.1 Basis for action

65. Improvement of environmental health is an essential element in achieving "health for all" and requires joint decisions by a range of agencies with responsibility not only for health and the environment but also for those activities that, by impinging directly or indirectly on the environment, may affect health. Therefore intersectoral cooperation and consultation is essential for effective decision-making in the area of environmental health.

66. Because agricultural, energy and industrial production all have claims, to a greater or lesser extent, on environmental resources, decisions in these areas must be taken jointly with those responsible for the environment. Because many changes in the environment affect health, the latter authorities must similarly be involved in the decision-making process. For a long time this sharing of responsibilities for environmental health has often been lacking, in both western and eastern Europe, and this has led to situations that threaten health which could have been avoided if interdepartmental cooperation had been operating effectively.

67. The environment and health sectors themselves have been partially responsible for these problems. One reason is that environment and health departments understandably have different priorities. Furthermore, formal mechanisms seldom exist by which they can either identify the many priorities that are common to both of them or join forces in making sure that such shared priorities become government priorities and follow up the translation of policy into action. These two sectors are also pressured by different groups.

2.2 Objectives

68.
- To ensure, through the establishment of appropriate government machinery, that decisions and long-term strategic planning affecting the natural environment, and through it health, are taken not merely on the basis of economic factors alone but also with full consideration of potential environmental health consequences, in accordance with the requirements of sustainable development.
- Similarly, to ensure that decisions on economic development at local level are taken in full knowledge of their environmental implications and potential consequences for health, through effective consultation involving not only local authorities and those who stand to benefit financially from the proposed development but also the population that will be affected by the positive or negative outcomes of the decision.

2.3 Actions for consideration

69. Establish at national level, where this is not already in existence, an appropriate mechanism involving representatives of the departments of the environment and of health, working jointly in regular consultation with each other and informed of all decision-making which potentially affects health and the environment.

70. Develop and keep continually under review national environmental health policies. In so doing, those referred to above should cooperate with all other sectoral departments, as appropriate, so as to reach collective decisions in the joint interest of the environment, health and the economic wellbeing of the country.

71. Establish similar though simplified machinery for the same purpose at other appropriate levels, with the capability to identify and assess local problems and develop solutions, taking full advantage of public participation.

72. While ensuring a consistent approach, develop effective delegation of responsibilities from central to local level, in accordance with the principles of subsidiarity.

CHAPTER 3. ENVIRONMENTAL HEALTH MANAGEMENT TOOLS

3.1 Environment and health information systems

Basis for action

73. Monitoring strategies have so far been designed mainly to ensure compliance with regulatory standards for a limited number of defined factors and may not have been sufficiently directed to specific areas of health significance. To be useful and cost-effective, the health-based rationale for monitoring a particular agent must be clearly established, and the protocol for sampling must be designed to provide sufficient (but not unnecessary) monitoring data for analysis and interpretation.

74. Existing databases (e.g. WHO's HFA database, the OECD database, the EC's Eurostat, the UN/ECE Conference of European Statisticians (CES) database and their International Environmental Data Service (IEDS), and UNEP's International Register of Potentially Toxic Chemicals and Infoterra) should be fully exploited.

75. Microbial contamination of food and water has been identified as an important environmental health problem. Many countries in the European Region have the capability to carry out at least basic microbiological monitoring, although difficulties exist in identifying certain important pathogens. Monitoring of chemicals is far less well developed in many countries in the Region. Given the increasing number of chemicals in use, future concerns must include the development of national capabilities for monitoring a variety of chemicals in environmental media, particularly water and food, having special regard to the need to obtain relevant data subjected to quality assurance and quality control.

76. Once a chemical has entered the natural environment, there is the likelihood of movement from the source and of chemical transformation. This can make it extremely difficult to set up an adequate monitoring system. Some means of predicting what will happen to the chemical is essential. Predictive modelling of the environmental fate of chemicals should be carried out and the results used in the design of monitoring schemes.

77. Even in countries with good records of mortality and registers of certain types of morbidity, such as cancer, the linkage of such data with data relating to occupational and general

environmental exposures could be improved. Such linked data can be used, for example, to identify unforeseen health problems and critical groups, industries or geographical areas for further study – particularly if mortality data are available at subnational levels. The variations in the local incidence of some forms of morbidity may be interpreted as an integrated response to environmental factors. Health indicators, with standardized diagnostic criteria, have yet to be fully developed as the basis for a system of monitoring morbidity in order to identify health problems resulting from environmental hazards and populations at risk.

78. To optimize the usefulness of environment and health information systems, it is important to obtain relevant information on each stage in the environment-health chain, for example, on the use of chemicals, emissions/discharges, ecotoxicology (ecological indicators may be particularly sensitive and so provide the basis for a precautionary approach to protection of human health), ambient concentrations, exposure-dose relationships and health effects. This would make it possible not only to predict health effects but also to identify sources and their contributions to overall exposure to particular pollutants and thus facilitate targeted monitoring and control.

Objectives

79.
- To improve the relevance, quality and availability of data on various aspects of the environment related to health (e.g. pollutant levels in air, water, soil, food, body fluids and tissues) for purposes of situation, trend and impact analysis, as required for national environmental policy development and evaluation, as well as for research purposes.
- For the same purposes as above, to improve the value of mortality and morbidity data by making them accessible at suitably low levels of geographic aggregation and by facilitating the possibility of relating them to environmental and other external factors (e.g. occupation, lifestyle) that may contribute to mortality, morbidity or both.
- To develop country-specific environmental health profiles as the basis for defining priorities for action and for monitoring progress.

Actions for consideration

80. Develop capacities at country level for systematic monitoring of environmental exposures and the collection, analysis and interpretation of data. Emphasis should be placed on the relevance and quality of the data, through the use of established routines of quality assurance and quality control, rather than on the amount of data collected.

81. Develop, at national and subnational levels, a network of health statistical databases and the capability for linking their data to information at local level on exposure and other environmental conditions, in order to identify adverse impacts on health from environmental hazards.

82. Ensure that provisions protecting the confidentiality of data do not prohibit the justified and appropriate linkage of data on health by authorized people who would uphold the basic principles of confidentiality.

3.2 Assessment of health-related environmental hazards

Basis for action

83. As emphasized in the European Charter, accurate assessment of environmental hazards and related risks to health is an essential element in management of the environment and is needed to identify the environmental action that can produce the greatest return, in terms of improved health, for the smallest claim on limited resources. Indeed, priority-setting requires the comparative assessment of risks to health of different environmental factors against the cost of controlling them. Assessment of health risks should be, but all too often is not, part of established environmental impact assessment.

84. This is partly because environmental health risk assessment is still limited in its effectiveness by the inadequacy of the information available, especially on exposure. In addition, even with the best possible information, an environmental health risk assessment may not be complete because of difficulties in analysing the complexity of possible interactions in the case of multiple exposures.

85. The existence of vulnerable population subgroups due to factors such as age, genetic predisposition, specific sensitivity, poor nutritional status, underlying disease, and lifestyles and socioeconomic conditions add to the complexity of the task; furthermore, the location and size of such subgroups cannot usually be estimated reliably. But clear identification of vulnerable groups and an attempt to quantify the degree to which they may require additional protection if they are not fully protected by measures aimed at the general population, will become important as relevant data become available and environmental health policies gain in sophistication.

Objective

86. • To ensure that effective mechanisms exist for the identification and assessment of environmentally determined health hazards.

Actions for consideration

87. Develop programmes to improve and harmonize environmental health risk assessment as a management tool for governments and industry, where possible taking into account multifactoral interactions such as multiple exposures.

88. Integrate considerations of health risk assessment in the procedures for environmental impact assessment.

89. Carry out risk assessments for specific risks or populations.

90. As relevant data become available, make allowance in assessments for the risks incurred by well defined vulnerable groups.

3.3 Control measures

Basis for action

91. Much improvement in environmental health has taken place in the last 30 years, especially in western Europe, owing to the adoption of environmental control measures. However, this has tended to result in a patchwork of uncoordinated responses to environmental issues under a number of different authorities, thereby limiting their potential effectiveness. Thus many countries have numerous laws and agreements which are directed at past problems but are inappropriate for the prevention of potential environmental health problems. Furthermore, integrated pollution control is still not widely adopted; instead, measures are taken that merely shift pollution from one medium to another. Finally, the institutional framework for fully implementing control measures may be lacking.

92. Throughout the European Region of WHO there is considerable variation in the nature of the environmental health problems and the resources available to deal with them. The most effective control measures will be those best suited to particular national and local circumstances. In countries undergoing transition, new political systems will demand new approaches to implementation and enforcement of environmental control, with greater decentralization, the use of incentives and more self-regulation. Flexibility in the use of different control measures is likely to be more effective than reliance on one particular approach.

93. The regulation of environmental risks to health can be introduced at various points in the pathway from production to human impact. Regulations can relate to:

- the source of emission or discharge of waste substances;
- ambient levels of waste substances;
- the supply, transport, use and eventual disposal in the environment of industrial or consumer products;
- exposure of humans to noxious substances or products.

94. The need for regulation will depend upon the following factors for each environmental threat:

- severity and frequency of damage to health;
- size and susceptibility of the population exposed;
- environmental distribution and persistence.

95. Environmental improvement can be achieved through legislation and enforcement by the state and its direct agents, such as inspectors, or by voluntary agreement and cooperation between the private sector, government and communities. The history of environmental improvement and protection has often been marked by initiatives at local level that show the

way for the development of national policies. Promotion of subsidiarity should encourage this pattern.

96. When regulation by the state is used, it must be enforceable and enforced. Regulations that are unenforceable or unenforced are mere exhortation and are unlikely to contribute significantly to protection of the environment or of health. It is also important that controls are reviewed and unnecessary or out-dated controls abolished, in order to release resources for more effective action on current problems.

97. Within the general framework of legislation on environmental health, issuing improvement notices can be useful. Using this approach, regulatory authorities draw up a programme of required improvements with a timetable for their achievement, when a particular activity has been found in breach of laws and regulations. Failure to comply with the agreement set out in the improvement notice can result in court action and penalties, which can include closure.

98. Countries have often found that voluntary agreements can be a useful mechanism for achieving environmental improvement earlier than through legislation. However, public opinion is not always content with voluntary agreements between the state and the private sector, if the agreements fail to go as far as public opinion considers legislation would in controlling risks.

99. When voluntary agreements are entered into, there must be a reasonable belief that they will be honoured and that some alternative course, such as regulation, will be available to permit enforcement if they are not.

100. In the design of both compulsory and voluntary controls to protect the environment, it is useful to have standards against which the effectiveness of the control can be judged and monitoring systems to measure performance in meeting those standards. These standards can thus be the focus of regulations or agreements. Standards are also useful as conditions that have to be met for obtaining the support of international, national or local investment bodies.

101. The approach now adopted in the EU provides a general framework for comprehensive regulation with the aim of achieving total quality management, i.e. the simultaneous improvement of product quality, productivity and occupational and environmental safety. The Fifth Environmental Action Programme recognizes that a broader mix of instruments is needed in order to bring about substantial changes in current trends and practices and to involve all sectors of society in a full sharing of responsibility. These instruments include legislative and administrative instruments, market-based instruments (which are intended as a move towards internalizing external environmental costs and "getting the prices right") and financial support mechanisms. One voluntary mechanism aiming at total quality management, for example, is the European Community's voluntary eco-management and audit scheme[a].

[a] Council Regulation (EEC) No. 1836/93 of 29 June 1993 allowing voluntary participation by companies in the industrial sector in a European Community eco-management and audit scheme, O.J. L168/1, 10.07.1993.

Objectives

102.
- To develop an increasingly coherent and consistent body of agreements and regulatory instruments which include provisions for enforcement and review.
- To apply control measures to individual activities on the basis of objective assessments of hazards, without penalizing some activities unnecessarily.

Actions for consideration

103. Establish an operational plan to control adverse environmental impacts on health, using a broad range of measures to meet national and local requirements.

104. Regularly monitor and review existing mechanisms for control of the risks to health from the environment, in particular with regard to the cost and effectiveness of intervention.

3.4 Economic and fiscal instruments

Basis for action

105. Inevitably, decisions about the environment are also often economic decisions. Deciding what to do about the broad array of environmental problems requires allocation and reallocation of economic resources. Since resources are limited, prevention and control of environmental hazards may often result in reduced commitments to meet other concerns.

106. Even under the best of conditions, these are extremely difficult decisions to make. The political changes in Europe, the rise of unemployment and the pressures of immigration, and the increasing need for national funds to pay for health care and other social services place enormous barriers in the way of any new goals, no matter how laudable. Nevertheless, situations exist whereby efficiency and environmental health protection can benefit from technological change.

107. There is a need to encourage rather than stifle innovation and the creation of wealth which, in the medium and longer terms, will provide the resources for the continuing improvement of environmental health. Controls should therefore be commensurate with the risks that they address and, wherever possible, work with market forces. In this context, economic instruments may often be preferable to traditional forms of regulation.

108. Indeed, economic and fiscal instruments that can help influence economic activity in order to secure market decisions that favour environmental improvement have been in use for many years both in western European countries and in CCEE. They have been introduced with the aims of reducing pollution and waste, halting the pace of depletion of natural resources, promoting recycling and improving efficiency and conservation of energy, among other things. The resulting environmental improvements have given rise to direct and indirect environmental health gains.

109. These instruments are financial transfers that affect the supply and demand for goods and services which have an environmental impact. They work by changing market costs in aspects of economic activity that are thought to be critical to environmental quality. The instruments can include marketable permits for "pollution rights", with the objectives of increasing efficiency and reducing pollution costs. They could also include environmental and health accounting/auditing, water charges, energy taxes, clean-up levies, deposit refund schemes, marketable permits, pollution penalties, fiscal incentives and state aid to environmental health activities. Economic and fiscal instruments may also be used to subsidize market access to technical assistance for environmental improvements, thus reducing the cost of such assistance at the point of use. For economic instruments to be effective, they must be carefully managed and monitored.

110. Economic and fiscal instruments are normally used in conjunction with other mechanisms of control, and they often require state intervention involving changes in the law, regulations and fiscal policy. These instruments and means of economic pressure have had some success in increasing the efficient use of energy in western European countries in the past twenty years and in reducing key aspects of air pollution, for instance. They are an integral feature of the policies to make the polluter pay for environmental improvement. In the CCEE and NIS, in the past, subsidies on fuel and the low level of fines and charges for pollution have meant that economic instruments have been inefficient or even counterproductive in environmental control.

111. Each country needs to develop an appropriate combination (which in the EU will often be based on relevant EC directives) of legislation, fiscal policies, economic incentives, community management, and the promotion of market mechanisms to produce sustainable economic solutions. The common requirement for each country will be to establish capacities for introducing, managing and monitoring these new arrangements for environmental protection. Progress can be made using a combination of legislative, fiscal and technical changes, especially in the control of energy use and the reduction of air, water and soil pollution.

Objectives

112.
- To improve the functioning of market and planning mechanisms in the private and public sectors, e.g. through economic incentives, so that they take account of health and environmental values and make prices reflect the full cost to society of production and consumption, including environmental health costs.
- To encourage, through financial incentives, investment in environmental health.

Actions for consideration

113. Encourage environmental health accounting and auditing at local, regional, national, industry and business/commerce levels, in order to reveal critical points where environmental intervention is feasible and cost-effective and to determine the mix of economic and fiscal instruments most likely to facilitate such intervention.

114. Establish a programme to create public understanding of economic instruments (such as internalizing environmental health costs), with the goal of increasing the effectiveness of their application.

115. Establish the interdepartmental intersectoral machinery needed to create and apply financial incentives promoting improvements in environmental health and to review their effectiveness.

3.5 Environmental health services

Basis for action

116. Environmental health services act as the direct interface between policy-makers and those who are subject to that policy. They also have a direct relationship with the general public, in dealing with their complaints and concerns relating to environmental health issues. There is a need for such services to be independent, appropriately targeted and sympathetically responsive to public needs, while representing the views of the empowered authorities, be they local, regional or national.

117. There is a wide range of systems for the administration of environmental health services in the European Region. Many have been based on strong central decision-making, planning and fiscal control. The current trend is to delegate responsibilities to regional and local administrations. However, if this transition is to be carried out effectively, central direction, guidance and support (including financial support, when self-financing is not possible) are required, in order to ensure that the appropriate infrastructures and mechanisms are developed at subnational and local levels (including arrangements for intersectoral cooperation) and that the services provided can meet the appropriate needs of the local communities while operating in harmony with national policies for environment and health.

118. Environmental health services must reflect the multifaceted nature of environmental health. Such services cannot stand alone; they require many different supporting mechanisms. They are built upon and nurtured by a complex mix of policies, legislation, economics, education and training, research and other factors which are addressed in this chapter.

119. The development of environmental health services is largely dependent upon development in other areas. For example, environmental health services cannot make worthwhile interventions if they do not have the backing of solid and well considered legislation. Similarly, without suitable and sufficient education and training in current environmental health issues, personnel employed within these services will not be competent to make positive impacts on environmental health problems.

120. Countries in the Region that are just beginning to come to terms with environmental health problems should take preliminary steps to establish a basis for the development of environmental health services according to their needs and capabilities. In the majority of countries, where the implementation of environmental health policies is well under way, action is now required across a range of supporting areas to further develop these services.

Objective

121. • To develop at national, subnational and local levels appropriate environmental health services, and the necessary supporting mechanisms, to implement policies to control, prevent and correct environmental factors with adverse effects on health and, where appropriate, promote those which enhance human health and well-being.

Actions for consideration

122. Where environmental health services are just being developed at national and local levels, establish basic mechanisms to meet fundamental public health needs, such as monitoring and control programmes related to food and water safety and sanitation.

123. Recognize and encourage the role of local governments and municipalities in providing environmental health services that are flexibly adapted to the needs of local populations, and establish appropriate intersectoral infrastructures and adequate financial provision at these levels.

124. Develop career structures, with appropriate salary scales, for environmental health personnel, thus encouraging their investment in the extensive education necessary to discharge their responsibilities.

125. Develop plans to ensure that, through target-setting and monitoring of performance, environmental health services meet present and future needs.

3.6 Professional training and education

Basis for action

126. Agenda 21 has identified the shortage of people suitably qualified for environmental health activities as a major impediment to improving environmental health management. Training is required in order to create a cadre of environmental health professionals who can manage and facilitate the implementation of a structured programme for the protection of environmental health. Training should take account of geographical, cultural, economic and political diversities and the nature of the environmental health problems.

127. In most parts of Europe, environmental health workers fall into one of three categories: medical doctors, environmental engineers, and environmental/public health scientists or technicians. Education of these professionals in environmental health is highly variable, and such education may be absent from curricula for medical doctors. In some western European countries, there are environmental health officers educated to degree level and trained in broad aspects of the environment and health in terms of technical knowledge, social policy, management and personal skills. In eastern Europe, long-term reliance on central direction has now made it difficult for local managers of environmental health services to develop new and independent strategies.

128. The concept of environmental management for the promotion of health is relatively new, and there is a lack of appropriate educational courses, either in the form of specialized degrees or of supplementary professional education. Recognition of the occurrence of diseases associated with exposure to environmental factors calls for further education of medical personnel in environmental health. Success here will depend partly on the further development of environmental health as a medical specialty, in parallel with occupational or public health, for example.

Objective

129. • To provide education and training at all levels so as to create cadres and teams of environmental health professionals who will be responsible for implementing and managing specific programmes to improve environmental health.

Actions for consideration

130. Introduce, in colleges, universities and other institutions, courses at various levels to educate and train environmental health and other relevant specialized personnel.

131. Develop environmental health as a specialty, perhaps in association with existing related specialities of occupational or public health, with a suitable programme of continuing professional education.

132. Increase coverage of environmental health in curricula for professional training in a wide range of subjects such as medicine, veterinary science, engineering, the law, economics, architecture, town planning, food and occupational hygiene.

133. Provide continuing professional education. Such education is an essential part of the career of environmental health professionals, to help make them aware of new developments so that they can adapt to new situations. Use of exchange fellowships and institutional links should be considered.

3.7 Public information and health education

Basis for action

134. For public involvement (by individuals and organizations) in political decision-making to result in the most appropriate use of resources, it must be sufficiently well informed. This requires significant investment in environmental health education. People need to be able to consider relative levels of risk and to distinguish between the often conflicting claims of industry, regulatory authorities and the scientific community. They also need to understand the impact of individual patterns of consumption on sustainable development.

135. Public involvement is needed in the planning, decision-making and implementation of environmental health policies. This need is justified for the simple reason that success cannot be achieved without it, as shown by campaigns such as those against smoking in

public places or for the adoption of a balanced diet. However, for public involvement to make its appropriate contribution, the many publics which together comprise the "vox populi" must have access to sufficient information to be informed participants. Otherwise, their voice is little more than noise but may nevertheless result in political commitments of public resources to the wrong environmental health priority.

136. A basic step towards good environmental health education is the recognition that public perceptions are often defined and limited by local experience and that fears based on inadequate or misleading information may play a major role in shaping the public's perception of and attitudes toward risk. Educational programmes should result in better public understanding of the connections between individual and community actions and the hazards of exposure. Nowhere perhaps is a lack of public awareness more damaging than with regard to the risks of exposure to ultraviolet radiation.

137. Responsible environmental management and public sector resource allocation require a public that can help make an informed analysis of the severity of problems, of the value of different options for solving them, and of the potential benefits of alternative investments. To have an informed public, it is necessary to increase the quality of the information available to both the public and decision-makers. This requires large investments in research, analysis and evaluation.

138. Once public information and participation have been accepted as essential elements in environmental health policy development and implementation, two fundamental issues remain. Firstly, there is a need to ensure that a greater proportion of schoolleavers than is currently the case are able to understand the scientific information related to environmental health problems. WHO/EURO's Healthy Schools project recognizes this need. Secondly, one must determine through what media the "vox populi" should be heard. Because in most countries, television, radio and the press (and possibly in that order) are the main source of information for the public, and make rather than reflect public opinion, the media have a key role in promoting public awareness of and positive attitudes to protection of the environment and health – and they are entitled to adequate and accurate information, which can be passed on to the public.

Objectives

139.
- To ensure and enhance participation of the public at the earliest stage in environmental health planning, priority-setting and programme implementation. Such involvement should be based on the principle of openness and equal partnership of all involved.
- To foster such active participation by the public, the necessary knowledge of the environment and health should be ensured, through effective health education programmes and the development of easily accessible information sources.

Actions for consideration

140. Build environmental health education into the fabric of educationalprogrammes and further develop WHOEURO's Healthy Schools project.

141. Develop or strengthen nongovernmental organizations in some countries.

142. Develop legal instruments and other means to ensure public participation in the environment and health decision-making process (e.g. through public hearings on siting issues and environmental health impact assessments). Observe the principles of the public's right to know, transparency of interests and equity of access to information, and ensure that relevant environmental health information is provided to target groups.

143. Develop environmental health media courses at university schools of journalism, for example, to improve the quality of information provided to the public and to encourage efforts to reflect informed public opinion on environmental health issues, rather than just the most vocal elements.

3.8 Research and technological development

Basis for action

144. Throughout this section, it has been pointed out that rational management of the environment in relation to health is hampered by gaps in our knowledge of how environmental changes affect health, how they relate quantitatively to health effects, and which population subgroups (e.g. according to age, sex, genetic predisposition, sensitivity, nutritional conditions, pre-existing diseases) are more vulnerable to this or that change in the environment and to what extent. Actual exposures to specific pollutants are often unknown. In addition, the not infrequent exposure to multiple environmental factors that may interact with each other and with other factors (e.g. lifestyles, socioeconomic factors), which themselves may contribute to the causation of the same diseases, makes retrospective attribution of causation to any one of these factors inherently difficult.

145. These gaps can be filled only through well planned and systematic research, especially epidemiological research. Such research should aim at defining indicators of exposure and/or early damage due to environmental agents at molecular, cellular and functional levels through laboratory investigations, and at population level through health surveys using *inter alia* the statistical and other data suggested in earlier sections, suitably broken down geographically. Research should also aim at identifying the environmental factors contributing to the occurrence of unexpected health problems.

146. Because environmental health management involves much more than mere recognition of the need to prevent or mitigate adverse environmental effects on health, research should also be conducted in the technological and economic fields, in order to develop environmental health-friendly technologies and to reveal the extent to which their likely higher costs, compared with traditional technologies, are offset by gains in health and wellbeing expressed in monetary terms. Likewise, it would be useful to devise methods to compare the detriment and gains that a given activity may simultaneously produce on different aspects of health and wellbeing, in order to ensure a resulting net balance in favour of health.

Objectives

147.
- To provide the scientific basis for policies aimed at identifying environmental hazards, assessing risks and reducing or preventing environmental effects on health.
- To provide appropriate technology and other tools for the maintenance and development of an environment that is conducive to health and well-being.

Actions for consideration

148. Promote research in such areas as:
- identification of environmental health indicators;
- development or improvement of methods for hazard identification and risk assessment;
- determination of quantitative dose-response relationships between exposures to recognized environmental hazards to health and health effects;
- assessments of the risks of low-level and complex environmental exposures and of the effects on health of interactions between socioeconomic and lifestyle factors and environmental agents;
- identification of groups particularly vulnerable to exposure to certain environmental hazards;
- identification of damage-causing mechanisms in the general population and in vulnerable groups.

149. Improve methods of exposure measurement and modelling to give a realistic picture of the actual exposure of selected individuals and populations, and identify molecular, cellular and functional markers of early effects.

150. Encourage technological research and development to make possible waste minimization, re-use and recycling and to provide low-cost methods of monitoring food, air and water quality and product safety.

151. Develop methods for comparing the costs of preventive action achieved through technological advances and other means and the gains expected in terms of health protection and promotion; also for comparing the detriments and benefits to health that the same economic activity may simultaneously bring about.

CHAPTER 4. SPECIFIC ENVIRONMENTAL HAZARDS

4.1 Water

Basis for action

152. The secure and ready availability of drinking-water of good quality and adequate quantity remains the backbone of public health services and of affordable disease prevention.

Waterborne bacterial, protozoal and viral diseases remain a major cause of morbidity and an important contributor to mortality. They are of widespread importance, particularly in countries in eastern and southern parts of the Region. Recent outbreaks of cholera in Romania, the Russian Federation, Tajikistan and Ukraine, as well as the widespread occurrence of hepatitis A in the CCEE and NIS, underscore the need for water quality to be assured on a regional basis.

153. There are still many industrialized and highly urbanized areas throughout the Region where liquid waste is untreated, or only partially treated, before discharge. However, except in circumstances such as outbreaks of cholera, typhoid or hepatitis, there are few well founded studies designed to identify the incidence of human illness associated with contaminated water sources. The overall incidence of waterborne infections is difficult to quantify because medical advice is sought only in the more serious cases.

154. In rural areas, levels of nitrate in drinking-water contaminated with animal manure and fertilizers sufficient to cause acute health effects (methaemoglobinaemia in infants) have been reported in several CCEE. There is also concern about groundwater contamination in some western European countries, particularly in intensive farming areas. In addition, acid precipitation has resulted in the mobilization of aluminium and heavy metals in streams and lakes in some parts of Europe, affecting their ecological balance and posing a potential threat to human health, particularly among fish-eaters.

155. Throughout Europe, concern about pesticide contamination of ground and surface waters is growing, though the evidence of waterborne disease in humans from this cause is still ambiguous. However, greater care of the sources of drinking-water in rural areas is needed: partly because the levels are generally higher than in cities, partly because the necessary water treatment is more difficult and costly, and partly because the rural population is usually more dispersed and difficult to protect. In certain areas, effluents from industrial plants or leachates from waste disposal dumps result in undesirable levels of heavy metals in surface waters.

156. Water shortages are threatening communities in many Member States. Some shortages have resulted from natural conditions, compounded by poor agricultural practices and irrigation projects leading for instance to salinization; some from constraints on the utilization of sources due to contamination of groundwater resources by industrial and agricultural chemicals; and some because the distribution system has deteriorated to the point where water availability for basic hygiene is spasmodic, uncertain and liable to contamination.

157. It may also be expected that water shortages ultimately affect economic growth in sectors such as manufacturing and tourism. This seems likely to be the case in some Baltic, Black Sea and Mediterranean resort areas, which are also threatened by the inadequacy of wastewater treatment plants during peak season or by the poor design of outfalls. Both factors contribute to the poor quality of coastal waters, rendering them unsuitable for bathing, and to the impairment of coastal seafood resources through direct contamination or indirectly through the production of toxic algal blooms.

Objectives

158.
- To protect water sources and supplies from biological and chemical contamination.
- To secure, on a sustainable basis, the continued availability of water for human consumption of a quality at least consistent with the WHO guidelines.
- To reduce the incidence of waterborne microbial diseases.
- To reduce exposure through drinking-water to toxic chemicals from industry and agriculture.

Actions for consideration

159. Make every effort to provide safe (and organoleptically acceptable) drinking-water. Where drinking-water is in need of disinfection, chlorination remains an excellent, economical and simple method to achieve it in most areas.

160. Devise a programme for sustainable water resource management at the appropriate level, commencing with public health protection, followed by provision for livestock and food crops, energy, manufacturing and non-edible agricultural crop industries, and other uses. In order to meet the probable needs of water and wastewater treatment within a minimum timeframe of 20 years, the programme should aim at reducing water consumption through avoidance of losses from leakages in the distribution system and through more efficient and sparing use, encouraged, where appropriate, by economic incentives.

161. Ensure the maintenance and longevity of community water and wastewater systems through careful management and frequent inspections, in particular by detecting and repairing leakages and by monitoring the operational conditions of wastewater treatment plants so that receiving waters are not made unfit for further intended uses and the rights of downstream users are protected.

162. Keep the drinking-water supply under continued monitoring according to schemes appropriate to local circumstances.

163. Protect and control areas intended for recreational uses, particularly bathing.

164. Apply agricultural chemicals and manage livestock in such a way as to achieve a better balance between the needs of agriculture and the protection of drinking-water resources.

4.2 Air

Basis for action

165. Action to control air pollution is required mostly because of the effects it has on the respiratory system. Exposure to a host of gaseous agents – primarily from fossil-fuel power and heating plants (SO_2) and from road traffic (NO_x and VOCs) – and to suspended particulate matter from energy production, diesel engines and ore processing increases bronchial and lung morbidity and exacerbates pre-existing respiratory pathology. The

interactions between NO_X, VOCs and oxygen under the effect of sunlight result in the production of ozone, hydroxy radicals and a number of organic irritants that induce lacrymation and mucosal irritation. Chronic respiratory diseases and asthma are aggravated by some forms of air pollution, lung function may be reduced, and exposure may contribute to the incidence of lung cancer.

166. Although actual measurements of outdoor air pollution are only available for about 30% of the urban European population west of the Urals, reasonable extrapolations suggest that several tens of millions of people may be exposed, at least transiently, to air pollution levels exceeding the values set out in the WHO air quality guidelines for Europe (see paragraphs 278–282), giving rise, in certain areas and at certain times of the year, to significant increases in respiratory morbidity. In addition, air carries lead from vehicles and industrial emissions. When deposited on the ground and on vegetation, this will contribute, in some places significantly, to the intake of lead by children, with possible serious consequences for their neurobehavioural development.

167. While the major current concern is with pollution outdoors (partly because more information is available on levels of ambient than of indoor pollutants), most people spend more of their life indoors, where air pollution can be aggravated by cooking with gas stoves, particularly if improperly vented, and the use of open fires. The low rate of exchange with outside air resulting from energy conservation measures enhances the concentrations of pollutants. Air pollutants of particular concern indoors include tobacco smoke and, particularly in damp conditions, biological agents capable of provoking allergic reactions. Children are most at risk of related respiratory illness. (Radon is discussed in paragraphs 205–206, 211, 214.)

Objectives

168.
- To provide information on indoor and outdoor air pollution levels throughout Europe, especially in urban areas.
- To adopt the measures required to bring, by a date to be specified nationally, air pollution levels below the health-related WHO air quality guidelines.

Actions for consideration

Monitoring strategy

169. Install systems, where these do not exist, in European cities with severe air pollution problems to monitor such major air pollutants as SO_2, NO_X, total suspended particles and dusts, VOCs, ozone and lead. While the number of stations, their location and the types of measurement they will undertake should be determined by local circumstances to provide a broad picture of the degree of pollution related to the population of urban areas and of changes in the situation, international guidelines for siting and operation of the stations should be developed.

170. Adopt harmonized measurement methods and protocols, following standard analytical and sampling procedures, and follow established quality control and quality assurance procedures, so as to maintain a constant degree of reliability, comparability, sensitivity, accuracy and precision. To that effect, participate in intercalibration exercises organized both nationally and internationally to confirm the comparability of data.

171. Organize data on exposure and suspected effects in such a way as to obtain information on the quantitative relations between the two.

Stationary sources(see also paragraph 283)

172. Design new industrial plants so that they make the most efficient use of raw materials, including fuels, apply low-waste technologies and ensure the lowest emissions that the best technology allows, within the economic constraints that prevail locally. The assessment of environment and health impacts should become a prerequisite of planning new industrial and energy plants.

173. Take energy conservation into consideration when constructing or improving dwellings and other buildings, weighing the energy-related benefits against the potential risks from increased concentrations of indoor pollutants resulting from low air exchange rates due to energy-saving measures. Individual, central or district heating systems should be designed so that they make efficient use of high-quality fuel whenever economically available. When it is not possible to use high-quality fuels continuously, alternating the use of more and less polluting fuels according to meteorological conditions can prevent critical concentrations of air pollutants from being reached. Cogeneration should be used whenever economically feasible.

Mobile sources

174. Formulate policies on the control of pollution from road traffic so that they are closely tied to policies on transport, urban traffic planning and road traffic safety.

175. Design new vehicles so that they meet exacting specifications for fuel consumption and emissions and are equipped with the technologically best emission control devices available; improve fuel quality so that harmful emissions from motor vehicles are reduced.

176. Check at regular intervals emissions of gases and particulates from motor vehicles – both petrol- and diesel-powered – with requirement to rectify non-compliance with standards.

177. Strongly encourage the use of lead-free petrol in all petrol-powered engines, initially through financial incentives, with the aim of phasing out the use of leaded petrol throughout the Region by 2010.

178. Promote the development and use of vehicles powered by alternative sources of energy.

4.3 Food

Basis for action

179. Contaminated food causes a considerable proportion of gastrointestinal infections in Member States. The great majority of these go unreported when the discomfort and debilitation are either short-lived or commonplace events in communities, or when the link between the consumption of food and subsequent illness is not recognized.

180. In the last few decades the frequency of gastrointestinal infections has been rising sharply throughout the world, and in Europe in particular, sometimes assuming epidemic proportions. Part of the blame is to be placed on the quality of drinking-water, especially in some of the CCEE and the former USSR, but much is due to infectious agents ingested through contaminated food – particularly *Salmonella* and *Campylobacter*. At present, the proportion of the population at risk each year from infections due to *Salmonella* or *Campylobacter* contamination of food and water is estimated to be of the order of 15% in Europe, with a very high cost to society.

181. A number of new viral and bacterial agents, and of new strains of those prevalent in the past, each with different ecological peculiarities, have made identifying the agents and the means to prevent their spread and control their effects an ever more complex task. In addition, protozoa and helminths continue to be a major problem in large areas of the Region.

182. Chemical contamination of food, though widespread, is at levels that in general do not justify concern of the same order as that for microbial contamination. Exceptions arise where soils are heavily polluted, especially by metals such as lead or cadmium. However, the public is in general much more aware of the risks of chemical contamination of food than of those resulting from microbial contamination.

183. Contamination of food can occur at virtually any of the many links in the chain of events between the farm and the table. The consequences of contamination have expanded with the increasing centralization of food production, processing, storage and distribution. The wider use of refrigeration, while improving the shelf life of foodstuffs and avoiding spoilage, also requires precautions in handling food at household level of which consumers are still all too often unaware.

184. The critical points along the chain are: animal feed that contains inadequately treated animal protein; mass production of farm animals; use of untreated or heavily contaminated municipal wastewater in food crop irrigation, especially when dispersed just before harvest or over snow; inadequate conditions of transport vehicles; inadequate refrigeration and reheating; and unhygienic preparation of food. The risks are compounded when water of poor bacteriological quality is used for washing or cooking purposes.

Objectives

185.
- To reduce the incidence of and if possible eliminate diseases associated with contaminated food.
- To ensure that food safety is put first in each process and in each part of the food production and distribution chain, from primary producer to consumer.
- To improve public awareness of food safety and hygiene.

Actions for consideration

186. Introduce, where appropriate through legislation, both microbiological and chemical quality standards and protective measures, including codes of good manufacturing practice, that are enforceable at each stage of the chain from the farm to the consumer. Use should be made, as appropriate, of recommendations of the WHO/FAO Codex Alimentarius Commission.

187. As enforcement is often the responsibility of several levels of government and several agencies at each level, close intersectoral cooperation within countries is necessary to provide effective control, with accountability clearly defined and an enforcement authority identified at each level of responsibility.

188. Because food is widely traded across borders, ensure consistency of controls relating to food safety according to relevant WHO/FAO Codex Alimentarius recommendations and EC directives, and their implementation among all countries throughout the Region.

189. Identify critical points of hazard control along the chain from production to consumption, in order to apply food safety management procedures most effectively. Incorporate in this hazard control approach food contamination monitoring based on a carefully designed system with clear objectives.

190. Introduce or strengthen schemes for the monitoring, control and eradication of zoonoses in both animal and fish farms.

191. Require education and training in food hygiene for food producers and handlers, in order to promote the adoption of careful procedures and awareness of the risks to health that neglect of such procedures entails. Special attention should be paid to educating those dealing with vulnerable populations in schools, hospitals and similar institutions.

192. Offer food hygiene education to all school pupils. Education through the media should extend to adults responsible for food preparation in the household.

193. Investigate outbreaks of food poisoning and record the causes, together with an account of the remedial action taken where this affords the opportunity of giving instruction in, and improving on, controls to prevent foodborne disease.

4.4 Solid wastes and soil pollution

Basis for action

194. In all Member States there is widespread public apprehension about health and safety in relation to management of the growing amount of wastes[a] in need of disposal. Its expression is most marked in public reluctance concerning the establishment of new waste disposal sites, especially sites for the disposal of industrial wastes. This appears to stem partly from a past history of inadequate, and sometimes illicit, waste disposal practices; partly from fear of the effects of chemical wastes on health and the ecosystem; and partly because of a perceived social stigma attached to living near a disposal site. Public rejection of necessary new disposal sites is now widely seen as one of the most intractable problems in community development.

195. It is of fundamental importance for good public health protection that community wastes are frequently collected and disposed of in a safe manner. Municipal wastes, the amounts of which are increasing in most communities, are typically heavily contaminated with pathogenic microorganisms and should not be allowed to accumulate where ready access, particularly by children, is possible. Properly controlled and regulated landfilling and incineration afford safe methods of disposal.

196. For a long time, industrial wastes have been disposed of in landfills without adequate precautions against leaching of metals and organic chemicals, sometimes resulting in serious and irreversible contamination of ground waters, rendering them unfit for human consumption. Inadequate development of systems for waste disposal are particular problems for NIS and CCEE. For some industries, it is feasible to introduce production processes that minimize the production of waste or make possible their partial recycling.

197. Wastes from mines are often particularly troublesome due to gradual toxic discharges into the environment. The mining of gold, toxic metals (such as lead and mercury) or uranium, and of sulfide-containing ores, requires close attention. Waste from abandoned mines often poses special difficulties because costly remedial work may have to be conducted at public expense. Collapsing coal mine tips have been the cause of serious accidents.

198. All Member States experience problems with chemical pollution of soils, some to a marked degree. Most can expect remedial work to be very costly. In some limited but heavily populated industrial areas, the soil has been contaminated with cadmium (e.g.in Belgium) or lead (e.g. in Poland), causing concern about the health of local inhabitants.

199. Medical wastes in most Member States need to be better managed, to protect health care workers against infection with hepatitis B, for instance, as well as to avoid unnecessary disposal costs. Pre-disposal separation of wastes according to their infectious and hazardous characteristics is becoming accepted as good practice.

[a] Radioactive wastes are dealt with in the section on radiation (paragraphs 205–216).

Objectives

200.
- To ensure the safe and nuisance-free disposal of (urban and rural) community and industrial waste, in order adequately to protect the health of workers and the public during collection, transportation, treatment and final disposal.
- To minimize waste production and promote recycling, reuse and energy recovery (see paragraphs 269–270).
- To identify contaminated sites, assess the risks they pose to health and the environment and reduce or eliminate those risks deemed unacceptable.

Actions for consideration

201. Develop and enforce legislation at country level in order to exercise close control over the processes of collection, transportation, treatment and disposal of community, industrial and medical waste, so as to reduce risks to human health and minimize public inconvenience. Responsibilities should be clearly identified at each stage of the above processes, which should cover:
- the need to minimize creation of waste at the production level by all means, including the use of waste technology and the reuse of waste (for example, in the case of solvents);
- the desirability of waste separation, e.g. to identify hazardous and/or recyclable wastes;
- the need for careful design, under specific legal requirements, of all disposal facilities (including collection and transport vehicles);
- the training requirements and opportunities for waste handlers andtransporters and for operators at disposal sites and plants (including workers dealing with hospital waste) and their supervisors and employers;
- the need for compliance monitoring and for tracking hazardous waste from source to disposal;
- the need for handling of waste to be dealt with as far as possible in the country where it originates.

202. Identify actual or potential threats to public health or the environment from active or abandoned community, industrial, mining and military waste disposal sites and the sites of important spillages of chemicals, and assess the risks they pose. When unacceptable risks to health or the environment are identified, undertake appropriate remedial work.

203. When considering the disposal of a particular type of waste, take into account the environmental costs and benefits of each disposal option – with consideration of the economic costs of the option and of public opinion.

204. Give consideration to the recovery of natural gas (for use as a fuel) from larger landfill sites, of energy from incinerators and of soil-amending products from composting plants. In all cases, a realistic financial marketing plan is essential.

4.5 Ionizing and nonionizing radiation[a]

Basis for action

205. In many areas in Europe with underlying uranium-bearing rocks, occupants of dwellings may be at increased risk of developing lung cancer, as a result of exposure to radon emanating from the underlying ground or, to a lesser extent, from building materials and, in high radon areas, drinking-water. Since the prevention of such exposures in new buildings and mitigation in existing ones are practicable options, the primary need is for identification of relevant areas and houses. Radiation workers may also experience higher than average exposures, and monitoring is necessary to limit their doses to internationally accepted levels. Some countries in the Region do not yet have registers of radiation workers and their dose histories.

206. Public perception of the risks attached to natural and man-made exposures to radiation seems to be at variance with known facts: exposure to man-made radiation gives rise to greater concern than the normally much higher exposure to radon. This may influence political decisions towards the allocation of resources for actions with little benefit to environmental health. There is a need for better communication between responsible authorities and the public on radiation risk assessment and management, for improvement of the former's credibility and for wider public participation in decision-making.

207. No country yet operates a repository for high-level nuclear waste (HLW). The International Atomic Energy Agency (IAEA) expects that this will not happen until 2010. The problem of disposal of HLW needs to be resolved before the long-term future of nuclear power can be assured. Past practices of radioactive waste disposal, together with accidental discharges and nuclear weapons testing, have resulted in serious environmental contamination in parts of the former USSR.

208. A more recent problem is the unauthorized acquisition of and trade in radionuclides and radioactive sources (for instance, from nuclear warheads or radiotherapy equipment). Proliferation of radioactive materials is an issue of global importance.

209. There is currently an increase in the incidence of skin cancers in many European countries. This is attributed to lifestyle factors involving excessive exposure to sunlight. Public awareness of the potential hazards of ultraviolet radiation (UVR) needs to be increased. Continuing depletion of stratospheric ozone in the Arctic is an important potential factor in increasing exposure to UVR among the European population, with possible direct and indirect impacts on human health in the future.

210. Although there is concern about a possible correlation between the prevalence of leukaemia and other cancers in children and the fact of living near overhead power lines, the evidence for such an effect of exposure to electromagnetic fields needs confirmation before any preventive action can be suggested. A recent study from Sweden suggests that less than one additional case of childhood leukaemia a year, in a population of nine million people, may be associated with living near high-voltage power lines. Further research is under way and the position will need to be reviewed when results are available.

[a] See also the section on nuclear accidents (paragraphs 224–229).

Objectives

211.
- To identify dwellings and workplaces where radon concentrations exceed the WHO guidelines action level and to introduce remedial measures, with priority according to the extent to which that level is exceeded.
- To resolve the issue of safe storage and disposal of high-level nuclear waste and prevent unauthorized access to radioactive materials.
- To minimize unnecessary exposure to radiation and to ensure radiation protection at work.
- To alter behaviour patterns in those European populations where sunbathing habits result in increased risks of developing skin cancer.
- To encourage informed public participation in decision-making on environmental health issues related to radiation hazards.

Actions for consideration

212. Mechanisms for monitoring levels of exposure to ionizing radiation in occupational environments should be established in those countries of the Region where this is not done and where radiation workers are not registered.

213. Efforts should be made to assess the radiation doses received by those living in areas of high environmental radioactivity of the former USSR and health surveys should be undertaken where indicated.

214. Countries with radon-prone geological areas should have targeted action plans for monitoring existing dwellings in these areas, in order to identify priorities for remedial action, and should adopt building standards for new houses in high-radon areas.

215. Government authorities should provide the media and members of the public with comprehensive and comprehensible information on specific environmental radiation issues, to facilitate informed debate.

216. Several European countries have already issued public health warnings on the cancer risks of suntanning, together with advice on protective measures and information on sensitive population groups. Such actions are recommended for all Member States, particularly where sunbathing is a cultural habit.

4.6 Natural disasters and industrial and nuclear accidents

Basis for action

217. Many natural disasters are due to decisions concerning land use and the siting of settlements that were taken sometimes decades prior to the event. Foresight could have avoided or at least minimized the eventual damage, if the possible long-term consequences of actions such as deforesting steep slopes or changing the water regime of rivers had been taken into

account, or if buildings had been constructed with knowledge of the seismic characteristics of their sites.

218. Industrial accidents are more common but have produced far fewer casualties among the public from the release of toxic material – at least in Europe. Release of radioactive material from one of the Chernobyl reactors, however, has caused the largest accidental contamination problem so far, with profound impacts on the environment and health, forcing the evacuation of a quarter of a million people who have not yet returned to their homes eight years after the event, and inducing thyroid cancer in some children. The possibility of similar accidents occurring in other RBMK reactors in eastern Europe, or in older reactors elsewhere in Europe, is a serious health hazard with transboundary implications.

219. Large-scale accidents and natural disasters are not only the cause of a large number of casualties, they are also the source of physical and psychological effects for those exposed to toxic agents or those who, without being injured, lose all their belongings and often their jobs and need to be resettled in unfamiliar, sometimes inhospitable and often inadequate circumstances. Persistent anxiety may occur in physically unharmed survivors following the acute stresses of disasters. They may be minimized by effective communication and the availability of skilled support services. Uncertainty about and lack of understanding of the environmental health consequences of an accident may aggravate the social, economic and health problems of an affected population.

Objectives

220.
- To limit the consequences of natural disasters, prevent the occurrence and limit the consequences of major industrial and nuclear accidents, and ensure the existence of effective arrangements for emergency preparedness for and response to natural and man-made disasters, in and between countries.
- To ensure that the appropriate levels of government and the relevant public services,as well as members of the public, are fully informed of the probability and potential risks of industrial and nuclear accidents, can put those risks into perspective and understand the action required of them in the event of an emergency.

Actions for consideration

221. Although natural disasters and major accidents will usually involve exposure to different types of environmental health hazard, and different government departments may have lead responsibility, the emergency services involved (for example, fire, police, medical) will be the same. It is essential that the basic elements of disaster and major accident response plans are developed in a coordinated manner to eliminate any possibility of confusion in operation.

Natural disasters

222. In order to try to limit the consequences of natural disasters, assess the environmental health impacts of land use, including the siting of industrial plants, water impoundment schemes and human settlements. The assessment should include a thorough and careful evaluation of the meteorological, hydrological and geophysical circumstances that may arise in the area, and of the potential implications for human life, health and property.

223. Keep in permanent operation a standing emergency control structure in each country with responsibility for (a) planning response to all emergency contingencies; (b) ensuring that people and communities at risk know the action required of them in an emergency; and (c) conducting an early assessment of the damage and needs. The structure should have available on a permanent basis the means for emergency relief, including effective field communication and transport, emergency shelters, and medical facilities and food supplies. It should have the authority to call on the army for logistical support and assistance in field operations whenever necessary.

Industrial and nuclear accidents

224. Design, operate and maintain installations handling or producing toxic or radioactive material according to internationally recognized standards and safety practices, and in such a way that the risk of accidental releases of toxic or radioactive material, or other hazards, is minimized.

225. Exercise effective control over every link in the production chain of all industrial and nuclear plants, including transport of harmful material from and into the plant; failure to do so may result in environmental contamination outside the plant's premises. Such control should be an integral part of regular day-to-day plant management.

226. Ensure that the plant's staff is adequately trained not only in routine operational safety but also in response to emergencies, and that compliance with safety standards is regularly monitored.

227. Undertake regular monitoring of the implementation of safety standards, and updating of staff training in both routine safety operations and emergency response procedures.

228. Develop and test at regular intervals emergency preparedness plans at all appropriate levels, and early warning systems (in line with various international guidelines such as those of UN/ECE, the International Labour Organisation (ILO), OECD, EU, WHO, UNEP, the International Programme on Chemical Safety (IPCS) and IAEA). Responsibilities among the various partners concerned within central government and at local level should be clearly defined and the population at risk made aware of the measures they may be required to take in an emergency.

229. Review and when necessary improve the safety of nuclear reactors, particularly of RBMK reactors in eastern Europe, if necessary through international cooperation, with a view to replacing them as soon as possible.

CHAPTER 5. LIVING AND WORKING ENVIRONMENTS

5.1 Urban and rural settlements

Basis for action

230. More than half of the European population lives in an urban environment. The proportion attains 80% in EU countries. In the European Region of WHO, the rural population exceeds the urban population only in Albania and Portugal. More attention has been devoted so far to the environmental health problems of urban dwellers, while those of rural settlements have been comparatively neglected. This is due partly to the difference in the numbers of people in the two categories, and partly to the relative immutability of the conditions of farmers' lives. Despite the transformation undergone by the rural environment after the Second World War, as a consequence of the introduction of intensive farming and animal husbandry (see paragraphs 289–293, 295, 297) the rural population has largely been spared such common urban problems as lack of adequate housing, overcrowding, and traffic congestion. Its access to health care services has remained more limited, however, and this may explain why infant mortality is generally higher and life expectancy shorter than in most urban communities. Educational, cultural and recreational facilities are also fewer.

231. By contrast, living conditions in many European cities improved greatly in the late nineteenth century (an essential factor in the dramatic reduction in mortality, mostly from infectious diseases) but have significantly deteriorated in this century, especially in the years after the Second World War. These years have seen not only the hasty and often poorly planned reconstruction of housing destroyed by the war, but also, in most countries, a spectacular increase in road traffic. Post-war mechanization of agriculture resulted in unemployment and an influx of rural immigrants seeking work in towns, where job opportunities existed during rapid economic development. But in the current economic climate, unemployment is a widespread and increasing problem in the Region, affecting many industrialized and urban areas. This problem and that of overcrowding or homelessness (see paragraphs 237–239) are aggravated in some situations by the influx of immigrants or refugees.

232. The living conditions of urban dwellers have been affected by other problems, some of which could have been prevented by better city and land-use planning, that remain largely unsolved. The failure of central and local authorities to arrest the decay of many historic centres, or to stem it only by allowing increases in real estate prices, has either left the original dwellers living in inner city slums or pushed them out into poorly built, maintained and serviced suburban tenements lacking the amenities for social well-being.

233. These problems concern both the physical and the social environment. On the physical side, the primary requirement is for sufficient sheltered accommodation provided with water supply, sanitation, cooking and heating facilities, and refuse removal services. Unlike in other Regions, the average space available per person is a problem in only a few countries of Europe, such as Romania and the Russian Federation. But overcrowding occurs in poorer urban communities in many countries and is associated with the spread of communicable diseases, the development of tensions and aggressive behaviour, and an increase in the number of accidents such as burns and scalds. Heating is also generally

available in normal circumstances, although at the cost of giving rise to major pollution problems in those cities where it is based on the use of poor quality fuel. On the other hand, much progress still needs to be made, especially in the CCEE and NIS, with regard to water supply, sanitation and refuse removal, if the levels of servicing prevailing in western European countries are to be achieved throughout the Region.

234. The problems of ambient and indoor air pollution have been considered in paragraphs 165–178. Dampness of living quarters not only favours the growth, in warm conditions, of biological agents such as mites and fungi but also predisposes, when it is also cold, to respiratory tract infections. Noise is an increasing problem in most urban areas, from neighbours, road traffic and, sometimes, the proximity of an airport. Although impairment of hearing is predominantly an occupational problem, residential noise can result in serious stress for those continually exposed to it.

235. Finally, construction faults are important factors in the occurrence of accidents in the home, especially among children and the elderly. It is estimated that about 50 million domestic accidents occur in the Region each year, of which 60 000 are fatal. Closer attention to users' needs could have prevented many such events at little, if any, additional construction cost.

236. The social difficulties encountered to a greater or lesser extent in all cities stem largely from the inequities with which facilities and services are distributed, their availability being too often dependent on the income of the inhabitants of the area. Important examples are lack or poor quality of local schooling, lack of recreational areas, inadequate communications, remoteness from the cultural life of the city, and proximity to polluted areas from industrial activities or disposal of wastes.

237. Above all, and especially during the present recession, those districts that are economically deprived offer fewer employment opportunities than others in the same city. The conditions in these suburban or inner city areas are breeding grounds for alcoholism, drug traffic and abuse, violence and vandalism.

238. These conditions also contribute to the problem of homelessness, which is common in all cities. The causes of homelessness are multiple, but there can be no doubt about the importance of poverty, particularly in circumstances where support from national or local social safety nets is inadequate. Many of the homeless depend on the availability of free shelters and meals, but others resort to "settling" in railway stations or abandoned and unsafe buildings, without heating or sanitary facilities, until moved out by the authorities, who do not always attempt, or are unable, to offer alternatives.

239. The vulnerability of homeless people to communicable diseases (increasingly including tuberculosis) is clear. So is their growing social isolation and diffidence towards the rest of the world, which make them extremely hard to reach. Inadequate statistics make it difficult to estimate reliably the number of homeless people, the underlying causes of their condition and their health status. Nevertheless, the magnitude of the problem can be guessed by considering that, in a number of countries within the European Union, it is believed that those without fixed abode represent close to 1% of the population.

240. Immigrants from distant areas within the country and, increasingly, from abroad are another group likely to be fully exposed to the harshness of the physical and social environment of the poor, both in towns and in rural areas. Discrimination on ethnic, cultural and religious grounds is spreading throughout Europe, often with violent overtones, and is nowhere more evident than in relation to housing.

241. The problem of immigration is further aggravated in some countries by the rising number of refugees driven out of their homes by armed hostilities. By the end of 1992, there were four million refugees, 80% distributed over eight countries. Most of them are in camps, the facilities of which can seldom cope with the increasing influx, despite the continued efforts of international, national and nongovernmental organizations. Apart from their current adverse environmental and health conditions, their eventual resettlement will pose major problems for European countries, both those directly involved in the hostilities and those that have accepted the displaced persons.

242. The difficulties posed by the management of settlements everywhere are compounded, in the CCEE and NIS, by the changing political circumstances over the past few years. Old-established structures have crumbled and, while central planning has been abandoned, it has in most cases so far been replaced not by organized local initiatives but by unbridled market forces. There is therefore a need to develop new approaches to the management of settlements, including environmental health aspects.

243. In western European countries, the inertia and lack of responsiveness to public needs that have too long characterized some municipal administrations have been partly due to their reliance on central government for funding and to the cumbersome lines of administrative authority between the centre and the periphery. Improvement of the situation calls for greater autonomy from the centre to be granted, but only on condition that it is exercised with wide and informed public participation and with complete accountability of local managers at all levels.

244. However, close working links between the relevant central and local authorities are required to ensure that decisions concerning health and the environment are made by mutual consultation and that gross policy inconsistencies between the centre and the periphery are avoided. Improvements in the urban environment require recognition of the relationship between physical, social, cultural, economic and institutional factors and the health and wellbeing of communities. Solutions to problems must take account of such local characteristics and needs and involve local communities in developing and implementing remedial policies.

Objective

245. • To improve social and physical living conditions in settlements, particularly for the disadvantaged, in order to prevent disease and accidents and enhance the quality of life.

Actions for consideration

246. Establish or strengthen a clearly identified authority at municipal level that has responsibility for ensuring the environmental health and safety of its community, with full participation of the community and in close consultation with the corresponding central authority, so as to achieve a degree of national consistency that, however, respects local identities, traditions and needs.

247. Such an authority should, where appropriate:

- map out the problems besetting the community for which it is responsible, in order to devise a corrective action plan and a time schedule for its implementation, in cooperation with neighbouring communities that share common problems and seek common solutions;
- have responsibility for development of the city and reclamation of its decaying districts and develop plans that will meet the environmental, recreational and social needs of inhabitants, avoiding town-planning schemes that have proved inadequate or disastrous in the past or elsewhere;
- strictly regulate the building of new housing, to ensure that it complies with zoning requirements and meets conditions of habitability, safety and durability;
- reduce road transport pressures in the urban environment and the impacts of accidents, pollution and noise, by developing integrated transport policies and improving the effectiveness of alternatives to motor vehicle transport;
- initiate at an early date a survey of dwellings, starting with the poorest, to determine if basic requirements for health and safety are met, and propose essential improvements; these should be achieved, whenever feasible, through cooperation with and within the community;
- pay special attention to circumstances likely to cause accidents in the home and to the remedial measures to be taken;
- make every effort to provide the homeless and the very poor with at least such necessities as sufficient space, easy access to safe water and sanitation facilities, systematic removal of domestic waste, and an adequate public transport service, especially to schools, markets and workplaces.

248. While these tasks are all deserving, in many urban centres only sustained commitments to the improvement of their economic and social conditions will eliminate the root causes of their decay. This will require political determination and steadfast and coordinated action of all government departments at both central and local levels, and not merely of those in charge of health, environment and housing.

5.2 Occupational health and safety

Basis for action

249. Occupational injuries involve perhaps 10 million people per year in Europe, 1% of whom may suffer a permanent, if not total, disability. While 25 000 people are killed annually in

Europe by preventable occupational accidents, risks differ widely between countries and, within countries, between occupations. The costs of occupational accidents have been estimated to amount in some countries to close to 5% of the gross national product. It is therefore clear that society stands to gain major advantages from the effective prevention of accidents. Additional benefits are likely to accrue from the reduction of emissions and effluents and the improved disposal of waste products that will be associated with the increased safety of factory operations.

250. Certain jobs in the mining, manufacturing and construction industries, and in agriculture, fisheries and forestry, have an exceptionally high incidence of injury or disease requiring special preventive measures that are not widely available throughout Europe. Furthermore, vulnerable groups within the European workforce, such as pregnant women, working children, ethnic minority groups, and people who are chronically ill or disabled or are sensitive to particular agents or conditions, may need special protective measures to ensure their health at work, promote equity and prevent adverse discrimination.

251. Nonetheless, although 70% of the people in industrialized countries spend one third of their adult life at work, only about 50% of European workers have access to occupational health and safety services consistent with WHO and ILO standards. This is particularly true of small and medium-sized industries where occupational health and safety services are less available, although accident rates and exposures to other hazards may be higher. Home-based workplaces may totally lack any consideration of occupational health. The improvement and wider accessibility of occupational health services is therefore a necessity in much of the Region.

252. The economic pattern is changing in many European countries, with a major shift from heavy industry and agriculture to services, which entail fewer risks of accidents but where workers are burdened by ergonomic and psychological problems. The latter are becoming increasingly important, although they largely arise from such non-environmental factors as imprecise definition of new work tasks and chains of command, frustrated competitiveness, conflicting demands of work and of family responsibilities, and job insecurity. With unemployment being a major feature of the economic situation in the developed world, a largely new pathology is becoming apparent among the unemployed, but its links to environmental conditions are tenuous.

253. The negative health effects of occupational exposures must be properly documented and recorded, so that occupational health programmes can be designed which reflect the prevalence of important problems in the various work categories, age and sex groups and geographical areas. It is therefore important to harmonize the practices of reporting occupational accidents and diseases at national and international levels. This may be achieved through the establishment of international databases and of international machinery for the dissemination of information on occupational health.

Objectives

254. • To reduce progressively but significantly the frequency and severity of occupational accidents and diseases and narrow the disparities between countries and between high-

risk and low-risk occupations, through the wider adoption of measures that are in force in the best-run workplaces.

- To establish and develop high quality, cost-effective occupational health services as an integrated and basic element of a comprehensive health strategy for the working population of the European Region.
- To ensure eventual access in all countries to a comprehensive occupational health service which reflects the risks to which workers are exposed, giving the most immediate attention to those workers who are at greatest risk of work-related disease and injury.

Actions for consideration

255. Develop or improve existing legislation for controlling working conditions and apply it to all new industries, processes and practices (including agricultural).

256. Apply, through the use of the best available technology, the principle of total quality management (see paragraph 101).

257. Develop, within national HFA strategies, national occupational health and safety services programmes to meet specific national priorities and targets, and encourage small and medium-sized enterprises and the self-employed to invest in occupational health and safety services. Economic incentives may be useful.

258. Through countrywide occupational health and safety programmes, provide training and upgrading opportunities to professionals in sufficient numbers to operate comprehensive occupational health services for workers at risk, with new emphasis on the psychosocial aspects of occupational health.

259. Include aspects of occupational health and safety in factory management courses, thereby enabling managers (a) to take occupational health and safety into consideration when planning, making decisions, or conducting day-to-day operations; (b) to call as appropriate on the assistance of occupational health and safety specialists; (c) to identify those operations under their control that, being especially hazardous, require tight and continuous supervision; and (d) to oversee the maintenance of complete and accurate records of all injuries and diseases occurring in their areas of responsibility, with the aim of identifying where improvements are needed for worker safety.

260. Encourage continuing training and education at all levels, from manager to floor worker, in how to conduct the enterprise's operations safely and efficiently.

261. Develop systematic, Region-wide systems for recording occupational and work-related injuries and diseases with uniform registration criteria, detail and accuracy, so as to provide a firm basis for establishing national and international priorities.

262. The databases so established should be easily accessible and part of a broader network through which providers of occupational health and safety services can obtain up-to-date

information, review the results of the most recent research, and interact with those with similar responsibilities in other countries for mutual advice, assistance and cooperation.

CHAPTER 6. ECONOMIC SECTORS

6.1 Industry

Basis for action

263. To be a national asset, industry must be competitive, create jobs and wealth and be a good neighbour. Strong industries are vital to people's health and quality of life because they provide a source of wealth that pays for health and social services. However, industrial development must take place with complete knowledge of the potential impact it may have on the environment and health.

264. Preventive measures start with the assessment of potential environmental and health impacts of new developments. They should also deal with the abatement of discharges of contaminants to air and water, and the careful management of solid waste. Preferably, these measures should be coupled with appropriate planning of land use so that industrial and residential areas are sufficiently separated. Prevention may not be as eye-catching as a cure, but it has the advantage of often being less costly and is strongly recommended in the European Charter.

265. Many modern industries have fewer negative effects on the environment than traditional ones. This is because they use modern technology and techniques, that are often more efficient, and cleaner production methods and operations. It is often the case, however, that older industries are more labour-intensive. Governments may therefore have to weigh the protection of the environment against the protection of jobs, taking into account the long-term survival prospects for the industry concerned in highly competitive markets.

266. A number of old industries have indeed disappeared in western Europe and may disappear in the CCEE and NIS. Jobs have been lost and only partly replaced in other industries and services. A substantial proportion of job loss can be attributed to new work methods and the automation made possible in a computer age. Experience in western Europe and North America shows that the cost of environmental protection has little effect on the closure of industries. The root causes are usually found in the costs oflabour, raw materials, transport and energy, and in wastefulness and poor management of resources and operations, as well as in competition from developing countries with low labour costs and less stringent environmental regulations.

267. When framing environmental controls it is important to make a full analysis of the health risks and the costs and benefits of taking action, so that rational and affordable policies and approaches can be developed. Consideration should then be given to introducing controls in a way that keeps the impact on industrial growth to the minimum necessary. This should be done in full consultation and concert with industry.

268. Environmental control in industry is neither cheap nor quickly achieved. Even in the most prosperous countries, it usually takes several years (typically three to six) for an enterprise

to install environmentally "softer" equipment, because of the time it takes to identify the problem, prepare designs and raise the capital to invest in new equipment. For major industrial plants, such as older steel or pulp and paper mills, where capital expenditures for environmental control are often measured in sums equivalent to hundreds of millions of US dollars, abatement measures must be applied in steps over an extended period, typically 15 to 25 years. It is reasonable to expect that abatement measures in less prosperous economies will take still longer.

269. Nevertheless, a number of effective measures can be taken at little cost, and without capital investment in abatement equipment. The success of this approach depends on a very searching and critical analysis of the balance between material, energy, economics and waste management at each step in an industrial process. The purpose is to identify where airborne, waterborne and solid waste is discharged and to minimize it, or to change the process where such discharge is not environmentally acceptable. The procedure should be completed by analysing whether or not waste can be recycled or re-used by other industries.

270. For example, many commercial solvents can be recovered, re-utilized by other industries where solvent quality is less important, or used in cement kilns or industrial furnaces as a substitute fuel (where there is the additional advantage that the high temperatures will destroy their toxic properties).

271. Internal management also has an important role to play, for instance by ensuring that the dispersion of dusts to the atmosphere, in particular of hazardous dusts such as those found in non-ferrous metal factories, is reduced to a minimum by good maintenance of the equipment and systematic handling of the dust-producing material in ways that will prevent dust release.

272. The experience of environmental control in industry is that abatement is a gradual process, where the rate at which improvements are attained is dictated partly by national economics and partly by astute and committed management. Abatement programmes must be devised with realistic compliance dates, recognizing the need for industrial modernization to keep pace with energy and economic efficiency and waste management.

Objectives

273.
- To define government-set goals for protecting the environment as clearly as possible, and to explicitly include requirements for health. In moving towards these goals, to take action only when careful and authoritative risk assessments and cost-benefit analyses justify it.
- Generally to install the environmentally soundest technology in all industries, having due regard to its cost-benefit and cost-effectiveness ratios.
- At all stages of industrial development, to give due attention to total quality management and continuous improvement of the quality of all aspects of industrial activity, including occupational health and safety and environmental health.
- To apply economic incentives to encourage compliance with environmental legislation, which should be carefully devised to ensure the continued modernization of the most

competitive and important industries through the application of the best available technology. Decisions should be made about the scale and types of incentive best suited to encourage the phasing out of obsolescent and non-competitive industries in conformity with existing domestic competition rules.

- To use economic incentives to encourage potential investors in countries in transition, for example by limiting investors' liability for existing levels of pollution. Prior to any investment, a detailed standardized report will need to be made of existing levels of pollution on the site and its surroundings, and a timetable drawn up so that investors can reduce levels of pollution over a reasonable period of time. This approach will provide a framework on which to base environmental investments while ensuring a decrease in levels of pollution.

6.2 Energy

Basis for action

274. Most of the environmental health effects and occupational injuries and diseases resulting from routine energy production, conversion and use are related to fossil fuels.

275. Routine operation of the nuclear fuel cycle is associated with minimal environmental radioactivity; it amounts to far less than usual background levels. The issues of accidents and high-level radioactive waste disposal are dealt with in paragraphs 218–219 and 224–229, and 207. Because of concern about these and other related issues, and because of the difficulty of nuclear power plants competing economically with fossil fuels, a significant expansion of its use in Europe in the near future appears unlikely.

276. Hydroelectric power may have profound environmental and social effects during dam construction and may disrupt local agricultural practices, but the major potential hazard relates to accidents. There is little scope for increasing the present level of this energy source in Europe, at least on any large scale.

277. Other renewable sources of energy – solar, wind and geothermal power, biomass and energy from waste – are, as yet, of limited application in Europe. Nevertheless they have significant potential to reduce emissions of harmful gases by displacing fossil fuels. The generation of energy from waste can also have a positive influence by partially neutralizing the harmful effects that the waste may otherwise cause. Fossil fuels are, however, likely to be the most important source of energy for most of Europe in the foreseeable future.

278. Fossil fuel pollutants of major environmental health concern areparticulates, sulfur dioxide and nitrogen oxides (see paragraphs 165–166 and 172–173). In this respect, in the absence of equipment to reduce pollution effectively, the combustion of coal is usually more polluting than oil, which in turn is more polluting than gas. The choice of fossil fuel is largely determined by economic factors, while the resulting levels of pollution will be determined not only by the choice of fuel but also by the technology adopted for controlling emissions and the energy efficiency of the processes used.

279. Thus, in western Europe, although coal is a major source of electricity (except in Norway, which has nearly 100% hydroelectric power, and in France and Belgium, which have more than 70% nuclear power), emissions of particulates and sulfur dioxide have been substantially reduced by using precipitators or gas purifiers, for example, and by adopting more efficient techniques for energy production. There is now a trend towards replacement of coal by gas, which produces not only less particulate matter and sulfur dioxide but also less carbon dioxide than coal (or oil). In addition, electricity is the preferred form of energy in western Europe for its commercial and service industries, which means that relatively little fossil fuel is used directly in some sectors of the economy.

280. Brown, sulfur-rich coal is the indigenous fuel in most of the CCEEand is used directly for power generation in heavy industries, as well as for electricity production and domestic heating, while oil shale is used on a large scale in Estonia. Pollution control technology was not applied in the CCEE and NIS and, because of unrealistic subsidies, energy efficiency was not important. As a result, the WHO air quality guidelines values were exceeded primarily in the CCEE and NIS. Consequently, air pollution in industrialized towns in eastern Europe is at a level sufficient to cause respiratory diseases.

281. The former USSR is rich in gas and oil, and these fossil fuels account for about 60% of fuel consumption, with gas being the major source of electricity. Although less polluting fuels therefore predominate, consumption is high because of artificially low energy prices. The potential efficiency of district heating is compromised in the CCEE and NIS by poor maintenance of distribution systems. And, in both groups of countries, the problem of heavily subsidized energy was aggravated by the lack of control of energy consumption. In some of these countries, consumers (except major industries) were not metered but charged a flat monthly rate for gas and heating, as well as for electricity, irrespective of the level of use.

282. The environmental effects of acid deposition as a result of emissions of sulfur dioxide and nitrogen oxides are established, and the potential for indirect effects on human health from increased intakes of heavy metals following their mobilization into the food chain under acid conditions is recognized. Although there are still uncertainties concerning the possible extent of global warming as a consequence of emissions of gases (carbon dioxide, methane) from fossil fuel extraction, distribution and use, existing information is sufficient to justify measures to limit further increases in such emissions.

Objectives

283.
- To control emissions of fossil fuel pollutants from large industrial sources (including power and heating plants, metal smelters) in those industrialized areas where health is affected by the resulting air pollution.
- To carry out environmental health impact assessment prior to making new investments in energy technologies, thereby emphasizing the need for prevention rather than subsequent mitigation.
- To reduce transboundary acid deposition and greenhouse gas emissions. In western Europe, technology is already being applied to reduce emissions of particulates and

sulfur dioxide. However, if gas emissions are to be curbed further improvements in fuel efficiency will be needed, as well as much greater efforts to promote energy conservation.

- Effective pollution abatement technology is already available, but the cost of installing it in established or obsolete enterprises is prohibitive, especially during economic recession. Moreover, the initial capital will only be recovered in the medium or long term. However, other less expensive measures can be taken to reduce fuel consumption and improve energy efficiency. Discontinuing unrealistic subsidies, for example, would undoubtedly reduce fuel consumption and thereby pollution levels. However, a sudden increase in the cost of energy, especially in countries with severe winters, would involve major hardships. Changes in energy-saving policies can therefore only be achieved gradually.
- To encourage the development of cost-effective non-polluting energy sources. The local mix of energy sources will be determined by local circumstances and require appropriate monitoring to make planning possible. In deciding on their energy policies, countries will need to consider the availability of energy resources both nationally and globally (as well as the impact of individual energy sources on the environment) and the possibilities for greater use of renewable sources and wastes for energy production.

6.3 Transport

Basis for action

284. Road transport is now one of the most widely used means to move people (about 80% including public transport, 50% excluding it), and freight (from 50% to 90% oftonnes per kilometre in western Europe, less in the CCEE and NIS) throughout the Region. It is a cornerstone of western Europe's economic life and an essential contributor to its economic growth. It has provided remote areas with access to wider markets, overcome the limits to mobility imposed by the inadequacy of public transport systems and so enabled young people easily to attend distant schools and universities and adults to find jobs far from home. Without road transport, access to medical care would be more limited and emergency services greatly restricted. It has also given millions of people greater choice of where to spend their free time.

285. But road transport has also exacted heavy human health and economic costs through the very large number of victims of road accidents in all countries: it is responsible for over 120 000 deaths annually (far greater than the combined deaths from domestic and occupational accidents) and more than 2 million injuries are estimated to occur. Road accidents have also involved spillages and explosions of transported material, endangering the environment and human health. The toll is all the more unjustifiable in that many accidents could have been prevented if more attention had been paid to reducing the contributions made by human, mechanical, structural and environmental (particularly road) factors.

286. Road transport is also a major contributor to air pollution, not only in cities but also in narrow valleys with heavy car and truck traffic. Technological improvements to vehicles and improved fuel quality are effective measures, which may be negated by the continuing

increase in the number of vehicles. In many CCEE the stock of vehicles is old and lacks not only catalytic converters but also modifications to enable lead-free petrol to be used. Attempts to reduce air pollution significantly may require measures to control and reduce road traffic. Traffic reduction would also contribute to a reduction in the number of accidents, limit the problem of environmental noise and improve the quality of life in congested urban areas. (The problems of air pollution related to road traffic, including its contribution to lead pollution, are also considered in paragraphs 165–166, 174–178).

287. In the absence of better regulations governing road traffic, the number of road casualties is bound to increase in the Region, while air pollution from engine exhausts will become worse with the increasing road traffic in areas where such traffic has so far made a relatively small contribution. Efforts to reduce air pollution, through curbs on the current major industrial sources, are likely to be overtaken by the increase in air pollution from road transport.

Objectives

288.
- To reduce road traffic injuries, disabilities and deaths by 25% by 2000 compared to 1990.
- To reduce gaseous and particulate emissions from road traffic to achieve levels consistent with the currently accepted air quality guidelines throughout the Region.
- To abate noise from traffic and congestion.
- To set and enforce speed limits and carry out frequent blood-alcohol tests on drivers, with appropriate penalties for those exceeding agreed levels. The rules should apply to all categories of drivers.
- To check the roadworthiness of all vehicles, including government and military vehicles and heavy goods vehicles, at regular intervals; to check at the same time their exhaust emissions and noise levels. Manufacturers or vehicle owners should be given a strict deadline to put the fault right.
- To safeguard the rights of pedestrians (especially old people, children and disabled people) by ensuring that road crossings are provided and clearly marked at frequent intervals and that pedestrians' priority on them is carefully observed; to keep pavements free from parked vehicles; to indicate clearly the sites where and times when motor vehicles must give way to pedestrians (who should in turn respect the rights of other road users); to provide bicycle lanes wherever possible and encourage their safe use.
- To regulate traffic in order to reduce accidents, pollution and noise, and to improve communications with cities by making environmentally friendly transport modes, e.g., public transport and cycling, attractive alternatives. These might include, when necessary, restrictions on private and commercial traffic within the citycentre and the relocation of traffic and transport streams by e.g. the construction of ring roads and redesign of public transport means and routes. The increasing use of heavy goods vehicles in international transport calls for cooperation betweenneighbouring countries to develop an integrated transport policy (see paragraph 338).

- To thoroughly investigate car accidents, at least on a suitable sampling basis, to identify the relative contributions of human, mechanical, structural and environmental (particularly road) factors to their causation; and to assess the likely impact on road safety of improvements in vehicle and road design.

6.4 Agriculture

Basis for action

289. Agriculture and animal husbandry are perhaps the most basic of economic activities for ensuring survival. However, a number of undesirable consequences for human health have resulted from agricultural, animal husbandry and related practices, driven by the need to raise productivity in increasingly competitive markets.

290. Intensive poultry and cattle husbandry may pose a major problem with respect to the disposal of animal wastes, because of seepage of liquid wastes into the water table and thus contamination by nitrates, in addition to that from fertilizers. Battery pens and feedlots also provide a fertile ground for the development of zoonoses such as brucellosis and tuberculosis, in the case of cattle, and of salmonellosis and campylobacteriosis, in the case of poultry. The uncontrolled reuse of wastes and offal as fodder has added to the risk of occurrence of these zoonoses. In some countries, the use of infected ruminant protein in cattle feed has resulted in the spread of bovine spongiform encephalopathy (BSE) in cattle without evidence of consequences for humans so far, but leading to the destruction of tens of thousands of cattle.

291. Irrigation can favour the spread of intermediate hosts of human parasites such as flatworms, liver flukes and *Leptospira* and can result in waters becoming progressively brackish. When untreated municipal wastewater is used for irrigation, especially of vegetables, contamination by hepatitis A virus, amoeba, *Salmonella*, *Shigella*, *Listeria* and *Escherichia*, as well as pollution from heavy metals, can occur.

292. The excessive or inappropriate use of pesticides and other agrochemicals on agricultural crops and of chemical veterinary products such as pesticides and antibiotics in stock and fish farming can contaminate food and drinking-water to an extent that may expose consumers to undesirable levels of chemicals.

293. Excessive use or ill-timed application of nitrogen fertilizers in several countries throughout Europe has led to surface and groundwater levels of nitrate higher than the WHO water quality guidelines, resulting, in some areas of eastern Europe, in a number of cases of methaemoglobinaemia in infants, with occasional lethal consequences.

294. Inappropriate conditions of storage of cereals may result inmoulding, with the possibility of the consumer being exposed to aflatoxins which, at exposures higher than observed in Europe, may cause liver cancer, and to ochratoxins; the latter are suspected of being responsible for the high incidence of "Balkan endemic nephropathy", which is common in some areas and is associated with an increased risk of urinary tract tumours.

295. Poor maintenance of forests, and especially clear felling on steep slopes in mountainous areas without adequate terracing or other means of slope stabilization, continues to be a cause of landslides, avalanches and floods that often threaten villages and entire valleys.

296. Failure to clear forest undergrowth is a contributory factor to the high frequency and extent of forest fires in the coastal areas of southern Europe. These are a serious hazard to neighbouring populations.

Objectives

297.
- To reduce human exposure to risks related to agriculture and animal husbandry without compromising the primary aims of agriculture and related activities, namely the provision of adequate and safe food. To this end, the closest cooperation will need to be established between human health, veterinary, agriculture and forestry professionals.
- To widely promulgate and apply simple and understandable rules on the amount and timing of use of pesticides, particularly in fish farms, on the wider use of antibiotics in animal husbandry, and on the application of agrochemicals on agricultural crops, if necessary through the adoption of legislation, so as to protect both the farmers and consumers as well as the surface- and groundwater draining the land.
- To train farmers in the use of agricultural practices that make more limited use of fertilizers and pesticides.
- To dispose or reuse animal waste and offal in such a way that pathogens are destroyed and nitrate contamination, especially of groundwater, is minimized.
- To conduct frequent and thorough inspections of intensive animal farming practices for the early detection of infections, especially by *Salmonella* and *Campylobacter*, which, without necessarily affecting the animals themselves, present a risk to the consumer.
- To improve practices in forest management to prevent serious environmental hazards to local populations and to achieve sustainability in accordance with the recommendations of the 1992 European Conference of Forestry Ministers.
- To conduct irrigation in such a way as to reduce to a minimum the risk of salinization and of exposure to fish- and rodent-borne parasites; and to identify areas and streams where such parasites are prevalent and take strict measures to avoid human infestation.
- To conduct continuous surveillance of conditions under which agricultural produce is harvested, transported and stored, in order to minimize losses of food and the possibility of its moulding in barns and silos, as well as of contamination of food by chemicals.

6.5 Tourism

Basis for action

298. Tourism is the cause of the largest migratory movements in Europe and probably throughout the world. Available statistics indicate 250 million foreign visitors per year in Europe. Add to these foreign visitors tourists from the same country, and the tourist

movement may well comprise close to one thousand million people annually. Their distribution among countries is highly uneven, with the largest numbers flocking to the Mediterranean coast and a large proportion, especially in winter, crowding the alpine slopes. Most of the environmental and health problems created by tourism are due to its seasonal nature, resulting in some areas in extreme taxing of local sanitary facilities for a few weeks, usually in the summer.

299. It is extremely costly to establish and maintain adequate water supplies and treatment, a sewage network and safe solid and liquid waste disposal systems that will stay virtually idle for some of the year; it is a cost that not all resorts are able to afford. Food safety is also a cause for concern, as the increase in the number of people needing to be fed may lead to a relaxation of hygiene standards. As a result, gastrointestinal disorders are 20 times more frequent among northern tourists visiting Mediterranean resorts than they would have experienced at home, this being partly due to a lack of previous exposure to the bacterial and viral flora of the host country. In addition, in coastal areas the high consumption of shellfish harvested, often by tourists themselves, in waters insufficiently protected from raw sewage discharges, contaminated by toxic algal blooms or carrying human viruses, makes for a high frequency of food poisonings and of hepatitis A infection.

300. As important as the relatively common diseases that tourists may contract in Europe is the increasing number of exotic environment-related conditions brought back by those venturing to tropical and subtropical areas. While there seems little risk of the malaria parasite becoming established in Europe again, the same cannot be said of dengue fever and other arthropod-borne viruses whose vectors can settle in the Region, although few instances have yet been reported.

301. Water- or foodborne cholera is a traditional menace to Europe, as recurrent small localized outbreaks show. The emergence in south-west Asia, and more recently in central Asia, of a new, extremely aggressive strain, and its rapid spread through that region, raise concern that this strain might be brought to Europe by travellers, with unpredictable consequences.

302. While tourism gives opportunities for rest, cultural exchange and healthy physical activity, it can at the same time contribute to temporary intensification of road traffic, with the attendant environmental effects ranging from air pollution to road accidents. Tourism is also at the origin of particular types of accidents, from drownings to mountain accidents, including a large number of winter skiing accidents.

303. Mention should also be made of one aspect of tourism that for a number of people appears to be its greatest attraction, namely sunbathing: a habit which, whether indulged on the beach or at high altitude, is the likely the cause of the increased frequency of skin cancers currently observed, especially among the more fair-skinned people in Europe. If the habit continues without adequate precautions being taken, especially by children, the incidence will eventually assume epidemic proportions, even if ultraviolet intensities at ground level remain little altered by the accumulation of ozone-destroying agents in the upper atmosphere (see also paragraphs 209–210, 216).

Objectives

304.
- To ensure that the adequacy and safety of the drinking-water supply and sanitation facilities in resorts meet peak tourist demand. The disposal of solid and liquid waste needs to be tightly regulated, to protect beaches and shellfish beds.
- To strengthen food inspection and monitoring, particularly with regard to *Campylobacter* and *Salmonella* during peak seasons, and take measures to ensure that the temporary staff hired to handle food are properly trained and that standards of personal and environmental cleanliness are observed as closely as elsewhere.
- To inform tourists immediately and objectively in the languages understood by most of them in the event of contamination of water and food or the outbreak of infectious disease, as well as in the case of water and beaches becoming unsuitable for bathing in areas they are or will be visiting.
- To strictly enforce the usual road traffic regulations in resort areas so as to reduce accidents, especially among children, to keep the quality of the air unimpaired and to prevent excessive noise.

VOLUME 3

INTERNATIONAL ACTION

CHAPTER 1. INTRODUCTION

1.1 International cooperation

305. In the European Region, international cooperation in solving environmental health problems has largely taken place under WHO/EURO's Environmental Health Programme. This programme, developed as part of the HFA strategy, has resulted in intensive collaboration between Member States in the areas of environmental health management, water quality, air quality, food safety, waste management, prevention of soil pollution, human settlements and occupational health. The programme has developed strong networks of professionals and government authorities and has influenced developments in environmental health in Europe.

306. The principles for public policy set out in the European Charter in 1989 (see Annex 1) still provide the most appropriate foundation on which to develop environmental health action plans, at regional as well as at national levels. Of particular importance for sustainable development are the principle of prior environmental and health impact assessment (prevention is better than cure) and the concept that the polluter pays.

307. Effective legally binding international instruments have been developed by UN/ECE to prevent, reduce and control transboundary impacts on the environment: the 1979 Convention on Long-range Transboundary Air Pollution with its four protocols; the 1991 Convention on Environmental Impact Assessment in a Transboundary Context; the 1992 Convention on the Protection and Use of Transboundary Water Courses and International Lakes, and the 1992 Convention on the Transboundary Effects of Industrial Accidents. Through these multilateral regulatory instruments (all of which have relevance for human health), sustainable development, the precautionary and preventive approach, and the "polluter pays" principle are receiving strong support at international level, as was called for by UNCED. These conventions provide ample opportunities for cooperation and coordination between the environment and health sectors, in particular with the following aims in mind: to include health aspects in environmental impact assessment procedures; to substantiate in quantitative terms the effects of air pollutants on human health; to incorporate health aspects in integrated water management, with emphasis on monitoring and controlling potentially harmful biological, chemical and physical agents, on identifying environmental hazards and the activities which give rise to them, and on establishing permit systems; and to devise policies and measures to prevent and prepare for response to technological accidents and their adverse effects on the environment and human health.

308. Over the past two decades, four EC action programmes on the environment have given rise to about 200 legislative documents covering pollution of the atmosphere, water and soil, waste management, safeguards in relation to chemicals and biotechnology, product standards, environmental impact assessment and protection of nature. The present fifth

environmental action programme of the EC considers human health to be one of the main criteria in selecting priority actions and proposing environmental protection measures.

309. A number of related international initiatives are now being taken to deal with environmental problems that are of direct concern to Europe: in particular, the Environment for Europe process (initiated at Dobris Castle in 1991) led to the adoption by the Lucerne Ministerial Conference in 1993 of the Environmental Action Programme (EAP) for Central and Eastern Europe, as a step towards the long-term development of the Environmental Programme for Europe. Several elements of the EAP are of direct importance to human health (see also paragraph 9).

310. The changed political situation in Europe has brought to the fore a number of environmental health problems that can best be solved cooperatively. It also gave the Second European Conference on Environment and Health (held in Helsinki) the opportunity to lay the foundations of an international programme on environment and health aimed at solving these problems by close collaboration between Member States and international organizations. To make the best use of available resources and avoid duplication of efforts, it is imperative to use existing international mechanisms and institutional arrangements as much as possible. In this spirit, all possibilities for integrating the proposed environmental health actions with existing environmental programmes in Europe should be explored, in order to make these processes and programmes mutually supportive.

311. The main objectives of the international actions endorsed at the Helsinki Conference are:

- to support the development and implementation of country environmental health action plans;
- to carry out concerted actions on common problems within the Region;
- to deal with transboundary issues;
- to support countries in transition in dealing with their immediate environmental health problems;
- to assist countries recovering from the consequences of armed hostilities;
- to achieve the necessary coordination of related international activities.

1.2 Principles and criteria

312. The basic principles underlying international actions for environmental health are equity and solidarity, in addition to those which are relevant to national and local actions such as intersectorality, sustainable development and subsidiarity. These first two principles are of increasing importance in achieving stability and harmony between and within Member States.

313. The following criteria have been used in selecting priority areas for the proposed international actions:

- the severity of the environmental impact on health in the Region, including the number of people affected;

- evidence of a deteriorating trend in the environmental health problem;
- the pan-European nature of the problem, i.e. the extent to which the environmental health issue and/or infrastructural needs are common to Member States;
- whether intervention is feasible, affordable, cost-effective in terms of health benefits and likely to yield demonstrable environmental health improvements within a reasonable time-scale;
- whether the involvement of both the environment and health sectors is needed to solve problems common to Member States;
- whether the proposals for action are consistent with the objectives of UN/ECE and other environment programmes, based on complementarity (with emphasis on health considerations in setting priorities for funding);
- whether the problem affects economically stressed Member States and those suffering from the consequences of armed hostilities.

CHAPTER 2. PRIORITY AREAS

2.1 Support for the development of action plans at country level

314. Agenda 21, as a blueprint for how to make development socially, economically and environmentally sustainable, calls for the development of national action programmes on sustainable development. Many countries have already started to develop such programmes; the development of country environmental health action plans should be seen as an integral part of this post-UNCED process. In this context, EHAPE provides a direction for planning and actions by all Member States to give effect to the first principle of the Rio Declaration: "Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature".

315. A major component in EHAPE is the development of country environmental health action plans by all Member States (by 1997), including targets for implementation of actions in accordance with countries' priorities within specified time-scales and interim milestones to monitor progress. These action plans can provide an important input to the meeting of the United Nations Commission on Sustainable Development in that year.

316. An information system will be established with the objectives of collecting countries' experiences with the development of their action plans and, by sharing this experience, of supporting Member States in their efforts to find the most cost-effective approaches in planning. This system will also provide valuable information concerning unforeseen problems related to the implementation of EHAPE and make it possible to assess progress in attaining the environmental health objectives at pan-European level.

317. In the interests of equity and solidarity, international assistance, if requested, should be provided to make possible the development of country action plans by 1997 through bilateral arrangements and/or the support of international organizations.

Possible partners: WHO/EURO, UN/ECE, EC, UNEP, OECD, EAP task force

2.2 Common problems

318. Because many problems are common to several if not to all countries, there are advantages in sharing experience and technical expertise in solving them. Facilitating this approach is one of the most important services that an international organization can provide for its members. The breakdown of the barriers between eastern and western Europe, the emergence of independent states, and the increased cohesion as well as the imminent enlargement of the European Union all make it imperative to share these intangible resources.

Improvement of environmental health management tools

319. In all countries, the main prerequisite for effective prevention and control of environmental hazards to health is the existence of an appropriate infrastructure and instruments for environmental health management. This approach, which derives from the HFA strategy, is also consistent with the decision made at the Environment for Europe Ministerial Conference in Lucerne in 1993 to endorse initial elements of an Environmental Programme for Europe, which focuses on the improvement of policy tools.

320. While a number of European countries already have infrastructures for environmental health management in place, the lack of even basic ones in some will impede the development and implementation of their action plans unless international cooperation is forthcoming. Essential components are discussed in detail in paragraphs 73–151. Only the role of international cooperation in their development is reviewed here,

321. ***Environmental health services (EHS).*** The main objective of this component is to assist countries in building their capacity for environmental health management by developing or strengthening their environmental health services. WHO/EURO already has an active programme on environmental health services in the Region. An extensive sample survey of the services in the Region has already been carried out, and a description of the services and "policy options" for their development will be published in 1994. This baseline documentation will allow WHO/EURO, together with other international agencies, to develop programmes, at the country and intercountry levels, for the necessary improvement of environmental health services.

Possible partners: WHO/EURO, EC, EEA

322. ***Professional education and training in environmental health.*** To harmonize international efforts to upgrade the training of environmental health professionals in Member States, gaps in the education of environmental health professionals will be identified, and assistance given in improving countries' capacities for education and training, with the objective of

facilitating national self-reliance in the recognition, prevention and control of environmental health hazards. A database will also be developed concerning existing training institutions and curricula for environmental health professionals, as well as for other professionals concerned with environmental health problems, such as general practitioners or journalists. The activities will be based on existing educational resources in Europe. If the proposed international centre in Sofia, Bulgaria, for training in environmental health management for CCEE were to be established, it could make a valuable contribution to these activities.

Possible partners: WHO/EURO, with bilateral or multilateral cooperation from Member States, EC

323. ***Environmental health information system (EHIS).*** The need for a European EHIS has been noted above in the context of country action plans. But there is also a wider need throughout the Region to develop or improve EHISs at country level (as detailed in paragraphs 73–151) and make them capable of detecting the emergence of new problems, facilitating assessment of the state of environmental health throughout the Region and monitoring the effect of interventions.

324. For these purposes the following actions are required:

- encourage the use of a set of core indicators, when available, for EH monitoring purposes throughout the Region;
- help Member States to develop appropriate and harmonized EHISs, with procedures for quality assurance and control of monitoring data;
- ensure that, in future, environmental monitoring and data collection provides information that better reflects actual human exposures to environmental agents, as a basis for assessing potential environmental impacts on health;
- cooperate closely with Member States and with other relevant organizations in ensuring that national environmental health databases are compatible and accessible, having regard to the overriding right to confidentiality of the citizen.

Possible partners: WHO/EURO, EEA, UNEP, OECD

325. ***Environmental health risk assessment.*** This programme component will provide the expertise and guidance that Member States may request in their efforts to build up their capacity for environmental health impact and risk assessment. It should also assist them in actually carrying out situation analyses. In addition, WHO/EURO's environmental health programme will, when appropriate, and in close collaboration with IPCS and other relevant international organizations or programmes, make early ad hoc risk assessments of environmental health hazards that are common to Europe or are newly recognized. In the longer term, WHO/EURO will regularly update its air quality guidelines for Europe and drinking-water quality guidelines and will update and/or develop other environmental health guidelines important for legislation and environmental health management in Europe.

Possible partners: WHO/EURO, IPCS, EC, OECD

326. ***Environmental health research.*** Most of the current problems in environmental health on which research is required are common to all Member States. Collaborative research projects are likely to be most effective both scientifically and in terms of the use of resources. A major factor limiting the assessment of relationships between exposures and health effects is the lack of adequate information on exposure to environmental agents. Research is needed to develop meaningful indicators of such exposure and of incipient damage to health related to exposure. This will involve the study of the effects, at cellular level, of chemical, physical, biological and psychosocial environmental agents. Efforts also need to be made to identify groups that are particularly vulnerable to environmental agents, and to determine the extent to which they are unprotected by current exposure guidelines or standards. Research on mechanisms of toxicity is fundamental to much of this work, and there is a need to involve relevant research centres and universities across Europe.

327. It is proposed to establish a joint programme of research on environment and health, which will be responsible for a common research strategy to be implemented through continuing collaboration between WHO/EURO, EC, the European Science Foundation (ESF) and other appropriate bodies that may wish to become involved. Consideration should also be given to the feasibility of holding regular international scientific meetings to share environmental health research results and assess their significance.

Possible partners: WHO/EURO, EC, ESF, European medical research councils

328. ***Public information.*** Developing national capacities to provide information to the public about environmental health issues is considered to be of high priority in efforts to upgrade public participation in environmental health decision-making in Europe, particularly at local level, where informed public involvement in environmental health impact assessment procedures, for instance, can achieve transparency in decision-making. A long-term programme should be developed to help the public gain a better understanding of environmental health issues and their implications, through improved presentation of technical matters and wider distribution of relevant published material.

Possible partners: WHO/EURO, nongovermental organizations, EC, UN/ECE

Accident prevention and disaster preparedness

329. The prevention of major technological accidents, together with preparedness for and response to the natural disasters and major accidents that may still occur, are primarily matters for national authorities, except where transboundary issues are concerned. The WHO/EURO programme on accident prevention and disaster preparedness, in collaboration with other relevant international organizations and programmes, will support Member States in their efforts to upgrade their capacities in the prevention and control of accidents and in disaster preparedness.

330. Collaboration will be strengthened among relevant organizations such as WHO, the United Nations Centre for Human Settlements (UNCHS), ILO and UN/ECE, in collecting data that will make it possible to determine the importance of environmental causes in the occurrence of accidents in the home, at work and on the road. This will provide a basis for

recommendations on the most appropriate preventive measures which should be taken by Member States to reduce the toll.

331. Every year, about 120 000 deaths, particularly among young adults, occur in the Region as a result of road traffic accidents, about 60 000 from accidents in the home, and 25000 at work – and most are preventable, the causes being cultural, organizational or inadequate risk management. Although the relative importance of road traffic compared with other accidents varies in different countries, the problem of road traffic accidents is likely to increase as the number of private cars increases with an improving economic situation.

332. Eight years after the Chernobyl accident, the operational conditions of many nuclear power reactors have deteriorated rather than improved, because of economic difficulties in countries in transition. The prevention of future nuclear accidents urgently requires international action to improve the operational safety of existing reactors and the design of future ones. IAEA and UNDP have a joint programme to strengthen radiation safety infrastructures in countries of the former USSR.

333. In cases where the scale of the catastrophe is such that international assistance must be provided, responsibility for coordination of the international response rests with the United Nations Department of Humanitarian Affairs (UNDHA), which is also responsible for the disaster management training programme. However, because UNDHA does not have operational responsibilities, it is planned that WHO/EURO's Emergency Relief Programme will be suitably strengthened, so as to upgrade national capacities to meet large-scale disasters and to provide immediate relief when they occur. Furthermore, WHO/EURO's work on the psychological impact of major accidents and disasters will be expanded. IAEA's convention on assistance in case of a nuclear accident or radiological emergency has been ratified by 35 countries of the WHO European Region (see paragraphs 348–349).

Possible partners: WHO/EURO, UN/ECE, CE, UNDHA, EC, EEA, IAEA, G 24 Nuclear Safety Assistance Group, UNDP

Promotion of urban environments supportive to health

334. Throughout the Region, urban areas demonstrate, on the one hand, the adverse effects on health and wellbeing associated with an affluent consumer society – traffic-related air pollution, noise and congestion (in addition to accidents) – and, on the other, unacceptable levels of deprivation, homelessness and violence.

335. WHO/EURO will extend its Healthy Cities project, and consider, in collaboration with other relevant international organizations, the development of a more comprehensive approach which attempts to take greater account of interactive factors for creating urban environments supportive to health and wellbeing.

Possible partners: WHO/EURO Healthy Cities projects and networks, UNCHS (Habitat), UN/ECE, EC

Promotion of a healthy working environment

336. International organizations (such as EC, ILO, and WHO) and trade union representatives will, through joint efforts, support Member States in implementing health policies for workers, establishing occupational health services and striving for equity in health for all workers at risk, by increasing occupational health care coverage.

337. Improved international cooperation is needed to harmonize data collection on occupational accidents and diseases, identify hazards and quantify risks, in order subsequently to develop internationally accepted guidelines on prevention for decision-makers.

Possible partners: WHO, ILO, EC, ICC, European Trade Union Confederation

Integration of environmental health policies into economic sector policies

338. The integration of environmental health policies into economic sector policies is a common problem to all countries in the Region and applies to agriculture, energy, industry, tourism and transport. The environmental health problems which can only be solved with the cooperation of those economic sectors have been identified in paragraphs 263–304. One of the tasks of the European Environment and Health Committee will be to explore, in partnership with UN/ECE and EC, the possibilities for cooperative action with other relevant international organizations aimed at helping countries arrive at policies which adequately protect the environment and health without preventing economic development.

339. To this end, steps should also be taken to develop appropriate methodologies for assessing and costing the benefits and detriments to health of particular economic activities, as well as the benefits to health expected of a particular intervention compared with the cost of that intervention. In addition, methodologies might be developed on how best to ensure that the costs of a given activity, in terms of its environmental impacts, are not borne by society as a whole but charged to the originator of the activity and/or the consumer of its products.

Possible partners: WHO/EURO, UN/ECE, EC, ICC, OECD, UNEP, FAO, WTO, IAEA, UNDP

2.3 Transboundary problems

340. These arise where activities in one country have environmental impacts (and potential consequences for health) in one or more other countries. A typical example is the long-range atmospheric transport of pollutants over borders. Similarly, the activities of one country at sea, on lakes or on land can affect the quality of the territorial waters of another country; on transboundary rivers, activities carried out upstream may affect waters downstream. Correcting the situation involves taking steps to change the activities of economic sectors such as agriculture, energy and industry or to improve waste water treatment. In future, when multinational arrangements are in place, interventions will preferably be made at the policy formulation and planning stage. Special cases of transboundary pollution may result from accidents. International cooperation may be required to assess, limit and repair damage, but the primary needs are to encourage and

coordinate preventive action, to develop national plans of response to any accident that may still occur, and to ensure that an effective early warning system exists for the whole Region. Another type of transboundary problem relates to the movement of hazardous wastes. The primary aims of the Basle Convention are to ensure that such transboundary movement is reduced to the minimum consistent with the environmentally sound management of hazardous wastes, and to prevent such wastes being moved from countries with strict standards for disposal to countries with less stringent requirements, where hazardous wastes are more likely to result in risks to human health.

Global conventions

341. Because a number of environmental problems concern the world as a whole, and not any single Region in particular, global conventions aimed at dealing with them are now in force. As an industrialized region, Europe has special responsibility for implementing and complying with global conventions.

342. Those with immediate health implications are:

- the Vienna Convention on the Protection of the Ozone Layer, its Montreal Protocol and subsequent amendments. Its aim is to reduce the production and consumption of chemical substances which, by reducing the amount of stratospheric ozone, will eventually increase the flux of ultraviolet radiation and hence the risk of skin cancer and cataracts in humans;
- the Basel Convention on the Transboundary Movement of Hazardous Wastes and Their Disposal, which provides for a very stringent regulatory system to control such movements and recognizes that the most effective way of protecting human health and the environment is to reduce the generation of hazardous wastes to a minimum in terms of quantity and/or hazard potential. As of May 1994, 66 countries (including 26 Member States of the European Region of WHO) and EU had ratified the Convention;
- the Framework Convention on Climate Changes, which has as its ultimate objective the stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.

343. WHO/EURO, in partnership with other relevant organizations, will strengthen regional commitment to these Conventions and ensure that health considerations are fully taken into account in their implementation and further development.

Possible partners: UNEP, UN, WHO/EURO, EC, UN/ECE

European environmental conventions

344. In order to ensure that health considerations are given appropriate weight in determining action to be taken, WHO, in partnership with other relevant organizations, should intensify its efforts to contribute to the formulation and implementation of the provisions regarding air, water and soil pollution in those environmental conventions which have among their aims the protection of human health. When health data are lacking, WHO should take steps, in cooperation with the countries concerned, to generate them. This should include

strengthening regional cooperation to achieve effective implementation and ensuring that levels of pollutants in air, water, soil and food are monitored for the purpose of obtaining and sustaining reductions in exposure. Whenever such pollution across borders is known to make a significant contribution to total exposure, efforts should be made to ensure that sources of pollutants, including those of microbiological pollutants, are adequately controlled.

Possible partners: UN/ECE, UNEP, IAEA, WHO/EURO, intergovernmental bodies established under the conventions, EC

Areas of special concern

345. Certain areas deserve special consideration because the action required to restore their environmental conditions or to prevent environmental health hazards needs to be taken jointly by a small number of countries. This may make matters easier, as is shown by the cooperation that has prevailed for some two decades among the Baltic countries[a] and among the Mediterranean countries[b] in protecting their common seas. Another example is the Council for the Barents Region. In other cases, such cooperation is just beginning and needs strong encouragement if the environment is to be restored and appropriate preventive measures supportive of health are to be taken. Among these areas are:

- the so-called Black Triangle, where severe air pollution affects an extensive area in the three countries jointly responsible for its intensity;
- the Black Sea, with its six riparian countries, where there is a need to restore the state of the marine environment damaged by activities carried out at sea, on the shore and far inland. The convention on the protection of the Black Sea currently does not give consideration to health effects;
- the Adriatic Sea, as a semi-closed sea with seven adjacent countries, where there is a need to take all possible measures to reduce pollution of the marine environment including eutrophication and to effectively implement existing and new agreements aimed at creating an environment supportive to health;
- the Aral Sea, where two decades of misconceived agricultural policies in itscatchment area, which includes most of the central Asian republics and small areas of Iran and Afghanistan, have resulted in severe health problems due to the profound alteration of the hydrological balance of the area and to agro-chemical pollution. More than anywhere else, perhaps, restoration of the environment here will need to have as its primary goal the improvement of human health;
- Lake Sevan – the important prospective drinking-water resource for the Republic of Armenia and the Transcaucasian region – is affected by similar problems. Use of its water for energy production (as a result of economic blockade) and for irrigation has significantly lowered the water level. It is also contaminated with industrial wastes and agrochemicals, and heavily polluted with pathogenic microorganisms. The building of a ring of sewage collectors around the lake remains unfinished;

[a] Baltic Marine Environment Protection Commission; Baltic Sea Joint Comprehensive Environmental Action Programme.

[b] Barcelona Convention, Mediterranean Action Plan.

- Lakes Ohrid, Prespa and Dojran are shared by The Former Yugoslav Republic of Macedonia with Albania and/or Greece. Their protection requires regional cooperation.

346. In all these areas WHO/EURO, in partnership with other relevant organizations, will make sure that health considerations are given the appropriate weight in developing plans to improve local environmental conditions. If a Centre for Tourism and Environmental Health, proposed to be set up to promote the sustainable development of tourism in the Region, were established, it could play a valuable role in this context.

Possible partners: UNEP, WHO/EURO, UNDP, WB, EBRD, EC, UN/ECE

Early warning systems

347. There is need for an effective Region-wide early warning system for major technological accidents, based on adequate monitoring systems at country level. WHO/EURO will continue its collaboration with the relevant EC programmes and OECD's Chemical Accidents System and will coordinate activities with the relevant systems developed under environmental conventions, such as the IAEA Convention on Early Notification of a Nuclear Accident. Early warning is also required for cases of food contamination with microbiological, chemical or radioactive agents, particularly when such foods are traded across borders.

348. Warning systems should therefore be established in all countries, based on appropriately designed monitoring activities within them and on effective means of communication within and between countries. They will give warning of actual or imminent major releases of hazardous material to the environment, or of potentially widespread cases of food contamination, and so enable the competent authorities both in the country of release and in those that may be exposed to it to take measures to protect their people from possible risks.

Possible partners: WHO/EURO, EC, UN/ECE, OECD, IAEA

2.4 Support to countries in transition

349. Countries in transition are now facing major economic and social problems which prevent them from coping effectively with existing or new environmental health problems. Furthermore, in this situation of economic hardship, concern for the environment and health has slipped down the national agenda despite the seriousness of the environmental heath situation in CCEE and NIS. It is therefore recognized that Europe needs to make a collective effort, in collaboration with the main international funding institutions, to help these countries overcome their current environmental health problems as soon as possible.

350. EHAPE should be seen as a framework for actions on priority environmental health issues not only by the environment and health sectors but also by all other organizations and specialized economic sectors, as well as by international funding institutions. Existing mechanisms such as the United Nations Global Environmental Facility (GEF) programme, and in particular EAP, should be used as much as possible for effective implementation of EHAPE in countries in transition. It is important to underline the point that this

international solidarity will contribute significantly to all other efforts to bring political and social stability to the European Region. To provide assistance more rapidly, in dealing with the large-scale environmental health problems facing countries in transition and those suffering from the consequences of war, it is recommended that international funding institutions (IFI) might adopt a more flexible approach to the repayments of loans allocated for environmental and health programmes in these countries. It is proposed that this programme will focus on support in the following three priority areas:

- developing country EH action plans;
- improving the environmental health institutional infrastructure;
- remedying priority environmental health problems.

Developing action plans at country level

351. It is foreseen that countries in transition will be given special assistance, primarily through existing international mechanisms, in preparing and implementing their action plans, until their own capabilities in terms of expertise and the requisite structures for the task are in place. This support will focus primarily on:

- technical collaboration for and among countries in transition, with seminars for decision-makers and planners responsible for drawing up country action plans;
- provision to government authorities of specific guidelines and information for use in drawing up country action plans;
- organization of workshops to deal with problems identified in developing action plans.

352. This action will be closely coordinated with the ongoing programme on implementation of EAP, as well as the WHO headquarters programme for development of national action plans in other Regions. Collaboration is envisaged on drafting a guideline document and setting up the database on approaches used and experience gained.

Possible partners: WHO/EURO including WHO/ECEH, EAP task force, EC and countries which have offered to provide assistance

Improving the institutional infrastructure

353. Since external assistance will be effective only if the main effort at country level is directed towards building up the structures required for identification, prevention and control of environmental health hazards, assistance will be given in developing and strengthening environmental health services, training environmental health professionals, strengthening the environmental health information system and building up public awareness. Such action will be based on WHO/EURO's ongoing programme aimed at upgrading environmental health services.

Possible partners: WHO/EURO, EAP taskforce, PHARE, TACIS, WB, EBRD and countries which have offered to provide assistance

Remedying priority problems

354. It is foreseen that special assistance will be needed to remedy the high priority environmental health problems identified. This support will be given through specifically designed projects carried out in partnership with international organizations and funding institutions. These projects, with emphasis on health-related environmental problems, will be developed as an integral part of EAP or in close association with it in CCEE/NIS already receiving support through this programme.

355. One example of an identified high-priority problem is the total lack of a safe drinking-water supply for more than 80 million people in CCEE and NIS, aggravated by decades of inadequate maintenance that have left drinking-water distribution systems in these countries in severe disrepair, with large-scale leakage resulting in water shortages and contamination giving rise to serious outbreaks of waterborne infectious diseases. Similar problems exist with wastewater treatment but this aspect, as well as urban air pollution, is already being dealt with under EAP and the PHARE programme.

356. Another example concerns the environmental impacts of previous accidents or hazardous activities carried out in the past with little regard to the health of the populace. Thus there is extensive radioactive contamination from the Chernobyl and Kyshtym accidents, from nuclear weapons testing in Semipalatinsk, and from inadequate disposal of radioactive wastes in other areas.

Possible partners: EAP task force, PPC, EBRD, WB, UNDP, PHARE, TACIS, WHO/EURO and countries which have offered to provide assistance

2.5 Assistance to countries recovering from the consequences of armed hostilities

357. Peace is a prerequisite for improvements in environmental health and for permanent sustainable development in the Region, but armed conflicts are still the cause of untold damage to people and property in several areas of the Region. Until hostilities have ceased, environmental health considerations will have low priority compared with meeting the basic needs of shelter and food for displaced and besieged people; by the end of 1992 there were 4 million refugees in the Region, with 80% concentrated in 8 countries, mostly in camps. Once peace is achieved, the tasks of rehabilitating devastated agricultural areas, reconstructing war-damaged cities and environmental health infrastructures and services, resettling whole populations driven out of their homes, and restoring normal living conditions in countries made economically unviable by sanctions against them or their neighbours will all have to be tackled internationally, at the request of countries and in support of national measures. The obligation of solidarity and the imperative of self-interest will both argue for such efforts to be of considerable magnitude. Environmental health considerations should be an essential component of those efforts. They will ensure the sustainability of results, provided they are taken into account at an early stage, rather than being reflected in uncoordinated improvization. International cooperation on the environment and health is important for the promotion and maintenance of peace.

358. WHO, in close collaboration with Member States and relevant intergovernmental and nongovernmental organizations, including funding institutions, will start to plan the actions

which will be required to alleviate adverse environmental health conditions and restore basic environmental health services once peace is achieved. A major international effort will be needed in order to hasten the return of the survivors of hostilities to normal life, including the resettlement of the very large number of refugees. Environmental health priorities will have to be strongly emphasized in carrying out actions to restore acceptable living conditions, rehabilitate devastated agricultural areas and reconstruct war-damaged cities and environmental health infrastructures.

Possible partners: UNHCR, ICRC, WHO/EURO, WFP, EBRD, WB, UNEP

CHAPTER 3. IMPLEMENTATION MECHANISMS

3.1 International partnership for Agenda 21

359. Agenda 21, as a blueprint for how to make development socially, economically and environmentally sustainable, calls for intersectoral collaboration by the many actors responsible for achieving such development. EHAPE should be seen as a framework for actions in Europe to achieve the health objectives of sustainable development. The partnership of international organizations will be essential in helping Member States develop and implement their action plans for improving environmental health.

360. The partnership of intergovernmental and nongovernmental organizations dealing with public health and environmental protection is essential at this time of political change in Europe. To this end WHO will be guided, in implementing EHAPE, by decisions taken by the United Nations Commission on Sustainable Development in May 1994 concerning drinking-water and environmental sanitation, chemical safety, wastes, human settlements and human health. The evolving role of UN/ECE's Environment for Europe process as an instrument for coordination of international action at the pan-European level gives added impetus at the regional level to the global efforts of the Commission.

361. Environment and health are interdependent, yet the full potential for European cooperation in these fields is far from being realized. There is no appropriate framework to discuss, in a systematic way, how the respective organizations can put their combined responsibilities, expertise and resources to more effective use either through joint action or by simply coordinating their respective programmes so that they are mutually supportive. The Helsinki Conference should further strengthen the alliance between the public health and environmental protection sectors in creating a new framework for collaboration and effective implementation of environmental health actions in Europe. The need to involve Ministers with responsibilities for relevant economic sectors in resolving environmental health issues remains to be addressed. Environmental health could achieve a higher profile if it were placed on the agenda for meetings of Heads of Governments.

362. To implement EHAPE effectively, it is necessary to secure the full support and participation of the public. This can be achieved through close collaboration with local authorities and relevant nongovernmental organizations as partners in achieving the common objective – an environment supportive of health.

3.2 European Environment and Health Committee

363. The successful and sustained implementation of EHAPE is dependent on collaboration between the partners to the Environment for Europe process and WHO's Regional Organization for Europe.[a] Despite making as much use as possible of existing coordinating mechanisms, it is judged that implementation of EHAPE will require its own machinery. In order to harness the cooperation and involvement of Member States, through their ministries of the environment and of health, together with relevant international organizations and funding agencies in giving effect to EHAPE, the European Environment and Health Committee (EEHC) is accordingly being established.

364. The Committee should comprise four representatives designated by the WHO Regional Committee for Europe, four representatives selected by the UN/ECE Committee on Environmental Policy and, subject to the approval of the respective institutions, representatives designated by UN/ECE, WHO/EURO, EC, CE and possibly other intergovernmental organizations and international funding agencies. A secretariat will be provided by WHO/EURO alone or in cooperation with one or more of the other organizations involved.

365. The functions of EEHC will be:

- to coordinate and evaluate the implementation of EHAPE;
- to assist in the identification of emerging environmental health issues that require collaborative action or further study;
- when requested by countries, to facilitate and support the development and implementation of cost-effective country environmental health action plans, including assistance in the analysis of economic, environment and health implications of particular policy and intervention options; and to assist in the identification of external resources for the development and implementation of plans, including those from countries which have offered support;
- to promote and facilitate the development of joint projects by international organizations at European level in support of EHAPE;
- to provide advice on environmental health issues to organizations and donors and Member States ready to support countries in economic transition or recovering from the effects of armed hostilities;
- to foster the exchange and dissemination of information.

366. EEHC might consider the establishment of subregional subsidiary bodies such as the one it is proposed to set up for the central Asian republics of Uzbekistan.

[a] The term "Regional Organization" (WHO Constitution Chapter 11, Articles 44–53) refers to the separate but interactive roles and responsibilities of WHO Member States, the Regional Committee and the Regional Office.

3.3 Technical support

367. WHO/ECEH, working closely with EEA and other intergovernmental and nongovernmental organizations, should be recognized as the principal technical instrument for providing support to EHAPE and as the principal executive arm of EEHC on technical issues. WHO/ECEH should, to the extent that resources permit, respond to the needs of Member States and to requests from EEHC in such fields as:

- technical cooperation with individual Member States of the European Region of WHO in relation to the implementation of EHAPE and specific environmental health issues, in close coordination with multilateral and bilateral funding agencies;
- development of a comprehensive environmental health information system capable of identifying priority issues, risk factors and trends and of measuring the impact of interventions;
- contribution to the development of scientific environmental health criteria and guidelines as a basis for the assessment of levels of safety and the definition of European norms and standards;
- provision of guidance on environmental health research and development priorities with a view to ensuring that effective action is taken and, in close cooperation with other international bodies, including the ESF in order to secure the optimal deployment of funding and resources that such research and development require.

368. The implementation of EHAPE will also depend on the expertise available in many institutions of excellence in Europe; the network of WHO collaborating centres and existing European programmes and projects will play a very important role in this respect.

369. Close collaboration with local authorities through different programmes and projects, such as WHO/EURO's Healthy Cities project, as well as with specialized nongovernmental organizations, will provide additional support in achieving the EHAPE objectives of gaining the full support and participation of the public.

References

1. World Commission on Environment and Development. *Our common future*. Oxford, Oxford University Press, 1987.

2. *Targets for health for all: the health policy for Europe*. Copenhagen, WHO Regional Office for Europe, 1993 (European Health for All Series No. 4).

3. *The European Charter and commentary*. Copenhagen, WHO Regional Office for Europe, 1990 (European Series No. 35).

4. *Our planet, our health: Report of the WHO Commission on Health and Environment*. Geneva, World Health Organization, 1992.

5. *Earth Summit '92 – The UN Conference on Environment and Development, Rio de Janeiro, 1992*. London, Regency Press Inc., 1993.

6. World Health Assembly resolution WHA46.20. *WHO global strategy for health and environment*, 1993.

7. Resolution of the Council and the Ministers for Health, meeting within the Council of 11 November 1991 on health and environment (91/C 304/06). *Official journal of the European Communities*, C 304: 6 (23 November 1991).

8. *Towards sustainability: A European Community programme of policy and action in relation to the environment and sustainable development*. Vol. 2. Brussels, Commission of the European Communities, 1992 (document COM92 23).

9. *Environment and health: a comprehensive survey*. London, Chapman & Hall (in press).

10. Elements for a long-term environmental programme for Europe. *In: Contribution to the Ministerial Conference Environment for Europe, Lucerne, Switzerland, 28–30 April 1993*. Geneva, United Nations Economic Commission for Europe, 1993 (document ECE/ENVWA/30).

Annex 1

THE EUROPEAN CHARTER ON ENVIRONMENT AND HEALTH

PRINCIPLES FOR PUBLIC POLICY

1. Good health and wellbeing require a clean and harmonious environment in which physical, psychological, social and aesthetic factors are all given their due importance. The environment should be regarded as a resource for improving living conditions and increasing wellbeing.

2. The preferred approach should be to promote the principle of "prevention is better than cure".

3. The health of every individual, especially those in vulnerable and high-risk groups, must be protected. Special attention should be paid to disadvantaged groups.

4. Action on problems of the environment and health should be based on the best available scientific information.

5. New policies, technologies and developments should be introduced with prudence and not before appropriate prior assessment of the potential environmental and health impact. There should be a responsibility to show that they are not harmful to health or the environment.

6. The health of individuals and communities should take clear precedence over considerations of economy and trade.

7. All aspects of socioeconomic development that relate to the impact of the environment on health and wellbeing must be considered.

8. The entire flow of chemicals, materials, products and waste should be managed in such a way as to achieve optimal use of natural resources and to cause minimal contamination.

9. Governments, public authorities and private bodies should aim at both preventing and reducing adverse effects caused by potentially hazardous agents and degraded urban and rural environments.

10. Environmental standards need to be continually reviewed to take account of new knowledge about the environment and health and of the effects of future economic development. Where applicable such standards should be harmonized.

11. The principle should be applied whereby every public and private body that causes or may cause damage to the environment is made financially responsible (the polluter pays principle).

12. Criteria and procedures to quantify, monitor and evaluate environmental and health damage should be further developed and implemented.

13. Trade and economic policies and development assistance programmes affecting the environment and health in foreign countries should comply with all the above principles. Export of environmental and health hazards should be avoided.

14. Development assistance should promote sustainable development and the safeguarding and improvement of human health as one of its integral components.

Annex 2

TABLES (COUNTRY ENVIRONMENT AND HEALTH ACTION PLANS)

Table 1. Examples of strategies for country environment and health action plans

Priority problems	Objectives	Actions	Actors	Time frame
Group 1 – Basic environmental health hazards				
1. Food- and waterborne infectious diseases (increasing trends; substantial economic costs as well as health impairment)	To prevent gastrointestinal infections, particularly in infants and children	– Provision of adequate supply of clean water to every home – Control of microbiological contamination of food – Education of public on hygiene	Departments of environment and health at central and local levels (lead role) + Private water companies + Departments of agriculture and food + Farming and food industry associations + Public	Country EHAP by 1996 – to include target dates for achieving specified objectives, with defined interim milestones; to be determined nationally, according to scale of EH problems, resources available, etc.
2. Winter-type smog; exacerbation of asthmatic symptoms; impairment of neurophysiological development (Pb)	To prevent or mitigate known adverse effects on health from air pollution	– Clean-up of urban air pollution "hot spots" (reduction in emissions of Pb, As, SO_2, TSP)	+ Departments of industry and energy	
3a. Threats to environment and health from accidents and disasters	To prevent and mitigate consequences of major accidents and natural disasters	– EIA of land use, including siting, geology, meteorology, etc.; plant design – Management and worker training in accident prevention, containment – Development and rehearsal of emergency response plans	Multisectoral, with defined lead roles in central government and at local level Emergency services – police fire medical Public	

Priority problems	Objectives	Actions	Actors	Time frame
3b. Preventable mortality and morbidity from accidents involving individuals rather than populations	To prevent domestic (see 4), occupational, and road traffic accidents	– Identification of industries/works with highest risk in order to take appropriate measures to prevent accidents – Investigation of road traffic accidents to identify role of environmental factors in causation and take appropriate preventive measures	Departments of + Industry/employment + Transport/roads + Urban planning + Public	
4. Urban settlements	To improve social and physical living conditions, particularly for disadvantaged; to reduce the number of homeless people	– Identification of EH problems – Development of action plan to deal with priorities, in cooperation with local communities	Multisectoral at local authority level + Public	

Priority problems	Objectives	Actions	Actors	Time frame
Group 2 – Potential environmental health hazards				
1. Ambient air pollution: regular exceedance of AQG	To reduce exposures to pollutants to levels in accordance with health-based AQG	Reduction in emissions from industry and energy sources, and from transport	Departments of environment and health at central and local levels (lead role)	As for Group 1
2. Transport	To reduce air pollution (including summer-type smogs), accidents (see Group 1), urban congestion and noise (see Group 3)	Use of lead-free petrol; reduction in traffic density; improved public transport systems, etc.	Departments of + Industry, energy, transport; + Finance (economic instruments) + Public	
3. Indoor air pollution	To reduce respiratory illness in children from exposure to indoor NO_x, ETS, allergens To reduce lung cancer risks from exposure to radon	– Assess extent of problem in Region: exposure monitoring, health studies – Introduce remedial measures – Identification of radon-prone geological areas – Monitoring indoor radon concentrations – Remedial action where indicated (including reduction in levels of insulation)	WHO/ECEH + Housing departments + Building industry + Public	

Priority problems	Objectives	Actions	Actors	Time frame
Group 3 – Environmental factors affecting wellbeing				
1. Noise	To reduce noise-related stress	– Reduce road traffic noise by urban planning measures and improved vehicle design – Develop better methods for dealing with neighbourhood noise	Departments of environment and health at central and local levels + Transport + Car industry + Public	As for Groups 1 and 2
2. Recreational water quality	To improve the quality of waters used for recreation, particularly bathing	– Treatment of municipal, agricultural and industrial wastewaters	+ Agriculture + Industry + Water authorities	
3. Drinking-water quality	To improve the organoleptic properties of drinking-water	– Assessment of public perception of organoleptic properties of drinking-water – Identification of nature and source of problem(s) – Remedial measures	+ Water authorities + Public + Industry + Agriculture	
4. Quality of the environment	To achieve and maintain an environment which will enhance the development of children	– Assessment of beneficial and adverse effects of environment on development – Identification of priority actions to create optimal environmental conditions for development	+ Education department + Teachers + Psychologists + Medical profession + Parents	

Key: Pb = lead; As = arsenic; SO_2 = sulfur dioxide; TSP = total suspended particulates; EHAP = Environmental health action plan; AQG = air quality guidelines; NO_x = nitrogen dioxides; ETS = environmental tobacco smoke; WHO/ECEH = WHO European Centre for Environment and Health; EIA = environmental impact assessment.

Table 2. Examples of activities and infrastructures supporting country environment and health action plans

Priority needs	Objectives	Actions	Actors	Time frame
Group 1 – Infrastructures to support basic environmental health improvements				
1. Intersectoral collaboration in development and implementation of EH policies	To resolve differences of interests and responsibility, of different branches of government, in reaching decisions affecting environment and health	Develop intersectoral mechanisms at central and local levels (with vertical as well as horizontal links) for decision-making on EH (hazard identification, risk assessment, priority-setting – including assessment of health benefits in relation to costs of interventions)	Departments of environment and health (lead role) + Industry, energy, transport, agriculture, food, economics, finance, etc. as necessary + Local and municipal authorities	Develop country EH policies and action plan by 1996, with realistic targets and interim milestones Timescales for targets to be determined at country level, according to scale of problems, resources available, etc.
2. Informed public participation	To improve public participation in EH policy development and implementation	– Develop environmental health information system – Provide information to media, NGOs and public as well as to decision-makers – Education in EH	+ Public + NGOs + Media + Departments of education	
3. Development and use of appropriate tools for EH management	To utilize appropriate tools for implementing EH policies	– Use of variety of control measures – Monitoring for compliance – Enforcement – Development and use of appropriate indicators for monitoring progress	+ Industry sectors + Legal departments of relevant government agencies	As before

Priority needs	Objectives	Actions	Actors	Time frame
Group 2 – Supplementary support for development and management of environmental health programmes				
1. Environmental health services (EHS)	To develop EHS to meet needs of human health and welfare, as influenced by the environment, including technical and administrative measures	– Recognize role of local government and municipal authorities in providing EHS adapted to needs of local population – Establish infrastructures and provide adequate resources – Provide for career development of EH professionals with training courses emphasizing multidisciplinary integrated approach	+ Local and municipal authorities + Department of education + EH professionals	
2. Occupational health services (OHS)	To ensure access to OHS for >80% of workers in Region, with emphasis on those at greatest risk of disease and/or injury	– Ratify and implement relevant ILO conventions – Identify where workers are at greatest risk and take steps to ensure adequate OHS provision – Introduce incentives for small/medium-sized industries to provide OHS – Develop programmes to maintain and diversify skills of unemployed, particularly the young unemployed – Prevent/mitigate health hazards of unemployment	Departments of health, industry, employment + NGOs (industry sectors) + Trades unions Departments of employment, education, social security + Technology institutes	As before
3. Research	To provide improved basis for policy decisions on EH	– Develop methods for follow-up and evaluation of previous policy decisions – Develop appropriate indicators for monitoring EH improvements – Enhance awareness among medical professions of potential links between environment and health; develop reporting systems for suspected or proven illness due to environmental factors	Departments of environment and health + Professional bodies	

Priority needs	Objectives	Actions	Actors	Time frame
Group 3 – Options for activities and infrastructures in support of environmental health strategies to improve wellbeing				
Tools for decision-making on EH policies related to achieving environments conducive to wellbeing	To obtain representative public views on priorities for improvement of environment to promote wellbeing To develop methods for assessing benefits to wellbeing vs costs of possible environmental interventions	– Develop better methods of ascertaining public opinion – Develop improved indicators of wellbeing – Define relationships between environmental factors and beneficial or adverse effects on wellbeing	Departments of health and environment	As before