

Action Programme "Environment and Health"

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I. Outset situation

In 1984, the member states of the World Health Organization Regional Office for Europe (WHO /Euro) adopted the strategy "**health for all**", using it to agree for the first time on a common health policy, with a range of objectives to be achieved by the year 2000. In this policy, in keeping with the relevant WHO definition, health is understood not simply as the absence of sickness; instead, it means physical, mental and social well-being. The environment must be shaped in such a way that it permits healthy life in this sense. Health takes priority over economic interests. In the understanding that human health depends decisively on a broad spectrum of environmental factors, the member states also defined priority objectives for areas of environmentally oriented health protection, within the framework of this strategy.

Numerous contemporaneous international initiatives for environmental protection are based on the process of sustainable development, as outlined by the United Nations; it is defined as development that satisfies the needs of the present without placing the opportunities and possibilities of future generations at risk. It reached a climax in 1992 in the Declaration of Rio and in Agenda 21.

Policy in the area of "environment and health" must be oriented to the central idea of sustainable development, which harmonises economic activity and living with the natural bases for life and thus provides a decisive basis for making health possible for all.

The realisation that improvements in the area of "environmental health" can be achieved only through co-operation between the responsible parties in the health sector and those in the environmental protection sector led to the First European Conference on "Environment and Health" in 1989 in Frankfurt/Main. Germany has actively supported this process.

At the Frankfurt Conference, the "European Charter on Environment and Health" was adopted; its principles are expected to remain valid for a long period of time.

This Charter states:

"Every individual is entitled to an environment conducive to the highest attainable level of health and wellbeing, to information and consultation on the state of the environment and on plans, decisions and activities likely to affect both the environment and health, and to participation in the decision-making process".

The Second European Conference on "Environment and Health" in 1994 in Helsinki took place in a Europe that had undergone profound political change since 1989. The number of Member States in the WHO's European region had increased from 29 to 50. Along with these political changes, many countries underwent significant changes in their demographic and social structures. The process of solving Europe's remaining environmental and health problems is becoming increasingly more difficult; one reason for this is unemployment and the consequences of increasing economic globalisation.

For the Second European Conference, the World Health Organization presented an "Environmental Health Action Plan for Europe (EHAPE)". The environment and health ministers of the participating countries agreed to implement this plan on the national level by means of "National Action Plans on Environment and Health (NEHAPs)". In 1999, at the Third European Conference on "Environment and Health" that will take place in London, the experience obtained in preparation and implementing the NEHAPs will be evaluated and the emerging problems will be analysed.

At the level of national activities, the Environmental Health Action Plan for Europe calls for management instruments as well as a comprehensive political reorientation in the area of environmental protection where this is relevant to health. This comprehensive reorientation is aimed primarily at the requirements of the former East Bloc countries undergoing economic change.

In the past few years in Germany, significant parts of such a reorientation have already been implemented through environmental policy and legislation. Such environmental policy is to be further refined, and existing environmental stresses, and the environmentally based burdens on health resulting from them, are to be further reduced by means of ambitious environmental quality objectives. In the process, particular attention is to be given to aspects of environmental stresses and children's health.

Germany still has shortcomings with respect to structures and management strategies for work in the common area involving both the environment and health. The Federal Ministry for Health (BMG) and the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) have thus agreed to meet their obligations from the Conference of Helsinki by means of a joint action programme that includes both improvement of strategies for working on the area of environment and health and definition of high-priority, health-relevant environmental quality objectives.

The purpose of the action programme on "environment and health" presented here is to place health-oriented environmental protection, and environmental medicine, within the framework of an overall strategy, on a viable basis that is in keeping with current and future requirements.

The action programme includes comprehensive **documentation** compiled from contributions by the competent scientific higher federal authorities. The documentation volume presents the current status and findings and thus provides the justification for the proposed objectives and measures.

This text does not represent an agreed programme of the federal government. The programme names the objectives that are required in light of current knowledge from the perspective of the Federal Ministry for Health and the Federal Environment Ministry and should serve as a **basis** for the future development of the policy field "environment and health". The further design and implementation of the programme will take place in close coordination with all parties involved and affected.

Where the listed measures affect the competence of other political areas, or fall within the scope of responsibility of the Länder, municipalities, the scientific sector or industry, the programme does not prescribe finalised measures. The programme is intended as a basis for intensive dialogue.

II. Objectives and intersectoral measures

A. Improvement of environmentally oriented health monitoring and reporting

Early recognition of problem areas in environmentally oriented health protection, and execution of suitable health policy and environmental policy measures, are possible only with realistic, current, environmentally oriented health monitoring and reporting.

To act properly in the areas of health-oriented environmental protection and environmentally oriented health protection, the state requires reliable findings about the status and development of public health and about environmental conditions that impair or promote health. Such findings are required especially as a basis for evaluating the efficiency of state measures. Such evaluation can help to avoid expensive future measures that have little effect on human health and on the environment. Therefore, such evaluation is of great significance during periods of restricted funding. It is important that such environmentally oriented health monitoring and reporting (or health-oriented environmental monitoring and pertinent reporting) be understood not solely as information collection and analysis, but also as a means of identifying needs for action and for initiating measures. The aim must be "data for deeds", not a "data cemetery".

As it is, a wealth of environmental data and health data are available. Experts agree, however, that Germany has considerable shortcomings in co-ordinated monitoring of the environment and health and their interconnections and in

relevant reporting. The Federal Environment Ministry and Federal Health Ministry have thus decided to create a basis for improving the situation. The aim is to create a differentiated monitoring and reporting system for health and the environment (environment-health surveillance system), by combining and completing existing resources. A beginning in this area has already been made by linking an environmentally oriented survey with the Federal Health Survey for 1997/98 (see Chapter 4.1 of the documentation volume).

A permanent, differentiated environment/health monitoring and reporting ("surveillance") system is to be established:

The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) and the Federal Ministry for Health (BMG) plan to carry out regular environmental and health surveys, at intervals of approximately seven years, that will be the centrepiece of a federal environment/health surveillance system.

The scientific higher federal authorities will carry out the following tasks, within the framework of the environment-health surveillance system:

- Networking, methodological co-ordination (possibly, also standardisation) and overarching evaluation of those data surveys on health and the environment that can provide indications of possible interconnections between the environment and health.
- Support of quality assurance for monitoring and reporting systems.
- Opportunities for regular training of the parties involved.
- Preparation of proposals for interdisciplinary co-ordination and advising of the responsible agencies in carrying out epidemiological studies of the environmental impact on health.
- In co-operation with the Länder, development and testing of a concept for a flexible network of sentinel practices and sentinel public health offices, a network that will permit co-ordinated forwarding and analysis of the obtained data; the aim in this connection should be to identify and evaluate recently chosen and clearly defined indicators in connection with environmentally caused health impairments.
- In co-operation between the Federal Government and the Länder, to make it possible – as necessary in connection with acute and complex problem cases – for experts of higher federal agencies to assist local actors and to ensure that use is made of available experience at the federal level.
- Systematic study of the health-related consequences of hazardous incidents.

B. Improvement of information management

The general public's and relevant experts' information requirements are growing, and thus reliable, understandable information is required about the health impacts of environmental stresses and products. Suitable structures must be promoted in this area.

According to the European Charter on Environment and Health, "Every individual is entitled ... to information and consultation on the state of the environmental and on plans, decisions and activities likely to affect both the environment and health ..." This right has been largely implemented, on both the European and national levels, by means of environmental information legislation.

To meet the information requirements of experts and the public professional information management is necessary. Comprehensive information dissemination, including open presentation of knowledge and areas in which knowledge is lacking, can help objectify discussion regarding the expected, probable or supposed health consequences of anthropogenic

environmental changes. In this light, the Federal Ministry for the Environment and Federal Ministry for Health will work to ensure that scientific higher federal agencies co-operate closely on issues of the interrelationships between the environment and health and develop joint active information management.

The "Environmental Medicine Information Forum" (Umweltmedizinisches Informationsforum – UMINFO), an electronic information and communications network established by outpatient clinics and consultation centres for environmental medicine, has had practical success in facilitating information procurement. This project is housed in the Documentation and Information Office for Environmental Questions (Dokumentations- und Informationsstelle für Umweltfragen – DISU) of the academy for paediatric medicine at the children's hospital in Osnabrück. That office also houses a Documentation and Information Office for Children's Allergies (DISA), which maintains an Allergy Information Forum (ALLINFO). These projects are being supported by the Federal Ministry for the Environment and Federal Ministry for Health. Both ministries are currently reviewing ways of maintaining these useful systems in the future, of adding to their content resources and of making them available to a wider group.

The establishment of the WHO Collaborating Centre on Environmental Health Information (WHOCC) at the Robert Koch Institute in Berlin represents an important step in co-ordination of international co-operation. In support of the WHO-CC's work, and as a separate contribution to the improvement of information management, the Department of Environmental Medicine (Fachgebiet Umweltmedizin) at the RKI is building an Environmental Medicine Information System (Umweltmedizinisches Informationssystem – UMIS) that will contribute to UMINFO's work in special areas.

The following measures are planned in order to improve information management:

- Establishment of the following sections within the framework of the UMIS Environmental Medicine Information System:
- Database of experts and institutions in the area of environmental medicine
- Press archive on issues of environmental medicine
- Documentation of methods in environmental medicine;
- Ensuring the necessary continuation and expansion of the UMINFO electronic information and communications network;
- Intensifying practical co-operation with the responsible higher federal authorities in the area of press and public relations, by means of the following activities:
- Co-ordinated and joint press information and publications, when topics are worked on by two or more agencies, from different perspectives
- Joint informational events held by scientific higher federal authorities
- Publication of the "Environmental Medicine Information Service" (Umweltmedizinischer Informationsdienst – UMID) by a jointly responsible editorial team representing the three higher federal authorities;
- Preparation and publication of a general overview of "Environment and Health in Germany" for the public;
- Development of initiatives, in co-operation with the Conference of Ministers of Education and Cultural Affairs, for actively informing children and adolescents, in schools, on issues of environment and health; support of suitable pilot projects.

C. Dealing with risks

For years, scientists, policymakers and the general public have discussed the possible health risks resulting from the environment and the immediate surroundings in which people live. This discussion has been repeatedly sparked by reports in the media about new pollutants and other risks. Many of these reports are contradictory, partly as a result of actual gaps in knowledge, and partly because unfounded statements that would not stand up to scrutiny are also publicised and treated as if they were serious opinions. This spectrum is completed by unfounded, sometimes interest-driven attempts to play down the issues.

The seemingly endless numbers of actual and claimed risk factors make it difficult to set priorities rationally and thus to deal with those risks that actually require intensive study. In addition, opinions by the authorities responsible for combating health risks, on current problems, are occasionally rather evasive and noncommittal, and this can increase public disquiet and foster distrust of the state's actions.

In addition, environmentally based impacts on people also have a real financial effect on the health-care sector. In this context, it makes little difference whether those affected become ill as a result of actual or supposed risks – or simply through perceptions of a generally threatening situation; as patients, such people require suitable treatment that in many cases can be very expensive and time-consuming.

Improvement of procedures and organisational structures for risk assessment and standards definition

Risk assessment and standards definition should be based on the broadest possible scientific, social and political consensus. To this end, existing advising and decision-making institutions must be reorganised, and procedures for developing environmental and health standards must be improved, in keeping with available critical studies.

Solidly based risk assessment and pertinent standardisation procedures, calling for suitable participation by concerned social groups, are the basis for setting priorities in environmental and health protection.

In its annual report for 1996, the Council of Environmental Advisors (Sachverständigenrat für Umweltfragen - SRU) found current approaches to be unsatisfactory. In particular, the council noted that the procedures for deriving sovereign standards are defined only as framework conditions or are not published, and that justifications are not available for decisions made. In nearly half of the standard types concerned, no assessment criteria whatsoever were listed. Furthermore, the SRU criticised the fact that concerned parties participated in connection with only 6 % of all standard lists and that hearings of concerned parties took place in only 17 % of standard types. From these figures, the council concludes that in the German system of environmental standards decisions are made with virtually no public participation. On these basis of these findings, the SRU has proposed a multi-phase procedure for defining environmental standards that takes scientific, technical, economic and social aspects into consideration.

In its 1998 annual report, the German Advisory Council on Global Change (Wissenschaftlicher Beirat "Globale Umweltveränderungen" - WBGU) discusses risk problems and emphasises the need for objective discussion about the

acceptability of risks. Other concept approaches are found in the "Sustainability Concept" of the Enquete Commission on Protection of Mankind and the Environment of the German Parliament and in the preliminary study of the "Environment and Health" project of the Office of Technology Assessment of the German Parliament. A research project completed in 1997, supported by the Federal Ministry for the Environment, analysed standardisation problems in detail and made proposals for reorganisation that can serve as a basis for further discussion.

In this light, one emphasis of the present programme is to promote refinement and co-ordination of risk assessment and standardisation, on the basis of generally accepted risk assessment procedures and existing proposals, in such a way that existing shortcomings can be largely eliminated.

The EU's Technical Guidance Document provides a standard basis for risk assessment of chemical substances, although this document is not legally binding. The national bodies and institutions concerned with risk assessment should be encouraged to use the EU Technical Guidance Document, and the document should be improved as necessary.

On both the national and international levels, there is a need for harmonisation of procedures for implementing results of risk assessments within scientifically founded proposals for media-oriented standards, taking relevant legal requirements into account. Several different concepts are still being applied, by numerous different bodies and institutions.

The objective should therefore be to orient existing procedures to standardised principles and to harmonise the procedures as is useful and possible. In addition, proposals should be prepared, taking existing critical analyses into account, for reorganising existing consultancy and decision-making bodies and institutions, and for refining procedures for deriving environmental and health standards. Furthermore, mechanisms must be established for linking the work of the various bodies involved in defining standards and for developing standardised work bases.

Although risk assessment is primarily a scientific process, standardisation is considerably influenced by political and social aspects. Therefore, it must be a clear process that includes the broadest possible basis of socially relevant groups; only in this manner can it acquire political legitimacy.

The following measures should be taken for refinement, co-ordination and harmonisation of risk assessment and standardisation:

- Support for the application and refinement of the EU Technical Guidance Document; holding of a workshop with the participation of risk assessment experts in Germany;
- Formation of an ad hoc commission "Reorganisation of procedures and structures for risk assessment and standardisation", consisting of high-ranking representatives of the responsible federal and Länder authorities, of representatives of bodies concerned with standardisation and of external experts. This commission should have the following tasks:
 - Development of proposals for improving the work of the involved federal authorities;
 - Development of proposals for reorganising the consulting bodies;
 - Development of proposals for a more transparent standardisation procedure that permits suitable participation of socially relevant groups.

The Commission is to present its report within two years.

Development of active, prompt risk communication

"Risk communication" is an important instrument for fostering better public understanding of decision-making processes in environmental and health policy. In risk communication, all participants, wherever possible, must be given the possibility to express their relevant experiences and values.

Risk communication, or discussion with "concerned parties" about risks, is an important part of the risk-management process. It is required because different interest groups, experts and members of the general public often think in terms of very different risk concepts. A rational risk policy must include both scientific risk assessment as well as the risk perceptions of the general public, which are often oriented to very different values. Risk communication thus must be understood as a basically open and thus only partially controllable process. The primary aim of risk communication is not to create risk acceptance but to permit public participation in identifying and assessing risks and in making decisions relative to risk control. It also aims to avoid conflict escalation, and it ultimately seeks to achieve a more equitable distribution of risks.

In keeping with the recommendations of the Enquete Commission on "Protection of Mankind and the Environment", the Federal Government's scientific higher authorities and research establishments can "build bridges" by helping to prepare, present and discuss relevant scientific findings. In order to enhance the authorities' contribution in risk communication, the higher federal authorities should determine what tasks in risk communication they can assume and how practical implementation should take place. This concerns the following matters: (1) Provision of information on risks, (2) Provision and development of staffing and material resources for risk communications and (3) Organisation of processes for communications about significant risk topics. Depending on the occasion in question, these processes must be designed in different ways (see Chap. 4.4 of the documentation volume).

Within the framework of the public risk-communication process, the higher federal authorities should assume a "bridge-building" function. Active, timely risk communications represents an important official task for the higher federal authorities, in their various areas of responsibility. To fulfil this task, the federal higher authorities shall take the following steps:

- Development of basic principles for risk communication by higher federal authorities;
- Implementation of these principles, through definition of the relevant requirements, tasks and responsibilities, as well as through regular evaluation (quality management) of risk communication;
- Establishment of a trainee programme for employees of federal authorities;
- Development of an identification and assessment system that will permit timely identification of emerging risk problems, in order to facilitate dealing with the most important risk topics on a continual, forward-looking basis;
- Development of efficient procedures for involving socially relevant groups in discussion on risks – for example, by means of an interdisciplinary "risk" commission that includes relevant non-governmental organisations;
- Facilitation of involvement of mediators in risk controversies;
- Execution of a model project on "participatory risk assessment";
- Promotion of research and development in the area of risk communication.

The involved higher federal authorities should create the necessary organisational basis for supporting and co-ordinating these measures; the relevant specialised work of authorities should be closely co-ordinated to permit regular exchanges of

information and experience.

D. Environmental medicine

Information exchange, quality assurance and research, in environmental medicine, must be promoted in the interest of assuring high-quality medical care for people with environmentally based health problems.

Environmental medicine so far is only beginning to find its place in medical science. Medical care for people suffering from environmentally based health problems is the task of doctors in private practice and in clinics. Medical associations have responded to this increasing need by creating an additional professional qualification, "environmental medicine", and by preparing a suitable curriculum for continuing education. In addition, consultation centres and outpatient clinics for environmental medicine have become established within the public health care sector and at university facilities. Problems still exist in the area of quality assurance and in evaluation of diagnostic and therapeutic procedures used in environmental medicine. There is also a lack of continuing education facilities, once current transition arrangements conclude, for acquiring the additional qualification in "environmental medicine".

The various responsible parties have a duty to continue their efforts to promote environmental medicine and to intensify these efforts as necessary. The relevant scientific federal authorities can make contributions in provision of information, in scientific evaluation of diagnostic procedures in environmental medicine and in research (see chapter 4.5 of the documentation volume).

Establishment of a central data collection and evaluation office for methods of environmental medicine, drawing on the expertise of the federal medical association, of scientists and other relevant institutions at the RKI.

E. Support of research on environment and health

If environmentally caused health risks are to be identified promptly and assessed scientifically, research in the area of environment and health needs to be promoted and maintained at a high level of quality.

In light of the many interrelationships between the environment and health, it must be possible to promptly identify and scientifically assess environmentally based (usually caused through human activity) health risks and health impairments associated with environmental stresses, and to develop and expand strategies and concrete possibilities for preventing and combating such problems. Too little is known about this area, and much additional research is required.

The Federal Government's programme "Research for the Environment" (1997) responds to this situation and lists key issues for the environmental health complex and priority topics in health-based environmental research.

The Federal Ministry for the Environment and the Federal Ministry of Health shall ensure that, in the framework of the action programme and the existing research concepts and support programmes, research projects are promoted especially in the following areas:

- Environmentally associated health impairments
- Children, environment and health

- Health-oriented assessment of the most significant exposures; optimisation of exposure models
- Evaluation of diagnostic and therapeutic procedures in environmental medicine
- Improvement and evaluation of risk assessment and risk management methods
- Evaluation of registering and monitoring systems
- Practically oriented risk communication and evaluation of models for public participation.

F. Improvement of existing authority structures

If risk management in the area of environment and health is to be effective, existing structures of federal authorities responsible for environmentally oriented health care must be improved.

There are considerable shortcomings in the responsible federal authorities' current work in the area of "environment and health": issues regarding impacts of environmental stresses on human health are considered largely sectorally within the relevant areas defined by applicable legal provisions, such as drinking water, air quality, soil, consumer goods, food and chemicals. What is more, responsibility for these areas is distributed among different authorities and departments. Overarching, comparative assessment of identified and supposed risks – which should be the central basis for the necessary state priorities – is not yet taking place to the necessary extent.

Problems and areas that are not directly subject to legal provisions or have not yet been regulated are often inadequately processed, even though their impacts -including financial aspects – can be quite significant. Examples include:

- Environmentally associated symptoms
- Children's health and the environment
- Allergies and the environment
- Indoor climates and air quality.

As part of implementation of the action programme, existing structures that would be of obvious use in co-operation in the area of environment and health are to be reviewed and redesigned with the aim of achieving optimal work-sharing and flexible processing of current problems, with the necessary co-ordination.

G. International co-operation

International co-operation is required, to permit exchange of existing findings and availability of these findings on the national level. The aim is to maintain or achieve healthy environmentally conditions world-wide.

In most cases, environmental stresses and the resulting health problems are not limited to national boundaries. Stresses and related problems occur in the same or similar forms in different countries; they cross boundaries and even cover large regions. For this reason, it is important for scientific knowledge to be continually published in international journals and new media and for general assessments of knowledge on particular problems to be carried out regularly.

In addition to the European Union and its institutions, which play a leading role in scientific and policy assessment of chemicals (in particular), the World Health Organization (WHO) and the International Agency for Research on Cancer (IARC) are centrally important in the interdisciplinary area of "environment and health". Other international organisations that deal with relevant questions include the United Nations Environmental Programme (UNEP) and the United Nations Economic Commission for Europe (UN-ECE), the World Food Organization (FAO), the International Labour

Organization (ILO), the Organisation for Economic Co-operation and Development (OECD), the International Forum on Chemical Safety (IFCS) and the International Programme on Chemical Safety (IPCS).

On the other hand, work carried out in Germany is often inadequately represented within the international discussion, and findings from other countries or from international bodies are sometimes inadequately considered in decisions made in Germany. For this reason, representation of German positions and scientific findings in the international framework should be intensified, and use of internationally available findings in national and international decisions should be improved.

For quite some time, industrialised countries have been aware of the close relationship between environmental quality and health, and between environmental stresses and impacts on health, and this relationship is a subject of public interest in these countries. This is the basis for the insight into the necessity of close co-operation between environmental and health policy on the national and international levels. In developing countries, acute health problems are often at the forefront of concern. At the same time, environmental issues are given secondary priority. In keeping with the need to implement sustainable development, these countries also need to become more aware of the relationship between environmental stresses and their health consequences, and to understand and establish environmental and health policy as an interdisciplinary field. For this reason, international bodies' awareness of the necessity for close links between environmental and health policy should be enhanced.

Intensification of international co-operation supports implementation of the aims of the action programme; this should be supported by the following, complementary measures:

- Greater integration of environmental and health policy in the international bodies on the global level;
- Greater inclusion of internationally available expertise in established procedures for standardisation and for evaluation of current problems;
- Support of efforts of G8 Environment Ministers to improve protection of children against environmental stresses (Declaration of the G8 Environment Ministers in Miami 1997)
- Improvement of possibilities for internationally publicising experience and insights gained in Germany (for example, through publication of a regular English-language newsletter by the responsible federal authorities);
- Co-ordination of the work of the WHO Collaboration Centres in Germany, in the area of environment and health; improvement of information about the activities of these centres;
- Intensification of German representation in international organisations and events;
- An international comparison should be made to support evaluation and assessment of the significance of environmentally based health impairments that have become particularly significant in Germany.

III. Media and substance-oriented quality objectives

Protection of human health against environmental risks is a task that demands state action in the form of media-oriented measures to support air quality, water quality and soil quality, and to combat noise in order to protect people from its negative health impacts. For this reason, health protection should include particularly vulnerable groups, especially children, and should be available even when several environmentally caused risks are working together.

It must be remembered that only seldom can a direct link be established between an environmental stress and health impairment – or vice versa – since harmful impacts can manifest themselves in many different bodily reactions, and since seemingly homogeneous symptoms can have a wide range of different causes. Thanks to current standards of protection, existing stresses tend to be of a sort in which no acute, rapidly apparent impairments occur. Regardless of the difficulty of proving direct causalities in individual cases, some scientifically founded indications of health-impairing environmental impacts are available; responsible environmental and health policies must investigate these indications, in the interest of precaution, in order to define and implement ways of minimising them if necessary.

In the following, possible risks and measures of risk avoidance or reduction are briefly described (the documentation volume contains detailed descriptions), for six priority areas of health relevance that are characterised by special quality objectives.

A. Outdoor air and climate

Quality objective: air quality conducive to health, throughout the country

Carcinogenic air pollutants, ground-level ozone and fine particulates are particularly significant in terms of their health-impairing or -harming effects. Additional attention must be given to interactions between different pollutants in the air. Substances that affect climate (greenhouse gases) or that attack the earth's atmosphere's ozone layer (such as CFCs) can have indirect impacts on human health.

Carcinogenic air pollutants. The main emission sources include traffic, combustion systems, refineries, coking plants and certain manufacturing industries. For many carcinogenic substances, it is not possible to define threshold concentrations below which no health impairments occur. For this reason, concentrations of such substances should be minimised.

Objectives and measures:

- **Reduction of concentrations of carcinogenic substances in urban areas, if possible to the current level of air quality found in rural areas, including through reduction of traffic emissions (85% reduction of benzene, and a 50% reduction of diesel soot, based on 1988 levels, by the year 2005);**
- **Tightening of emissions standards for carcinogenic substances, in the Technical Instructions on Air Quality Control (TA Luft), by 75 %;**
- **Achievement of strict emissions standards for automobiles (Euro 3, 4, 5); improvement of fuel quality;**
- **Traffic-control measures with the aim of traffic reduction and traffic calming; shifting of**

transport to more environment-friendly modes of transport.

Ground-level ozone. In warm summer weather, increased ground-level ozone concentrations form from ozone precursors (nitrogen oxides and volatile organic compounds (VOCs)), emitted primarily by traffic, combustion systems and in solvent use. Such concentrations can cause eye and respiratory-passage irritations in some persons.

Objectives and measures.

- **Nation-wide compliance with a precaution-oriented intervention target value for ground-level ozone of $120 \mu\text{g}/\text{m}^3$ (as a mean value over an 8-hour period)**
- **Reduction of VOC emissions from products and industrial production**
- **Initiative for Europe-wide measures with the aim of reducing emissions of ozone precursors by approximately 70 %, based on 1988 levels, by the year 2010.**
- **Amendment of the regulation on summer smog.**

Fine particulates. The health-related significance of particulate pollution of breathing air depends not only on the chemical properties of such particles, but also significantly on the particle size involved and thus on the exposition sites in breathing passages. Particles with diameters of less than $10 \mu\text{m}$ (fine particles) have a particularly significant impact on health. Emissions of fine particles, especially from industrial plants and traffic, must thus be reduced, preferably through regulations with EU-wide validity.

Objectives and measures:

Initiatives to tighten standards for fine-particle emissions from industrial plants and from traffic, within the relevant EU directives, and compliance with the limit values for immissions agreed in 1999 on the basis of the Framework Directive on Air Quality.

Carbon dioxide (CO₂) and other greenhouse gases. Human activities have considerably increased atmospheric concentrations of greenhouse gases such as CO₂. Unless countermeasures are taken, serious climate/global changes (such as higher air temperatures, higher sea levels, and probably also an increase of extreme weather events) must be expected. In addition to directly changing living conditions, such events could have indirect effects on human health – for example, through regional increases and spreading of disease-carrying agents or through greater incidence of weather-related circulatory problems.

As to the relevant *objectives and measures*, attention is called to the Federal Government's relevant programmes of measures.

Ozone-depleting substances. The stratospheric ozone layer functions as a protective shield against harmful solar radiation. The depletion of the ozone layer caused by substance groups such as CFCs, H-CFCs and halons, and by methyl bromide, is resulting in increased UV radiation at the earth's surface. Increased UV-B radiation tends to increase the frequency of health problems such as skin cancer and grey cataracts.

Objectives and measures:

- Co-operation in world-wide efforts to reduce emissions of ozone-layer-depleting substances, by the year 2010, with the aim of restoring the ozone layer's original condition in the long term;
- Tightening of state regulations to reduce ozone-layer-depleting substances;
- Support of efforts by developing countries to increase use of substitutes and to discontinue use of ozone-layer-depleting substances;
- Support for development of new technologies and substitutes.

B. Indoor air

Quality objective: healthy indoor environment

Human health depends decisively on air quality in indoor areas, and indoor air is often polluted with substances from construction products, fittings, household chemicals, biocides and tobacco smoke. While reduction of such substances is primarily the responsibility of consumers and building owners, the state should also promote healthy living areas, within the framework of its responsibilities.

Objectives and measures:

- *Rapid implementation of the EC Biocide Directive (see chapter III F)*
- *Development of strategies for reducing passive smoking*
- *Promoting the development of low-emission construction material, furniture and fittings. Examining to what extent the use of such materials can be supported.*
- *Reduction of potentially harmful emissions from construction materials, furniture and furnishings, by means of effective health-oriented testing and assessment of products and by introduction of suitable health-oriented labelling systems; reduction of microbial contamination of indoor air (mould fungus) by means of construction regulations and practical recommendations.*

C. Water resources, soil, food

Quality objective: Keep water and soil in a safe condition, nation-wide

In general, thanks to strict regulations, intensive monitoring and technical developments, concentrations of soil, air and water pollution residues in drinking water and in food are so low as to be considered safe. Some problem areas remain, such as excessive lead levels in residential drinking water, seasonal occurrence of parasites in some surface waters and nitrate levels in certain vegetable crops. Existing regulations should be refined, in part through implementation of the relevant EU regulations (for example the Framework Directive on Water Policy, the Drinking Water Directive, the Contaminants Regulation). In some cases, health risks can also be caused directly by contaminated soils and sites. A general substance-pathway system for appropriately assessing exposures and risks has been developed with BMU research funding.

Objectives and measures:

- *Further reduction of pollutant discharges into the soil, from industry, transport and agriculture (e.g. through bio-waste composts and sewage sludges used as fertilisers);*
- *Review of the effectiveness of measures taken in the areas of industry, transport and agriculture with regard to protection of water and soil quality;*
- *Clean-up of contaminated sites;*
- *Development of testing, measures and precautionary standards for the Federal Soil Protection Act;*
- *Improvement of use-oriented assessment criteria for soil pollution;*
- *Avoidance of construction of potentially groundwater-hazardous facilities in drinking-water catchment areas;*
- *Improvement of complete-coverage monitoring and study of untreated water in catchment areas of water works, and monitoring of drinking water quality in residences;*
- *Development of a federal/Länder programme for replacing lead pipelines in the drinking-water-supply network;*
- *Initiative to define maximum concentrations of other health-hazardous substances in food, on the basis of the EU Contaminants Regulation (Regulation 315/93);*
- *Promotion of organic farming.*

D. Ionising radiation

Quality objective: To minimise radiation

The general public's exposure to ionising radiation results from both natural and man-made sources. In Germany, over 60 % of such radiation is naturally caused, and inhalation of radon in indoor areas is the main contributing factor. The main human-caused component, among the artificial exposure sources, is medical radiation treatments. Emissions from nuclear plants play a comparatively minor role.

Radon. Radon is a natural gas that occurs everywhere in the soil and enters buildings through cracks or walls. It is considered an important risk factor for lung cancer, although smoking is by far the largest source of lung-cancer risk. The average radon concentration in Germany is 50 Bq/m³, although in extreme cases the concentration can reach over 10,000 Bq/m³ indoors, depending on the relevant geological conditions.

Objectives and measures:

- *By means of measures in buildings, maximum indoor radon concentrations should be limited to values recommended by the European Commission: 200 Bq/m³ for new buildings and 400 Bq/m³ on a long-term scale for older buildings.*
- *Informing the public about the radon issue.*

Medical radiation exposure. Use of ionising radiation for medical diagnostics and therapy should be limited to the absolutely required minimum. The possibilities should be investigated, in relevant individual cases, for applying radiation-free examinations and treatments that can be just as medically effective. The possibilities for reducing duplicate examinations should also be studied.

Measures:

- *Amendment of the Radiation Protection Ordinance and X-Ray Ordinance*
- *Adaptation of the Radiation Protection Directive in medicine*
- *Review of the EC directive on medical products (93/92/EEC) and the relevant harmonised standards, and, if necessary, review of the Medical Products Act.*

E. Noise

Quality objective: Reduction of noise to safe levels

The public in Germany is exposed to considerable noise, especially noise from aircraft, railway vehicles and motor vehicles, industry and commerce – and from neighbourhood noise resulting from recreational activities. High levels of continuous noise exposure, as often occur around inner-city traffic, are a stress factor that must be taken seriously. Noise levels that are constantly higher than a daily average level of 65 dB(A) can increase the risk of heart and circulatory disorders. Night-time sleep, the protection of which is particularly important from the standpoint of preventive medicine, is already disturbed at values above 55 dB(A).

The anti-noise measures taken to date, especially measures to limit traffic noise, have been outweighed in many areas by general increases in traffic and growing numbers of vehicles.

Objectives and measures.

- *Permanent reduction of traffic noise by means of co-ordinated technical, planning and legal measures (review or introduction of noise standards for aircraft, railway vehicles and motor vehicles and for tires; extension of night-time traffic limitations; review of thresholds for consideration of traffic-guiding, ordering and restricting measures, reduction of speed limits within built-upon areas, in line with the demands on transport policy put forward by the German Association of Cities and Towns, use of low-noise roadway surfaces, improvements in structural noise insulation, implementation of noise-reduction planning pursuant to Article 47a Federal Immissions Control Act; noise-control measures for existing railway lines, noise-control improvements in rails, amendment of the Aircraft Noise Act with the aim of improvement in the overall level of protection and introduction of specially allocated night protection areas)*
- *Measures against unhealthy recreational noise (education of young people about the relevant health risks, sound-level limits for discos and for portable music players).*

F. Substances and preparations

Quality objective: Protection of human health from harmful effects

Comprehensive findings about the relationships between discharges of certain substances into the environment and certain symptoms and disorders provide a basis for effective measures to protect human health. For certain substances, such as substances with hormone-like effects or with carcinogenic potential, special precautionary measures may be required. Currently, while new substances are toxicologically and eco-toxicologically studied and assessed in accordance with registration and notification obligations pursuant to the Chemicals Act, systematic cataloguing and health-oriented assessment of so-called "old" substances, sold before this Act came into force, are just beginning.

Substances with hormone-like effects. In some animal species that live or feed in waters that are highly chemically polluted, fertility disorders, feminine traits in males, reduced breeding success and organ damage have been observed, all of which are indications of chemically caused hormone disruptions. Study is urgently required to determine whether the significantly lower exposure of humans to such substances can endanger health.

Measures:

- *National research programme (set up in 1997 under the auspices of the Federal Ministry of Research and the Federal Ministry for the Environment), within the framework of an internationally co-ordinated approach, and an initiative for the establishment of additional international research and work programmes*
- *Introduction of any necessary measures to restrict discharges.*

Biocides. The EC Biocide Directive, which came into force in May 1998, requires comprehensive

legal provisions for substances or preparations with which certain pests are killed or restricted in their functions (for example, disinfectants, pesticides and wood-treatment substances). Since the very purpose of biocides poses a basic risk for people and the environment, attempts should be made to reduce biocide use and to use biocides that are much safer in terms of their impact on human health.

Objectives and measures:

- *Passage of an act for implementation of the Biocide Directive in national law;*
- *Introduction of a certification procedure for biocidal products;*
- *Development and implementation of a programme for testing of biocides already on the market;*
- *Bans on biocide products, for private end consumers, that are classified as carcinogenic, mutagenic or teratogenic;*
- *Development and implementation of a programme for integrated pest control outside of the agricultural sector;*
- *Establishment of a reference and co-ordination agency for pest control outside of the agricultural sector.*

Pharmaceuticals. Pharmaceuticals for human beings and animals can contain substances that are highly active biologically, as a result of their intended purpose. In certification procedures, they are studied with respect to their quality, effectiveness and safety, as well as with respect to their environmental effects, although there are considerable gaps in knowledge in this area. Medications for human use enter the environment primarily through wastewater; they can influence human health if they enter the drinking water supply. Discharges of medications for animals result especially from industrial-scale animal husbandry and fish farms. Increasing antibiotic resistance of pathogens a result of overuse of antibiotics presents a particular problem.

Objectives and measures.

- *Execution of a representative measurement programme to determine existing pharmaceutical pollution of water bodies and soils*
- *Evaluation of the environmental risks posed by pharmaceuticals, in keeping with existing procedures to assess the environmental risks of substances*
- *If necessary – initiatives to improve pharmaceutical-certification regulations, on both the EU and national levels.*



Preface

Programmes provide guidance for new paths. They are based on an analysis of the relevant facts and their assessment, as well as on assumptions concerning future developments. Programmes set out ideas on what is to be done to improve the present situation. They are meant to be innovative and open to new insights. Our objectives are inevitably determined by our level of knowledge and understanding. It is at least as important, however, that gaps in the available knowledge, uncertainties with regard to assessment and diverging positions among scientists and in society are identified and accepted as such. If this kind of awareness does not exist, it is impossible to launch new developments.

We are pleased that this Action Programme on Environment and Health is the first such programme in the history of environment and health policy in Germany that represents a basis for a comprehensive debate on the health effects of environmental impacts. The elaboration of the Programme came as a result of the Second European Conference of Environment and Health Ministers, held in Helsinki in 1994. But even without this landmark event, the determination and statement of our country's position in the field of environment and health was long overdue.

The Programme, which we hope will be widely read and intensively discussed, was developed in cooperation between the Federal Ministry for Health and the Federal Environment Ministry. In addition to this Programme, a comprehensive documentation was compiled by the superior scientific federal authorities working in this field, in consultation with a circle of renowned scientists and doctors. Accompanying activities such as research projects, expert meetings of the World Health Organisation and a Working Group on Environment and Health, comprising representatives of non-governmental organisations, have been instrumental in giving the Action Programme a sound technical basis. Nevertheless, the Programme cannot be but a first step in an intensive debate in society on the issue of health and the environment, which will have to take on board all parties involved in the decision-making as well as all those concerned, including the relevant non-governmental organisations.

Past experience has shown that the complex questions in the area of overlap between environment policy and health policy require an all-embracing approach to a greater extent than in the past. In particular, we need comprehensive information and communication on environment-related health risks of interest to the general public. Those affected have a right to expect competent help and advice, which presupposes a well-established set of methods of environmental medicine. This Action Programme therefore focuses on strategies and measures for improvement in these areas. Furthermore, the Programme specifies quality objectives for

particular substances and environmental media which are of special importance from the point of view of health protection.

However, in pursuing the above-mentioned goals, we must not ignore the fact that the most profound environmental changes having an impact on human health are the result of the enormous level of energy consumption, the will to achieve unlimited mobility as well as contemporary forms of food production. A change of direction is needed in this field in order to pave the way for a sustainable development which is also conducive to public health. These important questions, as well as the aspects of biological risks or risks posed by individual behaviour that is detrimental to health, make it necessary to launch an even more comprehensive debate which goes far beyond the realms of environment and health issues.

This Action Programme on Environment and Health is the fruit of our cooperation - and the point of departure for our future work. It is therefore becoming more and more crucial to intensify cooperation. We therefore call upon all relevant groups and institutions to participate in the debate on and development of the Programme and thus make their contributions to its implementation.