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Environmental

Research

Newsletter

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Introductory Note

1987 has been declared the "European Year of the Environment" by the Commission of the European Communities (CEC).

Among various activities, a regular publication of an Environmental Research Newsletter has been initiated. Its scope is to disseminate information concerning the CEC Environmental Protection Programmes in either Research Actions promoted by Directorate General XII (Science, Research and Development) or Regulatory Actions promoted by Directorate General XI (Environment, Consumer Protection and Nuclear Safety) and Directorate General V (Employment, Social Affairs and Education). It will also include information on other activities relevant to CEC Environmental Protection Programmes.

The Newsletter will appear twice a year and will be distributed free of charge to interested scientists and organizations.

This first issue describes the CEC's Environmental Programmes' content and their objectives. The results obtained will be progressively presented in the future issues together with important events or information of interest to scientists concerned with environmental research.

The editor will be pleased to receive your comments, suggestions and eventual contributions in order to improve the content and the quality of the newsletter.

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The Editor

Editorial

World wide growing concern for environmental problems and the resolution of the 1972 Stockholm UN Conference led the Community to start, at the end of 1972, its own Environmental Policy (EC Summit Meeting, Paris, October 1972).

At that time, as Environmental Protection has not been expressly mentioned in the treaty establishing the European Economic Community, special legal constructions had to be used to implement the Environmental Action and Research Programmes of the Community.

Meanwhile, the Single European Act, amending the EEC treaty and being in force since July 1987, assigns a special importance to the chapter Environment and defines the Community policy with the following general objectives:

- to preserve, protect and improve the quality of the environment;
- to contribute towards protecting human health;
- to ensure a prudent and rational utilisation of natural resources.

Since 1973, the Commission of the European Communities has implemented its environmental work by

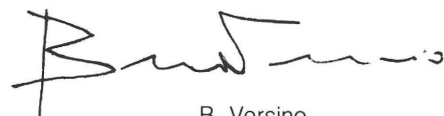
- the Environmental Protection Research Programmes which include the Commission's research activities under the responsibility of Directorate General XII (Science, Research and Development);
- the Environmental Action programmes which include the Community's regulatory work under the responsibility of Directorate General XI (Environment, Consumer Protection and Nuclear Safety);
- the regulatory work of Directorate General V (Employment, Social Affairs and Education) as far as occupational health and toxicology are concerned.

The multiannual research programmes intend, as main objectives, to provide a scientific basis for the Community environmental policy and regulatory actions and to promote long-term research as a preventive approach to important environmental problems.

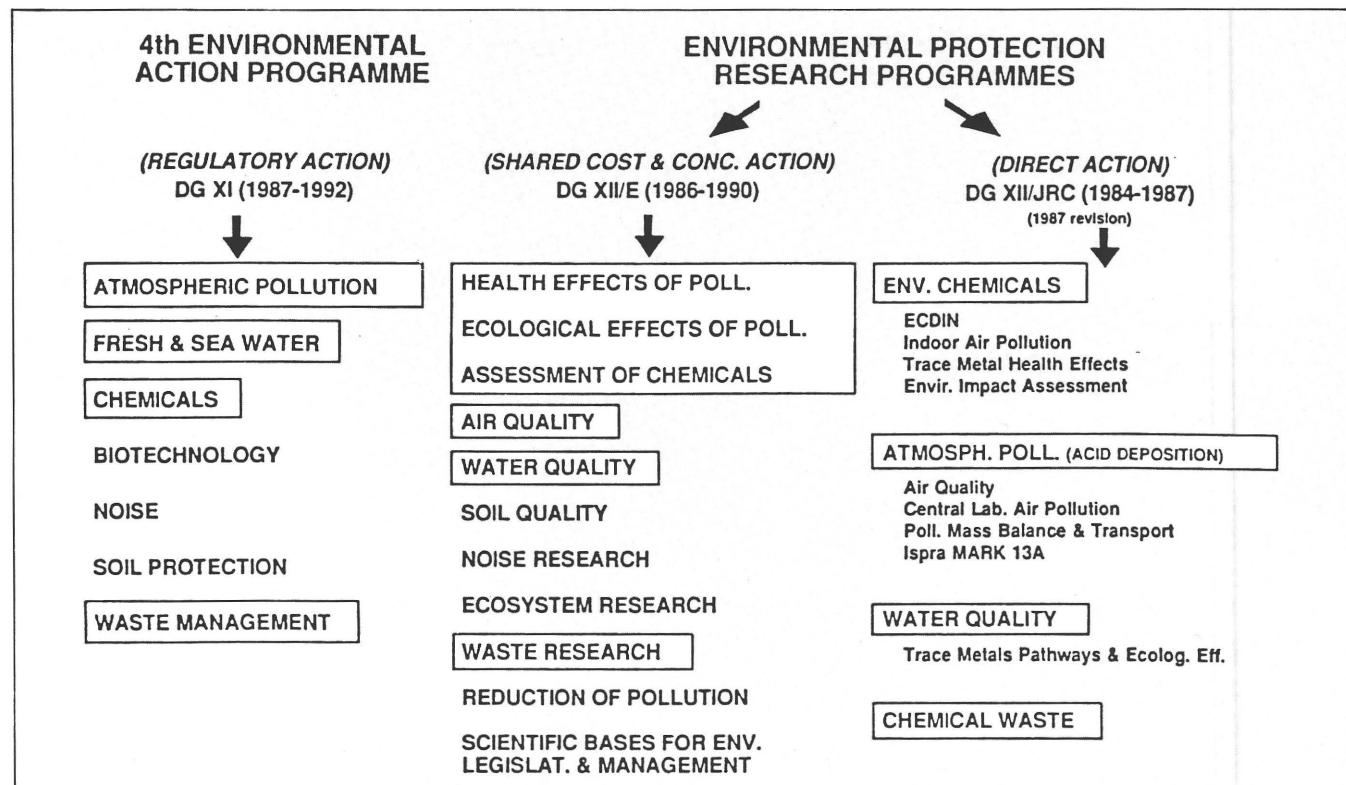
Research programmes are carried out by shared-cost contracts and concerted actions, both managed by Directorate General XII/E, and covering a broad spectrum of environmental research, and by the Commission's own Joint Research Centre (Directorate General XII/JRC, Ispra Establishment), which is focussed according to its experience and competence on a limited number of selected topics.

The relevance of the Environmental Protection Research programmes to the regulatory work of the Commission, for which Directorate General XI is responsible by preparing, drafting, implementing and control of EC-directives, can be seen from the table in which research topics and priority items for regulatory actions are confronted.

This Newsletter intends to report mainly on Community research activities, but it will also inform the reader on new EC-directives which may have an important community-wide impact on the European environmental policy.



B. Versino
Environmental Protection Programme
JRC Ispra



WASTE RESEARCH

EC Research Action Programmes

These programmes are managed by Directorate General XII.

Programmes objectives

The main objectives of the programmes are:

- to provide a scientific basis for the implementation of Community environmental policy;
- to promote long-term research on important environmental problems in support of a preventive approach to environmental protection.

Programmes realisation

The programmes are carried out by means of:

Shared-Cost Actions funded jointly by national authorities and

the CEC. The contracts are supervised and coordinated by the Commission's services, Directorate General XII E.

Concerted Actions funded at national level, with contributions of the CEC for coordination costs. Participating scientists are either from EC Member States or from non-EC Member States involved in the "COST" (European Cooperation in the Field of Scientific and Technical Research) i.e. all the European OECD Member States. Concerted Actions are administered by Community-Cost Concertation Committees and are divided in several Working Parties.

Direct Actions: Joint Research centre (JRC) Research funded and carried out by the CEC at the Community's Joint Research Centre at Ispra, Italy.

I. Shared-Cost and Concerted Actions Programme

The Programme covers 10 broad research areas and is implemented either by Shared Cost Contracts or by Concerted Actions. Funding by the Commission is supplied for selected projects which can fill gaps not presently covered by national research.

A. Health Effects of Pollutants

This area is limited to a small number of coordinated "European Projects" whose objectives include the development of early indicators of exposure and effects, and the establishment of an EC level capability in epidemiology.

B. Ecological Effects of Pollutants

This area covers research on the effects of well characterized organic and inorganic pollutants on non-human targets in inland surface water, estuarine, marine and terrestrial environments, in order to support the establishment of quality objectives.

C. Assessment of Chemicals

The aim of this research area is to develop further methodologies for assessment of chemicals which may be released into the environment and to improve interpretation of test results. Emphasis is given to three areas:

- Methods for assessing the mutagenic and carcinogenic risks of environmental chemicals;
- Alternatives to, and reduction in the use of laboratory animals in testing of chemicals;
- Ecotoxicological test methods.

D. Air Quality

This research area is divided into three main topics:

- Analysis, sources, transport, transformation and deposition of pollutants.

The major aim is the establishment of source-receptor relationships for pollutants and the elucidation of mechanisms and rates of atmospheric conversion processes.

- Effects of air pollution on the natural environment.

Research will consider effects on:

- Terrestrial ecosystems (in particular forests) and agricultural productivity;

- Aquatic ecosystems and wet areas.

- Effects of air pollution on historic buildings and monuments. The main objective is to advance understanding of the mechanisms of pollution damage to historic buildings and monuments, to develop quantitative damage functions and to provide an improved scientific basis for the development of conservation techniques and substances.

E. Water Quality

Research in this area covers inland surface waters, estuarine and marine waters (ground water quality is considered within Area F). The following fields are particularly considered:

- Biotic and abiotic degradation of pollutants;
- Eutrophication.

F. Soil Quality

This research area is complementary to relevant parts of the Community's Agricultural Research Programme. Within the framework of the Environmental Protection R&D Programme, research related to soil quality is limited to environmental aspects, i.e. deterioration of soil quality, accumulation of pollutants in soils and their transfer to ground water and the food chain. The following themes are particularly investigated:

- Behaviour of pollutants in soils (mobility, availability, degradation);
- Effects of pollutants in soils (soil organisms);
- Effects of agricultural and forestry practice on soil characteristics (cultivation techniques and management, erosion, forest management, etc...).

Research in this area is complemented by work on waste disposal (Area I).

G. Noise Research

Research in this area is limited to a few already well defined specific projects.

H. Ecosystem Research

Research in this area consists of multidisciplinary approaches to improve understanding of the stability (or vulnerability) of ecosystems and of the impact of a combination of factors on the overall ecological balance, as well as on different compartments of the environment. The following fields are considered:

- Basic research on the functioning of ecosystems (ecosystems dynamics);
- Effects of agricultural practice and urbanisation on ecosystems, loss of genetic diversity (see also area F);
- Environmental oceanography;
- Biogeochemical cycles (sulphur, nitrogen and phosphorus);
- Conservation of flora and fauna.

I. Waste Research

Research in this area concentrates on environmental aspects and considers waste recycling rather than waste disposal. The following fields are considered:

- Organic wastes;
- Toxic and dangerous wastes;
- Abandoned disposal sites.

J. Reduction of Pollution

Research in this area is intended to provide a basis for reducing environmental pollution. Economic practicability is taken into account although pilot and demonstration projects are not funded. The following fields are considered:

- Advanced abatement technologies concerning either gaseous and particulate emissions into the atmosphere -with the exception of desulphurisation- or waste water treatment by new sensor/control technologies and biotechnological methods;
- Clean technologies using new industrial processes designed to avoid or significantly reduce particular types of pollution or waste, as well as to reduce energy and / or raw material consumption.

Concerted Actions have been funded to study:

“Physico-Chemical Behaviour of Atmospheric Pollutants”

(COST Project 611 related to Air Quality, Area D).

This Concerted Action is organized in five Working Parties:

- Detection, identification and analysis of pollutants;
- Chemical and photochemical reactions - Mechanisms and rates;
- Aerosol characterization and particle formation;
- Pollutant cycles;
- Transport and modelling.

Two special Task Forces to establish the state-of-the-art and to identify future research needs have been created in the fields of:

- Acid deposition (diffusion, transport, conversion and deposition of atmospheric pollutants);
- Photochemical pollution (ozone-precursors relationships).

“Air Pollution Effects on Terrestrial and Aquatic Ecosystems”

(COST Project 612 related to Air Quality, Area D).

This Concerted Action is organized in three Working Parties:

- Air Pollution effects on terrestrial, particularly forest, ecosystems covers:
 - Functioning of ecosystems;
 - Direct effects of air pollution on terrestrial ecosystems;

- Effects of air pollution on soils;
- Combined effects.

- Air pollution effects on aquatic ecosystems, including wetlands, considers:

- Functioning of aquatic ecosystems;
- Effects of air pollution on lakes;
- Effects of air pollution on running waters.

- Air pollution effects on agricultural productivity, including methodological aspects for assessing air pollution effects (biological and ecological points of view) considers:

- Functioning of agricultural ecosystems;
- Direct effects of air pollution on agricultural ecosystems;
- Effects of air pollution on agricultural soils;
- Combined effects.

European “Open-Top Chambers” Project

The common research project on “Open-Top Chambers” initiated and partly funded by the CEC in the framework of the third R&D Programme in the field of Environmental Protection (1981-1985) was incorporated in the above Concerted Action from the very beginning. It started in September 1985. Up to date thirteen scientific institutions are involved, working either on agricultural crops or on forest trees or on both. Direct financial support is provided by the CEC. Due to the regulations in force, institutions from Norway, Sweden and Switzerland do not receive any grant from the European Commission, but are associated to the coordination activities.

“Organic Micropollutants in the Aquatic Environment” (COST Project 641 related to Water Quality, Area E).

This Concerted Action is organized in four Working Parties and three activity Centres. The areas covered by the working parties are:

- Analytical methodologies and data treatment;
- Physico-chemical behaviour of organic micropollutants in the aquatic environment;
- Transformation reactions in the aquatic environment;
- Behaviour and transformation of organic micropollutants in water treatment processes.

The areas covered by the Activity Centres are:

- Inventory of pollutants;
- Mass spectroscopic data;
- Modelling concept for organic pollutants in natural waters.

“Coastal Benthic Ecology”

(COST Project 647 related to Ecosystem Research, Area H).

This Concerted Action comprises four separate programmes corresponding to four selected benthic habitats and communities around the Atlantic coasts of Europe:

- Rocky intertidal programme;
- Rocky subtidal programme;
- Sedimentary intertidal programme;
- Sedimentary subtidal programme.

“Treatment and Use of Organic Sludge and Liquid Agricultural Wastes”

(COST Project 681 related to Waste Research, Area I).

This Concerted Action is organized in five Working Parties:

- Processing of organic sludge and liquid agricultural wastes;
- Chemical contamination of organic sludge and soils;
- Hygienic aspects related to treatment and use of organic sludge;

- Agricultural value of organic sludge and liquid agricultural wastes;
- Environmental effects from organic sludge and liquid agricultural wastes.

“Indoor Air Quality and its Impact on Man”

(COST Project 613 related to Air Quality, Area D).

This Concerted Action organized in three Working Parties aims

at establishing guidelines for:

- Problem building investigations;
- Formaldehyde emission measurements;
- Indoor pollution measurements.

II. Direct Actions: Joint Research Centre Programme

The remit of the JRC is:

- to act as a coordination centre for environmental issues likely to have a short term impact for the regulatory work of the Commission;
- to pursue medium and long term studies in order to inform the Commission and EC Member States on environmental trends and to maintain its role within the European environmental research;
- to provide scientific support to other Commission services in implementing EC-Council directives.

At present the JRC programme is broken down in four research areas, namely: Environmental Chemicals, Atmospheric Pollution, Water Quality and Chemical Waste.

1. Environmental Chemicals

This activity aims to provide validated scientific information on environmental chemicals (e.g. utilization patterns, toxicity, biodegradability of commercial chemical products; emission pattern in indoor spaces) to support policy makers in drafting directives and laws for the protection of human health and the natural environment. It includes the projects: ECDIN, Indoor Air Pollution, Trace Metal Exposure and Health Effects and Environmental Pathways.

ECDIN

ECDIN (**E**nvironmental **C**hemical **D**ata **I**nformation **N**etwork) is a factual databank, publicly available, designed to obtain reliable information on chemical products produced industrially in such amounts as to be actually or potentially harmful for human health or the natural environment.

ECDIN supported the Commission in the preparation of the European Inventory of Existing Chemical Substances and intends to support the Commission in the implementation of EC-directives on chemicals.

ECDIN promotes also the search for ranking procedures as a decision help for priority testing of chemicals and the development of structure/activity relationships for the prediction of yet unknown properties of environmental chemicals.

Indoor Air Pollution (IAP)

This research activity aims at establishing a scientific basis for indoor air quality criteria and for a control of indoor pollution sources affecting human health and comfort. Besides its scientific research the JRC is the scientific technical coordinator of the European COST Concerted Action “Indoor Air Quality and Impact on Man”.

JRC studies include:

- Field measurements of mainly organic pollutants in selected indoor spaces (private houses, school rooms, administrative buildings);
- Provision of data for exposure models;

- Preparation of working protocols and intercomparison exercises (e.g. passive samplers);
- Design, construction, instrumentation and running of a simulation chamber for IAP measurements.

Trace Metal Exposure and Health Effects

The work aims at the preparation of criteria documents for the evaluation of risk to human health due to trace metals from industrialisation, intensive agriculture practices and coal burning for energy production.

The setting of exposure limits and standards of environmental quality relies on the creation of new scientific information in the field of environmental toxicology. Especially low level, long term exposure / vs. effects relationships are being established and the concentration of trace metals in critical organs and indicator media (blood, urine) determined.

Environmental Pathways

The main purpose of this activity is to assess the impact of solid wastes from coal and oil fired power plants on freshwater resources for which maximum admissible trace metal concentrations have already been defined.

The trace metal concentrations in aqueous leachates from fly ash stock piles, desulphurisation sludges and gypsum are determined by advanced radiochemical techniques. The data are used in environmental pathway models to assess the expected impact on freshwater resources.

Experiments aiming at determining the fraction of lead from traffic which, through different environmental pathways, is bound to human blood are also performed.

2. Atmospheric Pollution

This research area comprises activities which contribute to the understanding and abatement of the ‘acid deposition’ problem. It covers topics such as Air Quality, the Central Laboratory for Air Pollution, Mass Balance and Transport of Pollutants and the Ispra-MARK 13 process for flue gas desulphurisation.

Air Quality

The role of ozone and nitrogen oxides in the photochemical transformation of atmospheric pollutants is investigated. The research focuses on:

- The identification of precursors responsible for the photochemical ozone formation;
- The study of atmospheric night-time reactions of nitrogen oxides in teflon bags and simulation chambers using advanced spectroscopic techniques;
- The development of infrared, tunable diode laser systems for the detection of atmospheric gases;
- The investigation on the role of biogenic emissions of forest plants in promoting the formation and deposition of sulphuric

acid in presence of ozone and sulphur dioxide.

Central Laboratory for Air Pollution

The JRC Central Laboratory for Air Pollution Measurements provides the Commission with the technical support necessary for implementing directives on the limit and guide values for sulphur dioxide and suspended particulates in air.

The main tasks of this laboratory are:

- To improve reference methods for sulphur dioxide, black smoke and total suspended particulates according to scientific progress;
- To harmonise measurements and sampling techniques in Member States by round robin tests and cross checks between Member States' laboratories and the Central Laboratory.

These activities will be extended to other atmospheric pollutants such as ozone, nitrogen oxides, hydrocarbons, etc.

Moreover, the JRC is running, within the European Monitoring Environmental Programme (EMEP), a station for the continuous monitoring of chemical and meteorological parameters.

Mass Balance and Transport of Pollutants

The JRC-Ispira has developed instrumentation and methods for the remote sensing of atmospheric pollution and for the description of air mass trajectories on the mesoscale, which are employed by mobile laboratories in European and national field experiments. These are:

- Correlation Spectroscopy (COSPEC) for total burden mapping and mass flow determinations for sulphur dioxide and nitrogen oxides;
- LIDAR (Light Detection and Ranging) for the tracking of plumes from conventional power plants;
- Micrometeorological Station equipped with three dimensional anemometer/thermometer, microbarometer, radiometers and tristatic acoustic sounder (SODAR);
- Tracer Techniques for the experimental validation of source-receptor relationships for pollution transport over complex terrain and different meteorological situations.

The JRC participates in numerous EC Commission sponsored European measuring campaigns and in national and international programmes.

ISPRA MARK 13 A process for flue gas desulphurisation

The ISPRA MARK 13 A process is a new flue gas desulphurisation process based on the oxidation of sulphur dioxide to sulphuric

acid by bromine and the subsequent recovery of bromine by electrolysis of hydrobromic acid with formation of hydrogen.

At present the Commission supports the construction and operation of a pilot plant to desulphurise a flue gas throughput of 32.000 m³/h in Sardegna (Italy).

The JRC conducts also research for extending the ISPRA MARK 13 A process to a combined desulphurisation-denoxing process by using the produced hydrogen for further electrolytical/catalytical reduction of nitrogen oxides.

3. Water Quality

This activity is focused on pathways and ecotoxicological effects of trace metals in water, especially the development, vitality and composition of fresh water communities.

The work is performed by use of "enclosures" which represent microecosystems of controlled chemical compositions in semi-natural physical and biological conditions.

A study on the "Mass Balance of Trace Metals in an Aquatic Ecosystem" has been started on the basis of the experience with mathematical modelling of physico/chemical and ecological parameters for the understanding and control of fresh water eutrophication. The goal is to understand the mechanisms leading to transport, transformation, deposition and remobilisation processes of trace metals and to predict pollution levels of ecological significance by mathematical modelling.

4. Chemical Waste

The objective of this activity is to develop an environmental impact assessment of toxic chemical wastes. It considers especially the physico-chemical characterization of different types of waste and the development of a decision support system for the management of toxic waste.

The study comprises the following topics:

- Establishment of analytical methodologies for the screening and quantitative determination of highly toxic compounds in different types of waste (disposed and dispersed wastes) and their application in laboratory and in-field studies;
- Development of a toxic waste decision support system based on factual data from the "Seveso" accident. The system will give information on levels of danger created by chemical accidents, detail emergency measures to prevent further contamination as well as to suggest strategies for in situ decontamination and rehabilitation of affected areas and for long term surveillance of population effects.

EC Regulatory Actions Programmes

I. Environmental Action Programme

This programme is managed by Directorate General XI: Environment, Consumer Protection and Nuclear Safety.

Aims and Principles of Community Environment Policy

The main principles and the primary objectives of the Community's environment policy were already set out in the First Action Programme of 1973.

Initially, the main objective of the action undertaken was in the sphere of legislative and administrative provisions designed to bring about as quickly as possible a reduction in environmental pollution or at least to prevent an increase in pollution.

More recently, work has progressively concentrated on the development of new instruments aimed at the prevention of environmental problems and at the better management of resources e.g. environmental impact assessment, the establishment of an environmental information system and the promotion of clean technologies.

In order to translate the principles and objectives into practice implementation of the Community's Environmental Action Programmes has been within three broad categories of action:

- To reduce and prevent pollution and nuisances;
- to improve the environment and the quality of life;
- Community action (or where applicable, common action by the Member States) in international organisations dealing with the environment.

During the first decade of Community Environment Policy the European Community has adopted well over a hundred legal instruments concerned with the environment, relating to water and air pollution, chemicals, waste treatment, noise abatement, the protection of species and natural resources and international actions.

EC Fourth Environmental Action Programme (1987-92)

(Official Journal of the European Communities No C70, 18.3.1987)

The approaches to the prevention and control of pollution take into account the following recommendations:

- Need to move from the "sectoral approach" to the "integrated substance-oriented approach" in order to assess exposure, effects including risks for health and environment and to set standards. Hence selection at Community level of a list of priority substances for which to develop control strategies.
- Need to develop further the "source-oriented approach".
- Need to strengthen further *product standards, emission limits and environmental quality objectives and standards*.

The specific sectors concerned by the action are:

Atmospheric Pollution: identification of outdoor and indoor pollution from the standpoint of protection of human health and environment; reduction of total emission to combat acid deposi-

tion and associated damages including corrosion and forest die-back; longer term reduction of ambient air concentration of the most important pollutants; definition and implementation of preventive measures against indoor pollution; inventory of emissions and major source categories; inventory of best available pollution abatement technologies and associated costs; new low polluting technologies; monitoring networks; modelling techniques; economic instruments to prevent pollution; development and installation of instruments allowing to achieve the above-cited objectives.

Fresh Water and Sea Water: groundwater; priority to marine pollution; control of pollution by dangerous substances; "black list", "grey list"; reduction of land-based emission of pollutants into the sea; eutrophication; implementation of international conventions and protocols.

Chemicals: priority on notification of new chemicals and classification, packaging and labelling of existing ones; integrated risk assessment of existing chemicals listed on the **E**uropean **I**nventory of **E**xisting **C**hemical **S**ubstances (EINECS); development of the substance-oriented approach; regulation of dangerous chemicals; further implementation of the directive on Major Accident Hazards; ozone layer.

Biotechnology: classification, containment and control of risks by use and disposal of novel organisms; notification and consultation on the planned use of novel organisms in the environment.

Noise: need to progress beyond the product-oriented approach.

Nuclear Safety: development of the emissions standards concepts; harmonisation of safety criteria; correct application of the notification of nuclear facilities and emergency plans; transport of dangerous materials; management of radioactive wastes.

The management of environmental resources considers:

Conservation of nature and natural resources: maintenance of essential ecological processes and life support systems; preservation of genetic diversity; sustainable utilization of species and ecosystems.

Protection of the soil: contamination by harmful substances of various origins: urban, agricultural or industrial wastes, agro-chemicals, acid deposition, etc...; degradation, misuse and waste; identification and clean-up of polluted waste disposal sites.

Waste Management: support actions for clean technologies: environmentally sound products; demonstration projects for recycling wastes; safe disposal of wastes; revision of the directive on toxic and dangerous wastes; international agreements on transport of dangerous materials; more rational management of wastes: re-use, recycling, treatment, transformation, detoxification.

Urban areas, coastal, and mountain zones.

The Action at international level includes:

Action within international organisations and with third countries.

Cooperation with developing countries on environmental matters.

II. Programme of Safety, hygiene and health at work

This programme of the Commission of the European Communities is managed by Directorate General V: Employment, Social Affairs and Education.

The Council Resolution of 21 December 1987 concerning Safety, Hygiene and Health at Work is reported in the Official Journal of the European Communities No C28,3.2.1988, as well as the content of the programme.

D.G.V issues a publication entitled "Social Europe" which informs on its activities. It is published by the

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and is available in the various countries of the European Communities.

It is proposed to reproduce in future issues relevant extracts of interest to readers of Environmental Research Newsletter.

Other Activities relevant to EC Environmental Programmes

EUROTRAC - an EUREKA Environmental Project

EUROTRAC (**EURO**pean experiment on **TRA**nspport and transformation of environmentally relevant trace **C**onstituents in the troposphere over Europe) is one of the EUREKA Environmental projects studying the impact of human activities on continental -European- tropospheric chemistry.

Main goal

"To provide the basic information to understand and predict the distribution, transformation and transport of pollutants over Europe".

Main objectives

- To increase the basic knowledge in atmospheric chemistry;
- To improve the scientific basis for future political decisions on environmental management in the European countries;
- To promote the technological development of sensitive, specific and fast response instruments for environmental research and monitoring.

Moreover, EUROTRAC intends to cooperate with the Commission of the European Community (COST Project 611), international global research programmes such as the World Climate Research Programme of the WMO, the U.S. initiative "Global Tropospheric Experiment", the International Global Atmospheric Chemistry Programme, the International Geosphere-Biosphere Programme and with other organizations involved in research on atmospheric pollution such as the Dutch/German Programme PHOXA.

Major areas of concern

- Chemistry and transport of photooxidants (e.g. ozone) in the troposphere on a regional and hemispheric scale;
- Processes leading to the formation of acidity in the atmosphere, particularly those involving the presence of aerosols and clouds;
- Studies on uptake and release of atmospheric trace substances by the biosphere.

Main activities

- Determination of the distribution of primary and secondary pollutants to validate models of atmospheric chemistry and to understand the transformation as well as transport of pollutants in Europe;
- Laboratory and field experiments of physical and chemical transformation processes involved in gas, aerosol and droplet phases in order to establish the relationship between primary

and secondary pollutants, such as ozone and acidic substances;

- Development of fast response, sensitive and selective instruments for laboratory, ground and airborne field measurements; enhancement of the quality of observations by stringent tests and intercalibration of instruments;
- Quantitative evaluation of gas and aerosol fluxes between the biosphere and atmosphere; development and validation of deposition models;
- Development of models which describe the transport and transformation of pollutants and which can be used to explain trends of pollution on a regional and global scale and to predict the effects of proposed regulatory measures.

Organization

EUROTRAC is headed by an International Executive Committee (IEC) and a Scientific Steering Committee (SSC) and is managed by an International Scientific Secretariat (ISS).

Participants

To date, there are 14 participating countries: Austria, Belgium, Denmark, Federal Republic of Germany, Great Britain, France, Finland, The Netherlands, Norway, Portugal, Sweden, Spain, Turkey.

Funding

Although EUROTRAC is a collaborative European project, central funds within the EUROTRAC framework will not be available. Funding has to be provided on a national basis through the channels existing in each EUROTRAC country.

EUROTRAC Newsletter

A newsletter will be issued whenever needed (presumably 3-4 times per year) and will be the forum for information transfer among EUROTRAC participants. It will report summaries of important decisions concerning EUROTRAC and information on workshops which have been held or planned. The EUROTRAC Newsletter is edited and distributed by International Scientific Secretariat of EUROTRAC, Fraunhofer-Institute for Atmospheric Environmental Research

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