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## Editorial

Tailoring research to public concerns, and helping Europe's enterprises to do more to tackle them is the dual aim of the "research-industry task forces" created at the joint initiative of three members of the Commission: Mrs. Edith CRESSON, responsible for Research, Education and Training, Mr. Martin BANGEMANN, responsible for Industry, and Mr. Neil KINNOCK, responsible for Transport.

Task forces were launched in spring 1995 covering a number of areas: car of the future, educational software and multimedia, new generation aircraft, vaccine and viral diseases, train of the future, intermodal transport. Other task forces are under discussion; one of these deals with Environmentally Friendly Water Technologies.

Proper management of water resources represents a major challenge for society because of the geographical disparity between water reserves and population density, demographic pressures, deterioration of quality and over-exploitation of water resources, and global environmental pressures which have a detrimental impact on the water cycle.

Sustainable provision of water has become a matter of urgency throughout the world; the European Union and its immediate neighbours from Eastern and Central Europe and the Mediterranean basin are no exception.

Southern European regions, mainly in coastal areas, are characterized by very low rainfall and large seasonal variations. This situation is even worsened by an increasing seasonal demand due to tourism and mainly to irrigation (domestic demand and agriculture demand might increase by 20-50 and 20-30% during the next ten years, respectively).

Inversely, extreme events, such as floodings, regularly affect our countries, with detrimental consequences for the population and the infrastructure. As an example, the 1994 flooding in NW Italy led to the death of 70 persons and to damages equivalent to 5500 Million ECUs.

Many efforts have been made in research, infrastructure development and legislation to cope with the various issues. However, a reinforcement of the Community RTD effort is amply justified. As of now, Community water-related RTD activities are minimal (around 1% of the total RTD spending over the last ten years); they lack credibility and visibility, and are not adequately related to relevant initiatives taken in other policy areas, such as environment, agriculture and international cooperation.

The initiatives taken in the context of other policies have considerable influence on the nature of demand for technologies and services and on the development of the relevant market. Community research must assist enterprises and other actors to respond to these developments. It must help to reduce regional disparities in technological and managerial performance related to water systems, and to solve ongoing problems of water pollution and overexploitation. It must also help in devising adequate responses in the case of extreme events such as accidental pollution or flooding.

The world market is set to triple in the next fifteen years to reach around 127 Billion ECUs; however, to fully participate in this market will require efforts both in adapting technologies and innovation in financial engineering and the organisation of co-operation. Europe is home to several global water companies and high quality water management systems; it is essential to reinforce and extend this European expertise.

The task force on water should allow for better co-ordination and targeting of the European research efforts in this domain. It should establish links between Community research programmes, JRC activities, national and regional programmes, and private sector research.

More importantly, it should allow for improved uptake of research results by the economic actors concerned, for the benefit of society as a whole.

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## Programme News

### EROS 2000-Black Sea

EROS 2000-Black Sea is an interdisciplinary research project coordinated by Prof. J.M. Martin (presently Director of the Environment Institute at the JRC Ispra, Italy), co-funded through EC research programmes and Associations (Environment, PECO, Danube Task Force, INTAS) and aimed at promoting the co-operation between Black Sea riparian countries and EU scientists in view of the development of a scientific tool for environmental management. The research methodology involves the combination of monitoring studies of water quality at reference stations, process studies in the course of cruises and the development of explanatory biogeochemical models based on experimental data.

When the ukrainian research vessel "Professor Vodyanitsky" left the rumanian harbour of Costanta on July 17th, 1995, 29 scientist from 12 western and eastern European Countries were on board. These marine researchers carried on board an impressive number of scientific equipments and apparatuses in view of assessing and understanding, through a common effort, the functioning of the northwestern Black Sea ecosystem.

This nearly-enclosed sea is widely recognized as being heavily damaged by the burden of nutrients and pollutants discharged by the Danube, the Dniestr and the Dniepr rivers. The 15 day cruise, jointly led by C. Lancelot (Belgium) and V. Egorov (Ukraine), represented the first part of the EROS 2000 exercise in the Black Sea and was devoted to the study of the ecological functioning of the pelagic realm under summer conditions. Particular attention was paid to:

- the study of the microbial degradation of the organic matter and its control mechanisms, including the availability of redox species;
- the food chain structure and functioning with special emphasis on key gelatinous organisms like *Mnemiopsis*;
- biogases production and emission to the atmosphere.

The feeding behaviour of all zooplankton functional groups - protozooplankton, copepods, gelatinous - were experimentally addressed for the first time.

The second part of the exercise, led by N. Panin (Rumania) and V. Egorov, took place on August 4 to 28 and was focussed on the benthic communities and on the sedimentation and processes occurring within the sediments and at the sediment-water interface. A benthic lander was successfully used on the continental shelf for the first time and sediment traps were deployed for the seasonal collection of particles.

A total of 77 stations were sampled in the northwestern shelf area, including reference deep stations in the central anoxic basin and those along a longitudinal profile performed with a rubber boat in the St. George branch of the Danube delta. Furthermore, methane seeps were acoustically localized and some 70 new seeps identified in the coastal area.

Despite an intensive monitoring of the coastal area, in particular close to the Dniepr, Dniestr and Danube mouths, seasonal sulphate-reduction and methanogenesis were seldom detected either in the bottom waters or in the superficial sediments. Only the stations located very close to the shore showed indications of some oxygen depletion.

As a whole, these observations might be considered as the indication of a certain improvement in the functioning of the Black Sea ecosystem, this fact being supported by the dominance of diatoms which were unexpected in the season. However, the scarcity of macrobenthos and the ubiquitous presence of significant biomass of opportunistic benthic (*Mediolus*) and pelagic (*Noctiluca*, *Aurelia*, *Mnemiopsis*) organisms testified the severe damage of the ecosystem.

The EROS 2000 cruise across the ukrainian, rumanian and bulgarian waters turned out to be a great success in terms of co-operation between various nations, integration of different disciplines, stimulating ideas and friendship in spite of the language barrier.

The participants in the cruise are expected to meet again in March 1996 in Istanbul for a preliminary evaluation of the data gathered in the course of the exercise.

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### ELOISE update

Regular readers may recall that ELOISE (European Land-Ocean Interaction studies) is a planned joint contribution of the ENVIRONMENT & CLIMATE and the MAST research programmes of DG XII to the international global change research project LOICZ (Land-Ocean Interactions in the Coastal Zone) of the IGBP. ELOISE was initially prepared as a pilot project in the framework of the European Commission initiative ENRICH (European Network for Research on Global Change). An ELOISE Science Plan was published by the Commission late in 1994 in the Ecosystems Research Reports Series of the ENVIRONMENT & CLIMATE Research Programme (Report #11, copies available on request). The Science Plan had the objectives of serving as an aid to researchers in focussing future research in this area on a limited number of topics of European interest, of guiding those preparing research proposals to the Commission research programmes, and, by laying out a common framework for future work at European level, in orienting research agencies/funders in the Member States who had not at that time prepared their own contributions to LOICZ, thus improving co-ordination of European research.

Following Calls for Proposals early this year for both the ENVIRONMENT & CLIMATE and the MAST research programmes a series of projects (10 and 6 respectively) have now been selected for funding. Contract negotiations with the projects participants will commence shortly and it is hoped to have an ELOISE Implementation Plan in place by the end of the year.

To improve co-operation and co-ordination with Member States' activities (and to avoid duplication of effort, double funding etc.) two additional activities have been undertaken. By means of the first of these, using a top-down approach, an overview will be prepared of national efforts with respect to the LOICZ project. Through the second one, using a bottom-up approach, a 2-day meeting was recently convened in Brussels where the 15 European IGBP-LOICZ National Contact Points were invited to present details of current LOICZ activities in their respective countries. The objectives of this first meeting of the European National Contact Points, were to review their activities and to determine how they might best coordinate their efforts with each other and with those of the Commission. The meeting concluded that the Commission could play an important role in coordinating European LOICZ-related research and that ELOISE would be an appropriate vehicle.

It is planned to set up in the near future a Steering Group comprising representatives of the Commission, projects coordinators, and a suitable selection of national (formal or informal) representatives to assist in the implementation of ELOISE. It is expected that the ENRICH Council can facilitate this process of ensuring coherent and complementary national and international activities. Regular readers will be kept informed of progress through this newsletter and through the ENRICH Information server at <http://www.enrich.hi.is>

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# The Centre for Earth Observation (CEO)

## CEO Background

The European Space Agency (ESA) and the European Commission (EC) have agreed to work towards a more efficient and cost-effective use of Earth observation data, by combining their expertise with that of their Member States plus other relevant European organisations such as EUMETSAT to establish a co-ordinated, decentralised Earth observation network called the European Earth Observation System (EEOS).

The objectives of EEOS are:

- to improve the ability to monitor and understand the Earth System on local, regional and global scales,
- to enable through Earth Observation derived information, the European Union (EU), the Member States, including those of the European Economic Area (EEA), and ESA to implement their own policies and programmes more efficiently,
- to enable European Earth Observation industry to be more robust in European markets and more competitive on the world markets.

EEOS will link with international initiatives such as NASA's Earth Observation System Data and Information System (EOSDIS) and Japan's international satellite data management and information system (EOIS).

In this collaboration ESA and the national space agencies shall take responsibility for receiving data from satellites, and for the pre-processing and supply of these space data.

The EC contribution to EEOS is the Centre for Earth Observation (CEO). The CEO Project should be viewed as a programme of work contributing to the successful establishment of an operational system (the EEOS).

Within the EEOS the CEO will foster the development of applications of Earth observation data that fulfil the specified information requirements of scientific, operational and commercial users. This will ensure that relevant higher level products and information are produced and made available.

Associated with the application development are various services. These will include services that permit access to data and information, and help preserve the data and information.

## Project Status

The CEO project is divided into 3 phases:

- Feasibility Study 1992-1993
- Pathfinder Phase 1993-1995
- Design and Implementation Phase 1996-1998.

The CEO project is now in the Pathfinder phase.

The goal of the Pathfinder phase is to produce by end 1995 a project plan for the Design and Implementation Phase containing sufficient information and understanding of the system to bring the CEO successfully into being. The work of the Pathfinder phase has been described in a Project Plan.

The Pathfinder Phase is organised by Activities each with contributory deliverables. There are 5 Activities, of which the first two (Survey and Understand the Present Infrastructure Status; and Capture User Requirements, respectively) took place simultaneously at the start of the Pathfinder phase. The third Activity (Synthesis) started during Activities 1 and 2, and ends when the implications of those Activities are fully assimilated. The fourth Activity (Plan the Design and Implementation phase) then starts. Throughout the Pathfinder phase, the fifth Activity (Cost and Benefits of the CEO Elements of the System) maintains an up-to-date estimate of the probable cost of the programme.

## Project Organisation

The Pathfinder phase is overseen by a Steering Committee (PPSC) composed of delegates of the Member States of the European Union

(EU) and the European Economic Area (EEA) countries. The members of the PPSC were nominated by the JRC Board of Governors.

The PPSC is also observed by the European Environmental Agency, EUMETSAT, the European Space Agency (ESA) and relevant organisations of the EC such as EUROSTAT, plus other space data providers such as EURIMAGE and Spot Image.

The Pathfinder Phase is managed and co-ordinated by a Project Team based in the JRC Institute for Remote Sensing Applications (IRSA). The Project Team has a number of roles, which include:

- management and co-ordination of the Pathfinder Phase to ensure that the objectives of the Pathfinder Phase are achieved;
- provision of the technical and administrative support for the various study contracts given in support to the Pathfinder Phase.
- synthesis of the results of the Pathfinder Phase derived by the various contractors participating in the Pathfinder Phase, in addition to the results derived by the Institutes of the JRC;
- production of the plan for the Design and Implementation phase.

In support of this activity DG XII-D4 (Space Unit) provides strategic and policy input. DG XII-D4 coordinates the contact with the Member States, and other appropriate international agencies and programmes. They also ensure co-ordination with other relevant services of the European Commission.

Within the JRC there is a wide range of expertise of relevance to the CEO Pathfinder Phase. This expertise is necessary to attain the objectives of the Pathfinder Phase, and is currently provided by four JRC Institutes:

- Institute for Remote Sensing Applications (IRSA);
- Institute for Systems Engineering and Informatics (ISEI);
- Environment Institute (EI);
- Safety Technology Institute (STI).

## Proof Of Concept Studies

To achieve the objectives of the Pathfinder Phase, and in particular in order to understand the requirements of the user for the CEO, it was necessary to undertake a limited number of practical studies (proof of concept studies). These will be based on existing projects, both within the JRC and in organisations in the Member States. They will test the requirement for distributed access to earth observation and associated data. They are also testing the requirement for making these data sets available. The Institutes of the JRC have considerable experience in these areas, both in terms of the projects themselves, and also in terms of the technology to implement the distributed access. It is planned that this expertise will be combined with that of organisations within the Member States in order to undertake the proof of concept studies.

In addition to the Pathfinder studies, it was also considered necessary to test the user requirement for individual technological developments. One example of this is the requirement to create and an on-line tool that will allow access to the various data sets and services provided by the CEO. It is considered that without a practical test of such technologies the full user requirement for such a tool could not be produced. Again the experience of Institutes of the JRC in developing such tools, combined with that of organisations within the Member States gave the possibility to undertake this task.

Finally, within the JRC, and in support of the various activities of the Pathfinder Phase, there is a need to provide a set of support services such as software engineering, quality assurance and networking. At present a prototype World Wide Web (WWW) information server has been established as a test bed to investigate many of the foreseen IT requirements of the CEO programme. The "European Wide Service Exchange - EWSE" page is available for open access using the following address: <http://ewse.ceo.org/> An electronic bulletin, updated periodically, is also included in EWSE.

It should be noted that none of the above presupposes a design for the CEO. All activities to be undertaken within the Pathfinder phase are only in support of the Pathfinder Phase plan.

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# Waste: The European Waste Catalogue

## Background and objectives

Council Directive 91/156/EEC amending Directive 75/442/EEC on waste established that the Commission had to draw up a list of wastes belonging to the categories listed in Annex I of the directive.

Council Directive 91/689/EEC on hazardous waste on the basis of three annexes introduced a new definition of hazardous waste. The directive also prescribed that all categories of hazardous and non-hazardous waste have to be included in the same list.

The list, in the following called European Waste Catalogue (EWC), has been elaborated by a group of independent experts from various Member States and appointed by the Commission. Work was managed by DG XI.

The Commission has adopted the list by its decision of 20 December 1993. The global list of wastes has been published in the OJ of 7 January 1994. The list of hazardous wastes finally has been adopted by the Council Decision of 22 December 1994 and has been published in the OJ of 31 December 1994.

The EWC is an illustrative, non-exhaustive list of wastes and is mostly process/arising oriented. It is subdivided into 20 main categories. There are three levels for the description of a waste: main category, subcategory, type of waste. For an exact definition, a single waste has to be described by all three levels. Totally the catalogue contains 776 types of waste.

According to Directive 91/156/EEC some categories of waste are excluded from the EWC. The most important excluded wastes are: radioactive waste, gaseous effluents emitted into the atmosphere, decommissioned explosives.

Until now the definition of "waste" in the EU Member States and in the OECD countries is rather inhomogeneous. So the EWC has been created in order to assist the waste management authorities of the Member States by means of a defined and EU-wide harmonized list of wastes which at the same time constitutes a legally binding definition of waste. In addition, the EWC can also be considered a helpful tool in the field of transboundary shipment of waste and hazardous waste, and in establishing comparable waste statistics in the Member States. Also, treatment operations and disposal of waste in the Member States has to be regulated uniformly in order to reduce discrepancies of economic and environmental costs and to avoid emerging differences in competitiveness between the Member States.

In any case during the interim period before the implementation of the EWC into national legislation, the national waste catalogues must be linked to the EWC. Indeed, for what it concerns waste management and shipment of waste in the EU, a rather great number of national and international lists, catalogues and regulations exists. Often these are edited and available only in their national language. All these lists must be related to the EWC by a so-called cross-referencing. Then, for the referencing between two national waste lists, the EWC can be used like a bridge.

This finally means that a lot of data has to be handled. Special user-oriented computer programmes are required for the documentation of the lists and catalogues and for the cross-referencing of the various waste lists.

The Environment Institute of the JRC Ispra, together with two German and Italian companies, has developed such programmes. Work was financed, at a large extent (about 60%), through a contract with the German Ministry of Research and Technology and supervised by the German Federal Environment Agency (Umweltbundesamt, Berlin).

## The computer programmes

Two computer programmes, called local and central system, have been developed. The so-called Local System on PC (MS-DOS, Dbase, 30 Kb) is thought for a broader distribution to waste managing offices and single users. It is to be considered to remain a closed system. The so-called Central System (initially: workstation, SCO-UNIX, uniAce and finally: powerPC, Windows, uniAce, 85

Kb) has been created for saving documentation and the periodical updating of the data. It will contain all data in the various Community languages and will be used as reference data base. During the last months the central system has been brought to the windows platform and runs now on a stand-alone PC or in client-server modus as well. Data files from the central system can be extracted in a compatible format and then loaded into the local system.

Up to now the following lists, catalogues, and regulations are introduced in the databases of the two systems:

- European Waste Catalogue containing the list of hazardous waste
- Annexes to Directive 91/156/EEC (waste)
- Annexes to Directive 91/689/EEC (hazardous waste)
- Austrian waste catalogue
- Belgian waste catalogues
- British waste catalogue
- Danish waste catalogues
- Dutch waste catalogues
- Finnish waste catalogues
- French waste catalogues
- German waste catalogue
- Italian waste catalogues
- Swedish waste catalogue
- Swiss waste catalogue
- Council Regulation 259/93/EEC and Commission Decision 94/721/CE on the supervision and control of shipments of waste
- Basel Convention lists
- OECD, IWIC lists
- NACE classification.

The European Waste Catalogue is available in nine EU languages apart from Swedish and Greek. Regulation 259/93 is available in eight EU languages apart from Finnish, Swedish and Greek. The national lists are given in their national languages and in an English translation as well. The international lists are available in their English version.

Concerning the referencing of the national catalogues to the EWC and to the lists of regulation 259 (green, amber, red) a matching code has been introduced, which describes the grade of agreement between the descriptor of a waste of the EWC and the descriptor of the referenced list.

Until now only German authorities have created the respective reference data of the German catalogue to the EWC and viceversa and to regulation 259/93 too. All these references have been introduced in the systems. There are other references (rather incomplete) of some national lists (BE, DK, FR, IT, NL) available, worked out by the independent experts during the preparation of the EWC. Although these references are unofficial data, nevertheless they have been introduced in the databases of the programmes. In any way, it must be stressed that, for the usefulness of the programmes, official references of the waste catalogues from all Member States must be made available in the near future. Otherwise the programmes will remain incomplete.

The programmes also contain the recommendations for treatment and disposal operations according to the German technical guidelines for waste (TA Abfall). Moreover, the programmes are prepared to receive data on waste treatment and disposal plants in the Member States. These data, according to Directive 91/689/EEC, article 8.3, should already have been sent to the Commission by the Member States. At the moment, only an unofficial and incomplete list of German waste treatment plants has been available and introduced into the systems.

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## Water Quality

In the frame of the MITO project (a joint European research project on algal blooms) several campaigns were undertaken in the Mediterranean Sea to test the performance of fast and easy-to-use flow cyto-



meters for detection, enumeration and characterisation of phytoplanktonic populations at cellular level. The final objective of the project is the realisation of a monitoring system of algal biomasses in real time and the development of a provisional instrument for the quantification of the algal species responsible for the red and green tides.

The MITO project will also highlight the processes involved in the Di-Methyl-Sulphide (DMS) production in freshwater environments.

In order to implement the Ecological Directive for surface water bodies (OJ n. C222, 10/8/94), a project is been developed at the Environment Institute for the definition of uniform criteria for environmental acceptable flows in running waters aiming to guarantee a long-term safeguard of natural conditions of waterbodies, the occurrence of natural and undisturbed biocenosis and the maintenance of a good ecological quality of running waters.

A preliminary report has been published in June 1995.

The availability of the EI scientific experience in setting up safeguarding plans and prevention pollution schemes for the rational management of surface waterbodies was requested by Member States Authorities (i.e. Regione Lombardia). Two lake restoration projects are currently running: i.e.:

#### Lake Varese

The project was carried out to provide authorities with a decision tool for the recovery of this shallow basin, experienced significant internal loadings for decades, anoxia in deep waters and dense algal blooms.

Limnological knowledge, evaluations of the natural trophic level and trophic evolution of the waterbody, and estimations of residual P loads enter the lake were updated. A detailed analysis of the clean-up works performed (sewage, collection and purification) was completed.

Prediction calculations were made for the whole lake on the basis of quali-quantitative dynamic models.

Scenarios for improving lake water quality as a function of realistic reductions of external (actions on point and diffuse sources) and internal (in-lake measures) P loads were outlined.

#### Lake Iseo

A study contract was signed with the Regione Lombardia (Italy) to contribute the solution of the problems due to the massive production of weeds in Lake Iseo.

The research will attempt at gathering and collecting data for both the major nuisance species and other aquatic weed problems. Integrated control methods will be considered in order to minimize negative side effects, to improve the effectiveness of control and to reduce costs.

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## Quality of Environmental Data

### The Revised AOUACON-Project

Following to the request of the EU-Member States of the Mediterranean Basin, - Spain, Greece, Italy, France and Portugal - the Environment Institute established in 1991 the "Analytical Quality Control and Assessment Studies in the Mediterranean Basin" Project (AQUACON-MedBas).

The project aims of realizing the following objectives: assessment of data quality obtained by measurements of a number of critical contaminants in the most important environmental matrices, and identification, quantification and reduction of the measurement errors.

The project is based upon collaborative laboratory studies for specific analyte-matrix matchings taking advantage of the long-lasting experience of the Environment Institute in the field of environmental

reference and proficiency testing material production and the organization of the analytical laboratory performance studies, collected also in the context of Third Parties Work activities.

From the very beginning the project featured also the organization of joint field studies for the assessment of sampling errors, whose importance in all fields of environmental analysis is increasingly emphasized.

The addressed laboratory group included first of all the public (routine) laboratories, but research (Universities) and private (industrial) laboratories were accepted as well.

The AQUACON activity areas have been identified in a series of expert consultations and priorities were set according to the advice of a Scientific Steering Committee.

The activity are:

#### Environmental Monitoring

Seawater analysis  
Rainwater analysis  
Sewage sludge analysis  
Soil analysis  
Sediment analysis  
Freshwater analysis  
Wastewater analysis

#### Consumer Protection

Mercury determination in seafood  
Drinking water analysis  
Food analysis

Following to the prioritization process, the test materials for the collaborative laboratory studies were prepared and the series includes, so far, 18 solid materials (fish, mussels, sediments, soil, sewage sludge, food and waste materials) in the form of dry, stable and homogeneous powders with well defined particle sizes, properly selected according to the specific requirements of the laboratories. The methodological approach preferred in the AQUACON-Project for collaborative laboratory studies foresees complex inter-laboratory exercise structures, which will allow conclusions on the different steps of analysis (e.g., sampling, sample dissolution or extraction and clean-up, and analyte determination) to be drawn.

Typically, the sample set for an interlaboratory exercise consists of two samples with slightly differing analyte concentrations; in the case of solid samples such as soils, sediments, etc., solutions of the two solid samples (metals) or raw extracts and cleaned extracts (organic contaminants) are included as well as solutions containing the pure analytes. Interlaboratory exercises in the field of water analysis are based on test materials prepared on purpose.

The contribution of the EI consists, in addition to the project management, of the preparation of all test materials, the sample variability and stability testing the statistical evaluation of results and the edition of reports.

The most thoroughly developed subproject was "Rainwater Analysis". Five interlaboratory exercises have been organized so far on the determination of conductivity, pH, sulphate, nitrate, chloride, potassium, magnesium, sodium and calcium, followed by meetings of the participants (typically 50 to 60 participants).

Participation in the rain water exercises grew from some sixty to over 180 laboratories. Particular progress was observed for the determination of nitrate, chloride and sulphate but further refinements are needed.

Sampling errors associated with seawater analysis for the metals lead, cadmium and copper were assessed in a first field study carried out in cooperation with the University of Venice, acting as reference laboratory.

During a cruise in the Mediterranean Sea, six teams from France, Italy, Portugal and Spain sampled seawater at 5 different stations and at different depths using the individual laboratory's equipment as well as standard Operation Procedures (SOPs).

Sample treatment and analysis of all samples was performed in the Mobile Clean Metal Analysis Laboratory of the Univ. Venice, on board the oceanographic ship and run by the specialized staff from Venice.

The six different samplers employed during the study yielded widely differing results; in the worst cases (lead) up to 1000 fold variation of the measured concentrations was observed.

During November 1994 the AQUACON Conference was held at Ispra with the major aim of reporting on the progress obtained so far and of discuss future activities.

The Conference was attended also by a group of 24 delegates from ten Eastern Countries which expressed high interest to join the laboratory groups and an agreement with PHARE-Programme was reached which allows the participation of a limited number of PHARE laboratories in the future.

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## ETEX - State of the Project at the end of its First Phase

The first phase of the European tracer experiment (ETEX) has been successfully completed.

The purpose of ETEX is to verify the capability of atmospheric modellers to forecast the evolution of a cloud of an atmospheric pollutant in real time, as it is required for emergency response. The experiment involved the release of a non-toxic and environmentally safe tracer, which was sampled at 160 station in Europe, up to 2000 Km downwind. The collected samples, which were several thousands, were analysed at the JRC-Ispra with a special chromatographic technique, thus obtaining a "ground truth" of the position and concentration of the pollutant cloud over the next 60 hours from the start of the release.

The ETEX participants, which were 25 from 21 countries, were informed of the release only at the release time, and they had to report about the cloud evolution as soon as possible. Results from all participants were received within 6 hours. The model results, when compared with the real evolution of the cloud, showed that only a fraction of the participating models were capable of describing the cloud evolution with sufficient accuracy.

In the first phase of the project the response of the models was evaluated statistically. The quality of the results was discussed at a workshop in Prague, where recommendations were issued for the execution of the second phase of the project, in which the possible sources of inaccuracy will be analysed, with the aim of improving the performance of the emergency response models. In the second phase, the project is extended to other Institutes, not involved with the real time aspects of emergency response, but having a scientific activity on the development of models for pollutant transport in the atmosphere.

ETEX was co-sponsored by the CEC, the World Meteorological Organization (WHO) and the International Atomic Energy Agency (IAEA).

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## Industrial Safety Research

In the context of the 4th EC R&D Framework Programme, the ENVIRONMENT and CLIMATE Programme includes research on industrial safety. This follows on from the Major Industrial Hazards research of the 1st, 2nd and 3rd Framework Programmes. The change of name comes in recognition of the fact that only an integrated approach to safety, health and environmental management can yield adequate results, and that attitudes to safety in general, including smaller and on-site risks, largely determine the risk of a major accident.

One of the principal aims of the research is to support EC policy and legislation in this field, notably the Council Directive 82/501/EEC ("Seveso") and its forthcoming revision. The research is necessary, firstly to ensure that safety legislation and its implementation is put on a sound scientific basis, and secondly to provide industry with the knowledge and technology to comply with the legislation in such

a way as to make genuine improvements to the safety of their plant, while avoiding excessive and unnecessary cost.

With this in mind, the work continues to cover the three main areas:

- technologies to mitigate or prevent accidents;
- chemical and physical phenomena of releases of hazardous material;
- risk assessment and management.

Work in the first area is devoted to the development of techniques to prevent and/or mitigate major accidents. So far considered mitigation techniques have included the use of water sprays and water curtains, both to absorb and disperse toxic gas and to protect neighbouring buildings and people from heat radiation in the event of fire. Research on prevention is increasingly focusing on inherent safety, where the risks inherent in an industrial activity are reduced by, for example, using smaller inventories, rather than relying on add-on safety techniques.

Work in the second area "chemical and physical phenomena" has covered five main areas:

- flashing flow through an orifice or in the event of the catastrophic failure of a vessel;
- atmospheric dispersion with particular emphasis on the behaviour of dense gases and aerosols and on fluctuating concentrations;
- torch fires and their impact on neighbouring vessels;
- gas explosions;
- storage fires.

Care has been taken to ensure that modelling and experimental work is carried out in tandem. The result has been the development of well-validated models which can be applied by regulators, legislators, industry and researchers in predicting the consequences of hazardous occurrences and could be utilised, for example, in the preparation of safety reports as required by the Seveso Directive, or by local authorities to assist their land use planning and civil protection strategies. In addition, a Model Evaluation Group has been set up to develop protocols for the evaluation of consequence models, to ensure that the models being used for such purposes are of high quality and are being used in the correct way.

Work in the third area "risk assessment and management" has included safety management methodologies, the study of human behaviour in crisis situations, the development of decision support tools for crisis management, and methodologies for land use planning, emergency response and regional/sub-regional risk assessment. These research priorities reflect the new emphasis given in the revised Directive.

The following publications have recently appeared or will shortly appear:

- "European Research in Accidental Release Phenomena" (P.J. Wicks and S.T. Cole) in: International conference and workshop on Modeling and Mitigating the consequences of accidental releases of Hazardous materials, Sept. 26-29, New Orleans, USA, 1995.
- "Model Evaluation Group: Report on the Second Open Meeting", Cadarache, France, 19 May 1994. EUR 15990 EN.
- "Seminar on the Evaluation of Models of Heavy Gas Dispersion", Mol, Belgium, 25 Nov 1994. EUR 16146 EN
- "Industrial Fires II: Proceedings of the Second European Research Seminar", 17-18 May 1994, Cadarache, France. EUR 15967 EN (in print).

A catalogue of completed and ongoing projects (1987-1994) and a list of referred publications arising from the research are available, along with the above publications, from:

P.J. Wicks  
CEC DG XII-D-1, 200 rue de la Loi, B-1049 Brussels  
Tel. +32-2-2950347 Fax +32-2-2963024

## Major Industrial Hazard (MIH)

Three successive EU research programmes in the field of MIH have run from 1987 to 1994. The fourth programme, renamed Industrial Safety has been started in 1995 the first call for proposal having been issued early in 1995.



In the following, the list of projects partially funded by EC under the third programme is presented.

A number of these project are still in progress the pertinent contract expiring late in 1995 or early in 1996.

Three research areas were covered, namely:

- Evaluation and Management of Risk;
- Chemical and Physical Phenomena;
- Technologies of Accident Prevention and Mitigation.

## 1. Evaluation and Management of Risk

### Auditing and safety management for safe operation and land-use planning: a cross-national comparison and validation exercise

*Project Coordinator:* N. Hurst  
**Health and Safety Executive**  
Health and Safety Laboratory  
Safety Engineering Laboratory  
Broad Lane Sheffield S3-7-HQ UK  
Tel. +44-742-892000 Fax +44-742-892500

### Multi-user system for training and evaluation of environmental emergency response- MUSTER

*Project Coordinator:* V. Andersen  
**Risø National Laboratory**  
Systems Analysis Department  
Frederiksborgvej 399  
4000 Roskilde DK  
Tel. +45-423-71212 Fax +45-467-55170

### Fattibilità di un sistema informativo integrato per la gestione dei rischi industriali su scala regionale/subregionale

*Project Coordinator:* G. Giannandrea  
**Consorzio Venezia per il Disinquinamento della Laguna di Venezia e del suo Bacino**  
Calle Gritti, San Marco 2488/A  
30124 Venezia IT  
Tel. +39-415-209558 Fax +39-415-208446

### Integrated modelling of the management of (crowd) evacuation from hazardous situations

*Project Coordinator:* I. Brearley  
**United Kingdom Atomic Energy Authority**  
Safety and Reliability Directorate  
Culcheth  
Warrington - Cheshire WA3 4NE UK  
Tel. +44-925-232000 Fax +44-925-254307

### Assessment of the safety of hazardous industrial processes in the presence of design faults

*Project Coordinator:* R. Bloomfield  
**Adelard**  
Coborn Road, Coborn House 3  
London E2 2DA UK  
Tel. +44-819-831708 Fax +44-819-800130

### 'LAESS': Local area emergency support system

*Project Coordinator:* R. Dumolo  
**Electrowatt Engineering Services Ltd**  
Bradford BD1 UK  
Tel. +44-403-50131 Fax +44-403-211899

### Inherently safer approaches to the design of chemical process plant

*Project Coordinator:* D. Mansfield  
**United Kingdom Atomic Energy Authority**  
Charles II Street 11  
London SW1Y 4QP UK  
Tel. +44-925-252000 Fax +44-925-254537

## Environmental risk criteria

*Project Coordinator:* W. Nixon  
**United Kingdom Atomic Energy Authority**  
Warrington Laboratory  
Consultancy Services  
Thomson House Risley - Cheshire  
Warrington WA3 6AT UK  
Tel. +44-925-232000 Fax +44-925-254302

## Detection and mitigation of risks associated with pipeline releases - DEPIRE

*Project Coordinator:* S. Senni  
**Snamprogetti SpA**  
Viale Alcide De Gasperi 16  
I-20097 San Donato Milanese (MI) IT  
Tel. +39-252-05847 Fax +39-252-032226

## Validation and optimization of an integrated information system for industrial risk management at the regional/subregional level

*Project Coordinator:* G. Giannandrea  
**Consorzio Venezia per il Disinquinamento della Laguna di Venezia e del suo Bacino**  
Calle Gritti, San Marco 2488/A  
30124 Venezia IT  
Tel. +39-415-209558 Fax +39-415-208446

## Uncertainty in modelling of major industrial hazards

*Project Coordinator:* D. Deaves  
**WS Atkins Consultants Ltd.**  
Science and Technology  
Woodcote Grove, Ashley Road  
Epsom - Surrey KT18 5BW UK  
Tel. +44-372-726140 Fax +44-372-740055

## 2 Chemical and Physical Phenomena

### Dispersion of two-phase flashing releases - FLADIS field experiments

*Project Coordinator:* M. Nielsen  
**Risø National Laboratory**  
Department of Meteorology and Wind Energy  
Frederiksborgvej 399  
4000 Roskilde DK  
Tel. +45-423-71212 Fax +45-467-55619

### Development of methods for obtaining trade-off judgements from the public suitable for input to decisions on the siting of hazardous chemical industry installations

*Project Coordinator:* P. Allen  
**University of Surrey**  
Robens Institute of Industrial and Environmental Health and Safety  
Guildford GU2 5XH UK  
Tel. +44-483-509203 Fax +44-483-503517

### A database for validation of models used in chemical risk assessment

*Project Coordinator:* A. Servida  
**T.R.I. - Tecsa Ricerca e Innovazione S.r.l.**  
Via Caravaggio 9  
24040 Levate (BG) IT  
Tel. +39-358-31163274 Fax +39-358-31163282

### The effect of dust explosion pressures on industrial plant, buildings, work areas, public areas and environment

*Project Coordinator:* P. Middleton  
**British Materials Handling Board**  
Index House  
Ascot - Berkshire SL5 7EU UK  
Tel. +44-019-535177 Fax +44-923-665096

**Review and dissemination of physical effect models developed within the 'Major Industrial Hazards' programmes - REDIPHEM**

*Project Coordinator:* N.J. Duijm  
**Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek**  
TNO Milieu- en Energietechnologie  
Laan van Westenenk 501  
7300 AH Apeldoorn NL  
Tel. +31-554-93493 Fax +31-554-19837

**Dispersion from strongly buoyant sources**

*Project Coordinator:* D. Webber  
**United Kingdom Atomic Energy Authority**  
Safety and Reliability Directorate  
Culcheth  
Warrington - Cheshire WA3 4NE UK  
Tel. +44-925-5232000 Fax +44-925-254302

**Extended modelling and experimental research into gas explosions (EMERGE)**

*Project Coordinator:* P. Mercx  
**Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek**  
TNO Pnns Maurits Laboratorium  
Lange Kleiweg 137  
2280 AA Rijswijk NL  
Tel. +31-158-42842 - Fax +31-158-43991

**Toxifire - guidelines for management of fires in chemical warehouses**

*Project Coordinator:* L. Smith-Hansen  
**Risø National Laboratory**  
Systems Analysis Department  
Frederiksborgvej 399  
4000 Roskilde DK  
Tel. +45-423-71212 Fax +45-467-57101

**Towards a better design of pressure relief systems in chemical and petroleum industries**

*Project Coordinator:* J.-M. Delhaye  
**Commissariat à l'Energie Atomique**  
Direction des Réacteurs Nucléaires - Département de Thermohydraulique et de Physique  
Service de Thermohydraulique pour les Applications Industrielles - GRETh  
Ctr Etudes de Grenoble - CE-G  
38041 Grenoble FR  
Tel. +33-76-884275 Fax +33-76-885177

**Fladis Field test analysis**

*Project Coordinator:* N.J. Duijm  
**Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek**  
TNO Milieu- en Energietechnologie  
Laan van Westenenk 501  
7300 AH Apeldoorn LN  
Tel. +31-554-93493 - Fax +31-554-19837

**An experimental and modelling study of two phase flashing jets**

*Project Coordinator:* K. Moodie  
**Health and Safety Executive**  
Health and Safety Laboratory  
Explosion and Flame Laboratory  
Harpur Hill  
Buxton SK17 9JN UK  
Tel. +44-298-26211 Fax +44-298-79514

**Risques industriels majeurs - Etudes des incendies en nappe et de leurs conséquences. Programme Mistral 2 "Modelisation d'incendie simulant les transferts et les risques à l'environnement"**

*Project Coordinator:* J.C. Malet  
**Commissariat à l'Energie Atomique**  
Institut de Protection et de Sécurité Nucléaire - Département de Recherches en Sécurité  
Service Expérimentation des Accidents, Laboratoire d'Expérimentation et Modelisation des Feux - LEMF  
Ctr Etudes de Cadarache - CE Ca  
13108 Saint-Paul-lez-Durance FR  
Tel. +33-42-257351 Fax +33-42-254874

**Emergency relief and safe disposal of runaway reaction products in the chemical progress industries**

*Project Coordinator:* R. Roger  
**Inburex GmbH Consultinggesellschaft für Explosionsschutz und Anlagensicherheit**  
Münsterstrasse 5  
59065 Hamm DE  
Tel. +49-238-1688158 Fax +49-238-1688162

**Dispersion studies of high pressure gas jets impacting onto flat plates**

*Project Coordinator:* M. Pritchard  
**British Gas PLC**  
Gas Research Centre Ashby Road  
Loughborough - Leicestershire LE11 3QU UK  
Tel. +44-509-282000 Fax +44-509-283131

### **3 Technologies of Accident Prevention and Mitigation**

**Mitigation of hazardous releases by fluid curtains engineering predictive model validation by wind tunnel experiments**

*Project Coordinator:* J. Lieto  
**Institut des Technologies Chimiques de Lyon**  
Rue Jean Macé 6  
69190 Saint-Fons FR

**A study concerning: integrated qualitative and quantitative portable tankfloor scanner**

*Project Coordinator:* W. Van Leeuwen  
**Röntgen Technische Dienst bv**  
Delftweg 144  
3046 NC Rotterdam NL  
Tel. +31-104-150200 Fax +31-104-158022

**Prevention of ignition impartially inerted dust/air atmospheres**

*Project Coordinator:* N. Maddison  
**Chilworth Technology Ltd**  
Chilworth Research Centre  
Southampton SO1 7NS UK  
Tel. +44-703-760722 Fax +44-703-767866

**Accident prevention of metalorganic precursors**

*Project Coordinator:* A.C. Jones  
**Epichem Ltd**  
Power Road Bromborough  
Wirral L62 3QF UK  
Tel. +44-513-342774 Fax +44-513-346422

**Mitigation of hazardous fire radiation by water spray curtain**

*Project Coordinator:* L. Joseph  
**Institut des Technologies Chimiques de Lyon**  
Rue Jean Macé 6  
69190 Saint-Fons FR  
Tel. +33-78-700040 Fax +33-78-703719



## Information

### The Sofia Conference of European Environment Ministers

In October 23-25, 1995 the third pan-European conference "Environment for Europe" has been held in Sofia (Bulgaria).

The preceding conferences had been held in 1991 at the Dobříš Castle near Prague and in 1993 in Lucerne, where the preparation of a report on the state of the environment in Europe (known as The Dobříš Assessment, now published) and the launching of the Environmental Action Programme for Central and Eastern Europe were decided, respectively.

The agenda of the conference featured the following main themes:

- Implementation of the above mentioned Action Programme and environmental financing;
- Business, industry and the environment;
- Biodiversity;
- The Environmental Programme for Europe (EPE).

A Ministerial Declaration has been adopted on the last day, addressing, in particular, the basic principles and problems connected with the environmental financing in EC countries for the implementation of the Environmental Action Programme. The need of an increased level of financial assistance has been stressed, and the way to achieve this goal highlighted.

Further, the importance of the business and industrial sectors in assuring an environmentally sustainable development in Europe has been underlined, collaborative programmes and investments to enhance the performances of large polluting plants having been endorsed and supported.

The effective implementation of the Convention on Biological Diversity and the elaboration of national strategies for the purpose have been urged, appropriate innovative financing mechanisms having been solicited. Nature protection was promoted in view of building the European Ecological Network.

Concern was expressed for the results outlined in the report "Europe's Environment: The Dobříš Assessment" and the implementation of priority recommendations for actions in the Environmental Programme for Europe was called.

The Guidelines on Access to Environmental Information and Public Participation in Environmental Decision-making, issued by the United Nations Economic Commission for Europe, have been endorsed and the revision in 1997 of their implementation solicited.

The call for schemes of training and education in environmental management, issued from the preceding conference in Lucerne, has been reconfirmed.

As far as it concerns the implementation of the Environmental Action Programme for Central and Eastern Europe (EAP), while recognizing the positive results achieved so far, the development of a workplan to support the integration of environmental interests into the areas of economic and social reforms in EC countries was encouraged.

The next Ministerial Conference, to be held in 1998, will focus on the review of the progress in the implementation of the EAP, the Environmental Programme for Europe, the Pan-European Biological and Landscape Biodiversity Strategy, the integration of environmental policies with sectoral policies and the partnership of governments with groups of major economic and industrial relevance.

### The GENIE Project - Global Environmental Network for Information Exchange

GENIE is the United Kingdom's Federal Metadata Network for Global Environmental Research. It is funded by the Economic and Social Research Council (ESRC). The group responsible for implementing and publicising the GENIE service is based at The University of Nottingham and is directed by Professor Paul Mather.

The objective of GENIE is to facilitate access to descriptions of data ("metadata") that are relevant to Global Environmental Research from both a physical (environmental) and human perspective.

GENIE is a federal system consisting of a set of nodes which may represent "users" or "data providers", or both. This means that metadata records can be held anywhere in the UK (or even overseas), preferably at the Data Centre that is responsible for the maintenance of the associated data sets. A list of all metadata known to the Federal Network is called the Master Directory. The ways in which users can access the information contained in GENIE are via the Casual User Service or by installing their own GENIE software.

The Federal Network currently consists of the ESRC Data Archive (University of Essex), the NERC Corporate Data Directory, the University of Nottingham, and Loughborough University of Technology. The metadata at Loughborough is gathered from all over the world, contributors include NASA and the German Climate Computing Centre.

Anyone whose research area is in the field of Global Environmental Change - whether it is change in the natural environment or the human dimensions of change - will find something (probably quite a lot) to interest them. The ESRC Data Archive contains a wealth of data including socio-economic and demographic variables, while the NERC Corporate Data Directory provides summaries of the data holdings of the major NERC Data Centres. Add to that the 4,000 or so items held at Loughborough University of Technology, derived from world-wide sources including the NASA Global Change Master Directory, and the remote sensing metadata stored at The University of Nottingham, and you have a major international metadata-base. You can find details of satellite calibration factors, definitions of terms, summaries of documents and quick-look images.

All of the Data Centres collaborating in GENIE automatically publish details of their metadata to the nearest GENIE index node, from where it is made available to the other index nodes and thence to any user via the World-Wide Web.

For further information, please contact:

GENIE, Geography Department,  
University of Nottingham  
University Park, Nottingham NG7 2RD  
Tel. +44-115-9515738 Fax +44-115-9515249  
e-mail: genie@nottingham.ac.uk  
Casual User Service: <http://www-genie.lut.ac.uk>

# Meetings of International Organizations\*

(to be attended by government representatives)

Month	Date		Meeting	Place
	Month	Day		
January	8-12		UNEP Meeting of the coordinators of the Mediterranean Pollution (MED POL) Programme	Athens
	16-19		ECE Meeting of Experts on Pollution and Energy	Geneva
	22-26		CE 15th Meeting of the Standing Committee of the Bern Convention on the Conservation of the European Wildlife	Strasbourg
	24-25		ECE Joint Working Group on Environment and Economics	Geneva
	29-30		OECD Advisory Board on Harmonisation and Labelling Chemicals	Paris
	29-6/2		UNEP 1st Session of an Intergovernmental Negotiating Committee for the preparation of an international legally binding Instrument for the Application of the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals in International Trade	Nairobi
	31-2/2		ECE 5th Meeting of the Signatories to the Convention on the Transboundary Effects of Industrial Accidents	Geneva
February	5-7		ECE Preparatory Committee of the 1996 Regional Conference on Transport and Environment	Geneva
	5-9		OECD Pesticide Forum and Joint Meeting of the Chemicals and Management Group	Paris
	5-16		Intergovernmental Negotiating Committee of Desertification Convention	Geneva
	12-23		UN Conference on Human Settlements (Habitat II): 3rd Preparatory Committee	New York
	19-20		OECD Environment Ministers Meeting	Paris
	19-22		ECE Work Session on Fauna, Flora and Habitat Statistics	Geneva
	19-23		ECE Ad Hoc Preparatory Working Group on Strategies	Geneva
	19-23		ECE Ad Hoc Preparatory Working Group on Persistent Organic Pollutants	Geneva
	19-23		ECE Ad Hoc Preparatory Working Group on Heavy Metals	Geneva
	26-27		4th Ministerial Conference of the Alpine Convention	Ljubiana
	26-1/3		Commission on Sustainable Development (CSD): Intersessional Meeting on Oceans and Atmosphere	New York
	26-1/3		Subsidiary Committees of the Climate Change Convention on implementation and science	Geneva
March	3-4		UNEP Meeting of Experts on Land Based Substances Protocol (Mediterranean Action Plan)	Siracusa (Italy)
	3-8		2nd Intersessional Group Meeting of the Intergovernmental Forum on Chemical Safety (IFCS)	Canberra
	4-5		Environmental Council	Brussels
	4-8		Ad-hoc Group on Berlin Mandate (Climate Change Convention)	Geneva
	4-8		ECE Working Party on Water Problems	Geneva
	4-8		Commission on Sustainable Development (CSD): Intersessional Meeting on Finance, Consumption & Production Patterns	New York
	7-8		UNEP Conference of Plenipotentiaries on Land Based Substances Protocol (Mediterranean Action Plan)	Siracusa (Italy)
	11-15		ECE Joint Meeting of the RID Safety Committee and the Working Party on the Transport of Dangerous Goods	Geneva
	11-22		Intergovernmental Panel on Forests (IPF)	Geneva
	13		UNEP 55th Meeting of the Committee of Permanent Representatives	Nairobi
	18-21		ECE 5th Meeting of the Signatories of the Convention on the Environment Impact Assessment in a Transboundary Context	Geneva
	19-27		Meeting of the Conference of the Parties to the Ramsar Convention	Brisbane
??		OECD/Germany "Urban Sustainable Development"	Berlin	
April	2-4		Global Environment Facility Council Meeting	New York
	16-17		UNEP Meeting of Experts on Hazardous Wastes (Mediterranean Co-ordinator Unit)	Izmir
	18-3/5		4th Session of the Commission on Sustainable Development (CSD)	New York
	19-20		UNEP Conference of Plenipotentiaries on Hazardous Wastes (Mediterranean Co-ordination Unit)	Izmir
April/May	??		9th UN Conference on Trade and Development (UNCTAD IX)	South Africa
May	1-6		UNEP Pilot Training Programme on Adoption, Applying and Operating Environmentally Sound Technologies	Dresden
	6-10		UNEP Meeting of the National Focal Points of the Mediterranean Action Programme	Athens
	6-10		ECE Working Group on the Transport of Dangerous Goods	Geneva
	27		IAEA Symposium of Harmonization of Health-Related Environmental Measurements using Nuclear Analytical Techniques	Vienna
May/June	??		EU Network for Implementation and Enforcement of Community Law: 8th plenary session	Rome
June	3-5		ECE Working Party on the Transport of Dangerous Goods	Geneva
	3-14		UN Conference on Human Settlements (Habitat II)	Istanbul
	6-9		Conference on Mediterranean Wetlands (5/6: Opening Ceremony)	Venice
	10-14		WMO International Congress on Urban Climatology	Essen
	10-14		ECE Meeting of Experts on Pollution and Energy	Geneva
	12		UNEP 56th Meeting of the Committee of Permanent Representatives	Nairobi
	17-25		UNEP 2nd Session of an Intergovernmental Negotiating Committee for the preparation of an international legally binding Instrument for the Application of the Prior Informed Consent (PIC) Procedure for certain hazardous Chemical in International Trade	Rome
	24-28		International Whaling Commission	Aberdeen
	24-28		UNEP Extraordinary Meeting of the Contracting Parties to the Barcelona Convention	Montpelier
	25-26		Environment Council	Brussels
	??		Intergovernmental Panel on Forests (IPF): Seminar on National land-use and forest programmes	Germany
June/July	??		2nd Meeting of the Conference of the Parties to the Convention on Climate Change	Japan

\*International Organizations Acronyms

**CE** Council of Europe; **ECE** United Nations Economic Commission for Europe; **IAEA** International Atomic Energy Agency; **OECD** Organisation for Economic Cooperation and Development; **UNEP** United Nations Environment Programme; **WMO** World Meteorological Organization



# Conferences

## Conference Announcement

### European Lowland Wet Grasslands: Management and Restoration for Biodiversity

#### International Conference

to be held at University of South Bohemia, Ceské Budejovicé, Czech Republic

on 16-20 September 1996

organized by

International Centre of Landscape Ecology, Department of Geography, Loughborough University, UK

in association with the Darwin Initiative - a commitment by the Department of the Environment to help conserve global biodiversity

For further information, please contact:

Gill Giles

International Centre of Landscape Ecology (ICOLE),

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Loughborough, Leics. LE11 3TU, UK

Tel. +44-1509-223030 Fax +44-1509-260753

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### Laser Applications to Chemical and Environmental Analysis

#### Topical Meeting

Orlando, Florida (USA)

#### Objective and Scope

Applications of chemical and environmental analysis using laser light are increasing at an incredible pace. New developments in optical sources, instrumentation, and spectroscopic techniques are increasing the capabilities for laser applications. These developments provide opportunities for new applications in a quite diverse range of endeavors. For example, laser diagnostics are used for remote monitoring of the atmosphere, measurement of reactive gases during operation of internal combustion engines, observation of monolayers on surfaces, and the diagnostics and ultrasensitive detection on trace species.

#### Topics to be Considered

- Laser Probes of Atmospheric Chemistry
- Laser Probes of Condensed Phases
- Laser Probes of Surfaces
- Near Field Optical Measurements
- Laser Sources and Instrumentation
- Applications of Optical Parametric Laser Sources
- Combustion and Plasma Diagnostics
- Laser Analysis of CVD Processes
- Resonant Four Wave Mixing Diagnostics
- Diode Laser Applications
- Environmental Sensor Development
- Gas Phase Spectroscopy
- Ultrasensitive Techniques

For further information, please contact:

OSA Conference Services Department

2010 Massachusetts Avenue, NW

Washington, D.C. 20036-1023

### International Sustainable Development Research Conference 1996

The Manchester Conference Centre, UK

March 18th-19th, 1996

The International Sustainable Development Research Network, in association with ERP Environment, publishers of the international journal *Sustainable Development* are pleased to announce this second annual conference.

Contributed papers will address the area of sustainable development and environmental management responding to the following criteria:

- Definitions, concepts and implications of sustainable development
- Social sustainability
- Cultural integrity and indigenous populations
- Monitoring and sustainable development
- Poverty, population and health
- Institutional arrangements and the practice of sustainable development
- Planning and implementing sustainable development in the Third World
- Economic policy instruments and sustainable development
- Business Strategies for sustainable development
- Local action for sustainable development
- Cooperation and alliances for a sustainable future
- Education and sustainable development
- The implementation of Agenda 21
- Environmental management and sustainability
- The role of women and minority groups

For further information, please contact:

ERP Environment, P.O. Box 75, Shipley

West Yorkshire BD17 6EZ, UK

Tel. +44-1274-530408 Fax +44-1274-530409

### Third International Conference on Carbon Dioxide Removal

Massachusetts Institute of Technology

Cambridge, Massachusetts USA

September 9-11, 1996

This conference provides a forum for the latest advances in the field of CO<sub>2</sub> control technology, including capture, disposal, and utilization. Additionally, it strives to promote international research and development collaborations and to encourage an exchange of ideas on future directions in this field.

#### Topics Covered

##### CO<sub>2</sub> Capture

Separation and recovery techniques including absorption, adsorption, membrane separation, and cryogenic fractionation.

Integration of CO<sub>2</sub> recovery into power plant designs, including replacing air burning with oxygen burning and integrated coal gasification combined cycle power plants.

Capture from non-power plant sources in the industrial, transportation, or building sectors.

##### CO<sub>2</sub> Disposal

Disposal of the CO<sub>2</sub> into the ocean, depleted oil and gas wells, underground aquifers, etc.

Transporting the CO<sub>2</sub> from the source to the disposal site.

##### CO<sub>2</sub> Utilization and Recycling

Opportunities for economic utilization of captured CO<sub>2</sub>.

Large-scale utilization of CO<sub>2</sub>, using either chemical or biological processing.

Cofiring of biomass in power plants

##### Implementation Issues

Current or proposed research, development, and/or demonstration projects.

Economic, environmental, and/or legal considerations.

### Policy Issues

Relationship of CO<sub>2</sub> control technologies to other mitigation options.  
Life-cycle and/or externality analyses.

Mitigation impact of CO<sub>2</sub> capture, disposal, and utilization technologies.

Further information can be obtained from:

ICCCR-3 Secretariat  
c/o Anne Carbone  
MIT Energy Laboratory  
Room E40-469  
1 Amherst Street Cambridge, MA 02139-4307  
Tel. +1-617-253-8296 Fax +1-617-253-8013  
e\_mail: hjherzog@mit.edu

### Toxic Impacts of Waste of the Aquatic Environment

Loughborough, UK, 14-17 April 1996

Traditional control of effluent discharges to the aquatic environment has been based, to a large extent, on chemical standards and limits. Over the last decade there has been an increasing tendency to incorporate biological assessment of actual or potential impacts. Very different policies and approaches have been adopted by different countries. Recently an increasing number of toxicological assessment of waste quality have been introduced.

This international conference seeks to bring together the "regulators" and the "regulated" with others interested in improving the environmental quality of the receiving waters. It will attempt to define toxic impacts, highlight sampling and suitable methods for measuring impacts and understand the scientific and political significance of the potential findings. Techniques and policies concerning the identification and elimination of toxic components of wastes will be discussed.

- Applications of toxicity-based criteria to regulatory control
- Sampling, screening and rapid testing
- Interpretation, relevance and extrapolations
- Toxicity reduction evaluations
- Case studies

Further information can be obtained from:

Elaine Wellingham  
Conference Secretariat, Field End House, Bude Close  
Nailsea, Bristol BS19 2FQ  
Tel./Fax +44-1275-853311

### QSAR '96

#### (Quantitative Structure-Activity Relationships)

#### The 7th International Workshop on QSARs in Environmental Sciences

Elsinore, Denmark. June 24-28, 1996.

Topics

- Developments in QSAR Interpretation
- Developments in Molecular Modelling
- Advances in Predicting Ecosystem Fate and Exposure
- Advances in Predicting Ecological and Human Health
- The Future of QSAR Research and Applications.

For further information, please contact:

Dr. Fei Chen Fredenslund  
National Environmental Research Institute  
Frederiksborgvej 399 P.O. Box 358  
DK-4000 Roskilde, Denmark  
Tel. +45-46-301200 Fax +45-46-301114  
e\_mail: SYFCF@DMU.DK

### EUROANALYSIS IX

#### European Conference on Analytical Chemistry

Bologna (Italy) September 1-7, 1996

Organized by  
Italian Chemical Society  
University of Bari

University of Bologna

Analytical Division of the Italian Chemical Society

EUROANALYSIS IX will cover developments in instrumentation and methodology in all areas of analytical chemistry with particular emphasis on applications in areas such as industrial, environmental, biomedical and new materials. Twenty-four oral sessions (running in three parallel streams) will focus the most recent achievements in selected topics such as: bio & chemical sensors, pharmaceutical and biomedical analysis, environmental analysis, chemistry of cultural heritage, surface and material science, flow analysis, separation science, electroanalytical chemistry, advanced spectroscopies, hyphenated techniques, food chemistry, process analytical chemistry and chemometrics. Special sessions will feature topics of high current interest: Validation of Analytical Measurements and Education in Analytical Chemistry (basic, advanced and post graduate studies).

A satellite workshop on "Environmental Reference Materials: needs and availability" will be organised on Saturday, September 7 from 9:30 to 12:30 a.m.

For further information, please contact:

Secretary General  
Prof. L. Sabbatini  
Dipartimento di Chimica - Università  
Via Orabona, 4 - 70126 Bari (Italy)  
Tel. +39-80-5442020/5442016 - Fax +39-80-5442026

### The impact of industry on groundwater resources

#### Water resources and the environment: priority of the third millennium

22-23-24 Maggio/May 1996

Villa Erba - Cernobbio (CO)

Water is mankind's most precious resource: its availability determines the quality of life and socio-economic development of entire populations. Despite this, the mistaken belief that water is an unlimited resource has meant that the proper planning and management of water resources has been ignored in the past.

In this context the current state of our groundwater resources is especially alarming: uncontrolled spread of tapping points, improper use of water resources, incorrect construction of catchment facilities and reckless utilisation omitting a hydrologic budget are just some examples of problems most commonly met with. The result has been a gradual qualitative and quantitative deterioration of available resources, with all the legislative technical and insurance implications this entails.

The conference will report on water resources themes of crucial international interest, including sophisticated political and legislative approaches (California), innovative management methods (UK) and major transformations (Ruhr, Germany). Special attention will be paid to the impact on water resources of civil and mining underground construction, and petroleum extraction and transport, with reports from Italian and other international experts.

#### Topics covered by the conference

- Evaluation of pollution risks
  - legislative consideration
  - insurance consideration
- Planning the use of resources
- Industrial cycles and use of water resources
- Containment of water consumption
- Alternative forms of water supply
- Treatment and reutilisation of waste water
- Impact of industrial waste disposal on groundwater resources
- Impact of industrial decommissioning
  - quantitative effects
  - qualitative effects
- Preventive measures
- Analysis of pollution processes:
  - crossing of the non-saturated zone
  - dispersion in the saturated zone
- Calculation of dispersion parameters
- New trends in transport and dispersion analysis

- New trends in soil and groundwater reclamation
- Reliability of models
- Relationship between water resources and underground construction
- Relationship between water resources and petroleum activities
- Safeguarding water resources during engineering work
- Monitoring water resources
- Analytical controls
- Construction methods for catchment and monitoring structures
- Guidelines for control legislation
- Identification of action priorities in limited resource situations
- Role and duties of controlling bodies at central and local levels

Further information can be obtained from:

Sezione Italiana Acque Sotterranee dell'Associazione Georisorse e Ambiente  
c/o Politecnico di Torino  
C.so Duca degli Abruzzi, 24 - 10129 Turin (Italy)  
Tel. +39-11-5647681 Fax +39-11-5647689

### 9th Conference of the International Soil Conservation Organisation (ISCO) 1996 in Bonn

The 9th Conference of the International Soil Conservation Organisation (ISCO) will take place from 26 to 30 August 1996 in Bonn, Germany under the motto "Towards Sustainable Land Use-Furthering Cooperation between People and Institutions".

The Conference will address key issues regarding the conservation and rehabilitation of land resources.

ISCO '96 aims to underline the fact that continuous soil degradation destroys the basis of life of future generations. This constitutes an environmental threat comparable to global climatic change and therefore demands the same attention. The ISCO Conference will demonstrate that there is a range of appropriate solutions for the rehabilitation of degraded land which are cost-effective, acceptable to land users and easy to apply.

The fact that the conference will bring together about 500 scientists and representatives of agencies and organisations active in development cooperation and in soil and water management from all over the world ensures that it will yield practical as well as policy relevant results.

The program of the plenary sessions and the working groups will focus on the following topics:

- Soil conservation and sustainable land use various responses to erosion and desertification
- Other forms of soil degradation - assessment, prevention and rehabilitation
- Influence of demographic, socio-economic and cultural factors on sustainable land use
- Soil conservation and sustainable land use innovations in approaches, technologies and practices
- Furthering cooperation between people and institutions

The venue will be the "Altes Wasserwerk" - an early 20th century building which until recently housed the Deutscher Bundestag (German Federal Parliament).

The new arts centre nearby will host a "Dare-to-share-Fair" on development cooperation and provide a forum for discussion as well as art projects dealing with the topics of the conference.

For any inquiries, the following address may be contacted:

Secretariat of the 9th ISCO-Conference  
c/o Federal Ministry for Environment  
Nature Conservation and Nuclear Safety  
P.O. Box 120629  
D-53048 Bonn Germany  
Fax +49-228-3052398 Telex 885790 d

### Next event to be announced: Area II.1, II.2

A workshop organized by the Environment and Climate Programme on Life-cycle assessment, recycling technologies, treatment of hazardous waste and the remediation of contaminated sites will be held from 20 to 24 May 1996 in Hannover. It will be hosted by the

PREUSSAG AG. The workshop will include the presentation and discussion of results of projects supported under the current and previous EC R&D programmes.

### EC Workshop on Non-Destructive Testing to Evaluate Damage due to Environmental Effects on Historic Monuments

#### Objectives

- Presentation and discussion of research activities and recent results in the field of non-destructive investigation methods applicable to historical monuments, that have been funded by the European Commission Research programme "Environment and Climate" under the area a "Technologies to protect and rehabilitate the European Cultural Heritage".
- To review the state of the art in the European Union and abroad and to promote mutual exchange of information on common strategies for future research and developments in the area of non-destructive tests applicable to historical monuments.
- Promotion of non-destructive test as an important tool for the monitoring of monuments, for the evaluation of reinforcement techniques and for enhancing the conservation of the European Cultural Heritage.

The Workshop is directed at experts in the field of non-destructive investigation methods applied to buildings of historical interest. The workshop is expected to be of interest for researchers in the field of non-destructive testing, for professionals working on restoration problems and for administrative officers involved in the conservation of historical monuments.

The Workshop will consist of technical sessions comprising the presentation of the final research results of the European Commission Project EV5V-CT920106 "Non-destructive testing and system identification to evaluate diagnostics methods and reinforcement techniques applied to historical buildings", coordinated by the Department of Civil Engineering, University of Trieste with the participation of LCPC, Centre de Nantes and of Idrogeo, Trieste. This presentation will be complemented by overviews of related EC environment Research projects, accepted papers, posters and invited presentation on issues of general interest in the field of non destructive testing. Particular emphasis will be given to methodologies and case studies of practical interest.

For further information, please contact:

Mrs. N. Korosic  
Workshop Secretary  
University of Trieste, Department of Civil Engineering  
Structural Engineering Unit  
Via Valerio 6/1, 34127 Trieste ITALY  
Tel. +39-40-6763830 Fax +39-40-54413

### Strategies and Practices in Environmental Education

Santiago de Compostela, Spain 27-30 June 1996

An International Congress entitled "Strategies and Practices in Environmental Education" will be hosted in Santiago de Compostela, Spain, from 27-30 June next year. The event is being jointly organised by the Universidade de Santiago and the European Research and Training on Environmental Education (ERTCEE) of the University of Bradford.

The congress intends to provide to opportunity for constructive and critical review of international, national, regional and local strategies in environmental education. One of the main objectives is to highlight successful programmes of environmental education in both formal education and more generally in the field of environmental action. The congress will be conducted through a series of lectures, round-table, group and video-session. The following topics will be included:

- Environmental problems and educational solutions
- Social groups and environmental education
- Environmental education, curriculum and education reforms
- Training of teachers for environmental education
- Evaluation design for environmental education
- Social communication and environmental education



- Interdisciplinarity and environmental education
- Institutional support and financing in environmental education
- Education resources for environmental education

For further information, please contact:

Carmen Moran  
 Universidade de Santiago de Compostela  
 I.C.E. Taller de Education Ambiental  
 Departamento Teoria e Historia da Educacion  
 Plaza de Fuenterrabia 3, 15702 Santiago de Compostela, Spain  
 Tel. +34-81-585899 Fax +34-81-561951

## ENVIRO-TEK '96

Moscow International Environmental Exhibition '96  
 19-22 March 1996

VVC International Exhibition Centre, Moscow

ENVIRO-TEK '96, due to take place 19-22 March 1996, at the VVC International Exhibition Centre, Moscow, will provide a dedicated forum at the heart of one of the world's most important markets for the environment and protection, pollution control, fire safety, reclamation and the sewage and recycling industries. Designed as a "one stop" exhibition, ENVIRO-TEK '96, will cover the entire spectrum of the environmental industry including water, wastes, recycling equipment, energy and the environment, air, noise, clean technology, analysis, measurement and testing.

The environmental and pollution problems of Russia and of the CIS are well documented and it is against this background that the Russian Ministry of Fuel and Energy is eager to provide a dedicated medium in which the world leading companies can exhibit new technologies and services with which to assist them in the Russian fuel and energy environment clean up.

The following exhibit guide, though incomplete, gives an indication as to what equipment and technology will be on display at ENVIRO-TEK '96

Air pollution management systems and equipment  
 Centralizing and pre-treatment plants and associated technologies  
 Decontamination  
 Emissions control  
 Energy conservation  
 Energy efficiency  
 Evap-incineration  
 Geomembranes  
 Incineration equipment  
 Industrial pollution control  
 Measurement and analysis equipment  
 Noise management and pollution control equipment and technologies  
 Oil waste management  
 Physico-chemical  
 Project Management  
 Sewage  
 Soil decontamination  
 Solvent regeneration  
 Special waste fluid equipment and technologies  
 Waste disposal

Waste sorting centers

Waste storage

ENVIRO-TEK '96 is organised by ITE - International Trade & Exhibitions J/V Ltd.

Byron House, 112A Shirland Road  
 London W9 2EQ  
 Tel. +44-171-2869720 Fax +44-171-2860177

## ISAF

### Eleventh International Symposium on Alcohol Fuels

April 14-17, 1996

Sun City, South Africa

The 11th International Symposium on Alcohol Fuels is the latest in a series which started in Stockholm, Sweden and was followed by Symposia in Germany, USA, Brazil, New Zealand, France, Canada, Japan, Italy, and the last one in Colorado, USA. Organized by an International Committee it brings together experts in the production and utilisation of alcohol and alcohol-derived fuels. The symposium will cover topics of fuel production and economics, use in mobile and stationary applications, environmental aspects, international activities, and socio-economic perspectives.

Please contact one of the following people for more details:

Traci Hanson, Francine Vaughan or Linda Angelos  
 Rennies Travel Incentive and Conference Management Division  
 P.O. Box 9395, Johannesburg 2000, South Africa  
 Tel. +27-11-4037900 - Fax +27-11-4073220

## 13th International Clean Air & Environment Conference

**The Theme: 2000 then what?**

**Adelaide, Australia, 22-25 September 1996**

Organized by:

The Clean Air Society of Australian and New Zealand Inc (CASANZ)

Since its inception, the CASANZ has focused on the technological aspects of air pollution. Now for the first time, the 1996 Conference has been expanded to include the wider environment. The society has decided it can no longer consider the air environment in isolation and therefore, while still having air as a main focus, the Conference will encompass issues and solutions that are allied to the air environment.

This Conference is about identifying emerging environmental problems and providing solutions to environmental problems that we shall take with us into the 21st century. It is about technical and non-technical solutions.

The society believes that the new century will bring with it a new sense of environmental urgency. The people who attend this Conference will be those who are willing to meet that challenge.

For further details contact:

Hartley Management Group  
 P.O. Box 20, Kent Town SA 5071  
 Tel. +61-8-3634399 Fax +61-8-3634577

## Conference Reports

### Model Evaluation Group

#### Report of the Second Open Meeting

held in Cadarache (F) on May 19th, 1994

Edited by S.T. Cole and P.J. Wicks EUR 15990, 1995 ISBN 92-826-9549-2

Published by the European Commission, DG XII, Science, Research and Development; Environment Research Programme

The purpose of the meeting was to review current progress and to provide future direction for the Model Evaluation Group (MEG). MEG is a CEC initiative aimed at improving the culture in which technical models are developed and used, this goal being achieved through the development of evaluation protocols and guidelines for developers, both in general and in specialized areas. In addition, the listing and classification of models and data set as well as the identification of deficiencies in the model evaluation are covered. These activities provide also CEC with suitable technical assistance to identify research priorities in the field of Major Industrial Hazard. Models of the physical phenomena (flashing, dispersion, fire, explosion) associated with the release of hazardous material have been the subject of the meeting.

For further information, please contact:

H. Ott and P.J. Wicks  
EC DG XII/D-1, 200 rue de la Loi, 1040 Brussels  
Tel +32-2-2951182 Fax +32-2-2963024

### Model Evaluation Group Seminar

#### The Evaluation of Models of Heavy Gas Dispersion

held in Rauwse Meren (B) on November 25th, 1994

Edited by S.T. Cole and P.J. Wicks EUR 16146, 1995 ISBN 92-827-3956-2

Published by the European Commission, DG XII, Science, Research and Development

The purpose of the seminar was to provide a report of the progress made by the "Heavy Gas Dispersion (HGD)" Expert Group set up by the "Model Evaluation Group (MEG)" with the task to evaluate HGD models. This Expert Group has been entrusted with the listing of HGD Models, the identification of data set, the review and adaptation of the "Guidelines for Model Developers" and of the "Model Evaluation Protocol", and the test of the protocol by means of an open exercise. Preliminary results of an informal validation exercise have been discussed and a related EU funded project - REDIPHEN - has been presented in the course of the seminar.

For further information, please contact:

H. Ott and P.J. Wicks  
EC DG XII/D-1, 200 rue de la Loi, 1040 Brussels  
Tel. +32-2-2951182 Fax +32-2-2963024

### European School of Climatology and Natural Hazards

#### Desertification in a European context: Physical and socio-economic aspects

Proceedings of the European School of Climatology and Natural Hazard Course, held in Pueblo Acanalado, Alicante (E) on October 6-13, 1993

Edited by R. Fantechi, D. Peter, P. Balabanis, J.L. Rubio EUR 15415, 1995 ISBN 92-827-4163-X

Published by the European Commission, DG XIII, Telecommunications, Information Market and Exploitation of Research

Training and Education are important parts of the accompanying measures of the European Community research programmes.

The European School of Climatology and Natural Hazards is organized in the framework of those measures and takes the form of courses dealing with current research issues in the fields of Climate and Natural Hazards. The courses which are organized in cooperation with leading European institutions, are open to graduating or post graduate students in appropriate fields of research. Such courses are meant to offer to the students an opportunity to be imparted first-hand knowledge from leading research workers.

The European School of Climatology and Natural Hazards held its sixth course on "Desertification in a European context: physical and socio-economic aspects" in Pueblo Acanalado, Alicante, Spain from 6th to 13th October 1993.

The course, which was devoted for the first time on desertification, was organized in cooperation with the CSIC and some other Spanish Institutions. Forty-five students from ten EC member states and two students from non-EC member states attended the course.

The main objective of the course was to provide an overview of the principal issues which are collectively contributing to the increasing risk of desertification in Europe and therefore to help to focus the attention of young scientists to the multidisciplinary research effort needed to address this complex problem.

The various lectures of the course were devoted to a general introduction on the concept of the desertification and its evolution, a presentation of the physical, socio-economic, and biological processes, an overview of the methods in desertification research with emphasis on field experiments, remote sensing and modelling, and finally a presentation of measures for preventing and mitigating desertification and implications of management practices in terms of policy formulation and implementation.

For further information, please contact:

D. Peter or P. Balabanis  
Climatology and Natural Hazards Unit  
EC DG XII/D-2 SDME 3/68  
200 rue de la Loi B-1049 Brussels  
Fax +32-2-2963024

### Ecosystem Research Report 10

#### Global change and Arctic terrestrial ecosystems

Published by the European Commission, DG XII

Science Research and Development, Brussels, 1995

EUR 15519 ISBN 92-826-7386-3

This volume contains the edited proceedings of a scientific meeting at Uppdal, Norway in August 1993. It was the first major international conference on Arctic terrestrial ecology since the Abisko IBP Conference of 1974 and was the most representative international gathering of Arctic terrestrial ecologist to date. About 140 scientists from 17 countries attended. The overriding objectives were to increase our understanding of Arctic systems to allow better predictions of rates and directions of change to be made, and to provide policy-makers with up-to-date information. The principal immediate benefit, though, was to stimulate international scientific communication and co-operation.

The Conference had three major components and instruments of dissemination of information: a series of invited, keynote papers, each an informed synthesis of its field, currently under preparation; a series of workshops to identify priority areas of research which have been published as workshop recommendations by the Norwegian Institute for Nature Research (NINA); and a series of short, but detailed project-orientated papers and expanded posters contributed to the Conference. This latter series of contributions forms the basis of this present volume.

This volume provides an opportunity for the Arctic ecology community as a whole to communicate their current research findings. A strategy was adopted to include as many contributions as possible after peer review. This strategy necessarily resulted in the accepted papers appearing as short contributions and many readers may require more detailed information; however, this approach does give the reader an extensive insight into the range of research on Arctic terrestrial ecosystems currently in progress. Access to details of current Russian research in the Siberian Arctic is a particularly useful product of this volume.

Further information can be obtained from:

C. Nolan  
EC-DG XII-D1, 200 rue de la Loi, 1040 Brussels  
Tel. +32-2-2961633 - Fax +32-2-2963024



## Courses

### The Preparation, Monitoring and Evaluation of Projects in Environmental Education

University of Bradford, UK 25 March-4 April 1996

The European Research and Training Centre on Environmental Education based at the University of Bradford, UK, is pleased to announce the organisation of a short course on The Preparation, Monitoring and Evaluation of Projects in Environmental Education to be held from 25 March until the 4 April 1996.

This course builds on the success of two similar events held in 1994 and 1995, and aims to build on current attempts in promoting the systematic development of environmental education throughout the world through enhancing information exchange between practitioners and developing the skills necessary to carry out successful long-term projects in environmental education. The course is designed using presentations, workshops and field visits to enable participants to-date their knowledge, discuss experiences and assimilate ideas in order to further develop projects in their own countries.

For further information and enquiries, please contact:

Ms Jenny Padgham  
Course Co-ordinator, ERTCEE, Dept. of Environmental Science  
University of Bradford, Bradford, BD7 1DP, UK  
Tel. +44-1274-385391 Fax +44-1274-385691  
e\_mail: ertcee@bradford.ac.uk

### The University of Rhode Island Summer Institute in Coastal Management

June 3-28 1996

URI Coastal Resources Center, Narragausset Bay Campus, Narragausset, RI 02882 USA

The URI Summer Institute in Coastal Management is an intensive four-week program for resource management professionals offered at The University of Rhode Island. The institute's purpose is to provide participants with the practical skills required to design and implement integrated coastal management programs. Participants learn how to formulate effective strategies for the management of coastal ecosystems and apply integrated, interdisciplinary approaches to solving coastal problems. The course emphasizes the challenge of managing coastal environments in developing nations.

#### Course content

The Summer institute emphasizes issues of concern to coastal planners and managers, including:

- Implications of ecological and socioeconomic trends
- Institutional arrangements
- Coastal development activities such as mariculture, tourism, shorefront construction, and their impacts
- Common coastal problem such as loss of habitats, coastal hazards, erosion, degradation of water quality, use conflicts, overfishing, and sea level change

Participants learn how to design strategic coastal management programs utilizing:

- Sustainable development as the primary objective
- Situation analysis to identify key issues
- National level and special area planning
- An array of regulatory and non-regulatory management techniques such as environmental impact assessment, permit programs, zoning, policy driven research, public works, public education and volunteer action
- Techniques to build broad public support for programs and foster effective implementation
- Empowering community-based initiatives and fostering public-private sector partnerships

#### The Training Approach

The Summer Institute uses a training approach which builds upon each participant's experience and education, and encourages an

exchange of ideas between participants and faculty. Training sessions include lectures, field exercises, simulations, case studies and group discussions integrated into intensive but varied daily schedules. Numerous examples of how issues are being addressed at the national and local levels in a variety of industrialized and developing countries from both temperate and tropical regions are used. Trainers also integrate cases from participants' countries into selected sessions.

Further information can be obtained from:

The Training Coordinator  
Coastal Resources Center  
Narragansett Bay Campus  
The University of Rhode Island  
Narragansett, RI 02882 USA  
Tel. +401-792-6224 Fax +401-789-4670/792-5436  
e\_mail: markd@gso.sun1.gso.uri.edu

### Environmental technology: new developments and applications

International Seminar 21-27 April 1996

Exeter

Organized by the British Council

The seminar will give a practical overview of the techniques available, training and maintenance requirements and the best and most cost effective techniques to use in environmental problem solving, particularly in developing countries. Laboratory and field work will form an important part of the seminar.

The seminar topics will include:

- project scoping and planning
- sampling strategy
- new approaches to sample preparation
- instrumentation: field and laboratory
- use, servicing and maintenance of instruments
- training requirements
- purchasing and cost effectiveness
- data collation and interpretation
- reporting and presentation skills
- case studies and field examples

Further information can be obtained from:

International Seminars Department  
The British Council, 10 Spring Gardens,  
London SW1A 2BN, UK

### ISVR Short Courses

Organized by the Institute of Sound and Vibration Research University of Southampton

#### 1996 Courses

9-11 January	Mechanical Vibration Measurement Techniques
20-21 March	Medical Signal Processing
25-29 March	Clinical Audiology
25-27 April	'Balance 96' An intensive course in balance assessment and rehabilitation (ISVR Hearing and Balance Centre)
9-13 September	25th Advanced Course in Noise and Vibration
16-20 September	Technical Audiology
2-4 September	15th Engine Noise & Vibration Control Course
4-6 September	5th Vehicle Noise & Vibration Course

Other courses: Instrumentation and Measurement Techniques for Noise Control Application of artificial neural nets to speech processing - principle and practice

26-28 March SAVOIR Training Course - 'Human Vibration' (organised by the European Partnership in Sound & Vibration)

Further information regarding the above courses may be obtained from:

ISVR Conference Secretary  
Institute of Sound and Vibration Research  
The University, SOUTHAMPTON, SO17 1BJ  
Tel. +44-1703-592310 - Fax +44-1703 593190

## European School of Climatology and Natural Hazards

A course on

### Climate Change Impacts on Agriculture and Forestry

Organized by the European Commission, Directorate General for Science, Research and Development is planned to take place on 16-24 March 1996 at Volterra, Italy

The course will deal with the following main areas:

- Climate change - Regional aspects and feedbacks
- Vegetation in a changing climate
- Assessment of Climate Impacts on trees and crops: advantages and limits of experimental methods
- Modelling and upscaling
- Socio-economic implications and alleviation measures

The course will be addressed to graduate or post-graduate students already involved in research in the field of Climate Change Impacts and related items.

The course will be given in English. Therefore, a good command of the English language by the student is required.

About 25 grants are envisaged for applicants who should hold the nationality of a Community Member State or associated State with the programme. The grants will cover the reimbursement of travel expenses (cheapest available air fare for distances greater than 400 km, or cheapest available railway fare for distance below 400 km) and accommodation. No other expenses will be covered by the EC.

Attendance of other students at their own expenses may be possible up to the limit of available places.

The School is organized in collaboration with the "Fondazione per la Meteorologia Applicata" located in Firenze.

The deadline for the submission of the application forms to the Course is: 10 January 1996.

Any questions concerning the School should be addressed to:

D. Peter or P. Balabanis  
European Commission  
Environment and Climate Research Programme  
European School of Climatology and Natural Hazards  
DG XII/D-2 (SDME 7/46) 200 rue de la Loi, B-1049 Brussels  
Tel. +32-2-2958446/2953630/2964815 - Fax +32-2-2963024

## The degraded earth renewed: new directions in land restoration and reclamation

19-29 March 1996 London

Organized by the British Council

The aim of the seminar is to provide an understanding of the principles and practice of restoring land to its former productivity, conservation use, or to make it suitable for building development. A range of cases will be examined, from areas heavily contaminated by industrial activity, to restoration after mineral extractions.

The seminar will include the following topics:

- defining the problem
- causes of land degradation and disturbance
- assessment of degradation
- soil movement
- soil storage
- reinstatement procedures
- effects of soil contamination
- design of restoration programmes
- agricultural restoration
- habitat movement and rescue
- forest establishment and renewal
- is mitigation acceptable?
- local authority perspective
- conservation end-uses
- remediation and amelioration of contaminated land
- building on reclaimed land
- restoration of landfill sites
- restoration of water bodies
- unusual restorations
- unsuccessful restorations

Further information can be obtained from:

International Seminars Department  
The British Council  
10 Spring Gardens, London SW1A 2BN, UK  
Tel. +44-171-3894264/4252/4226 Fax +44-171-2894154

## New Publications

### Europe's Environment

#### The Dobriš Assessment

Edited by D. Stanners and Ph. Bourdeau

Prepared by the European Environment Agency Task Force (European Commission: DG XI and PHARE)

in cooperation with:

- United Nations Economic Commission for Europe
- United Nations Environment Programme
- Organisation for Economic Cooperation and Development
- The Council of Europe
- IUCN - The World Conservation Unit
- World Health Organisation

together with Eurostat and individual European countries

Published by the European Environment Agency, Copenhagen, 1995, ISBN 92-826-5409-5

The report has been prepared following the request issued from the first Pan-European Conference of the Environment Ministers which was held at Dobriš in June 1991, and is the result of a more than three years work.

For the first time an exhaustive assessment has been made of the key environmental issues faced by Europe.

As such, the report constitutes the fundamental basis for building up strategies and programs addressing environmental problems at regional, national and transnational level. In addition, it responds to the need of providing the public with the best available data describing the status of the environment in Europe, so as to raise the required general awareness about the environmental problems, their causes and effects. Policy makers are, in fact, the primary but not the sole target audience of this work. The value of the report consists also of the fact that it is the starting point for future updating and reviews allowing to check the progress in the process of sustainable development.

The report consists of six parts encompassing forty chapters.



**Part I** (Chapters 1 to 3) explains the general context, the scope and the coverage of the report, and the approach for its preparation.

**Part II** (Chapters 4 to 11) provides the main assessment of the state of the environmental conditions in Europe, the principal environment compartments and units as well as the human health having been considered.

**Part III** (Chapters 12 to 18) deals with the different categories of pressures on the environment, their interconnections and the need of an integrated approach to them.

**Part IV** (Chapters 19 to 26) analyzes the various human activities (energy, transport, tourism, household, etc.) as the source of the above pressures, highlighting their environmental impact.

**Part V** (Chapters 27 to 38) identifies and describes the 12 environmental problems over which general consensus has been reached as their prominence and significance for Europe, i.e. climate change; stratospheric ozone depletion; loss of biodiversity; major accidents acidification; tropospheric ozone and other photochemical oxidants; management of freshwater, forest degradation; coastal zone threat and management; waste reduction and management; urban stress; chemical risk. For each of these issues targets and suitable strategies are indicated.

**Part VI** (Chapters 39 and 40) summarizes the conclusions and main highlights of the report, as well as the most significant policy responses and options proposed.

The impressive mass of data which have been collected and handled for this assessment would have represented an excessive burden for the report. Yet, having access to them for a comprehensive evaluation of the problems is of paramount importance and interest. To achieve this goal, a Statistical Compendium has been prepared to accompany the report. Reference is made very often in the report to this Statistical Compendium which collects background data and statistics.

The Statistical Compendium has been jointly compiled by:  
Eurostat, European Commission;  
European Environment Agency Task Force;  
DG XI and PHARE, European Commission;  
United Nations Economic Commission for Europe;  
Organisation for Economic Cooperation and Development;  
World Health Organisation.

Published by the Statistical Office of the European Communities, Luxembourg, 1995; Theme 8: Environment; Series A: Yearbook and yearly statistics. ISBN 92-827-4713-1

Both volumes **Europe's Environment: The Dobříš Assessment**, and **Europe's Environment: Statistical Compendium for the Dobříš Assessment** are available through the national sales agents of the Office for Official Publications of the European Communities.

For further information please contact:

European Environment Agency  
Kongens Nytorv 6, 1050 Copenhagen K (DK)  
Tel.+45-33-367100 Fax +45-33-367199

## Biotechnology for a Clean Environment

Published by the Organisation for Economic Co-operation and Development (OECD)

OECD 1994 ISBN 92-64-14257-6

This is the report of the Ad Hoc Group of Government Experts on Biotechnology for a Clean Environment set up by the OECD Committee for Scientific and Technological Policy (CSTP) under the chairmanship of Dr. M. Griffiths (Mike Griffiths Associates, Woking, Surrey, UK). The report is responding to the widely perceived need for a scientific review of the potentialities offered by biotechnology for the prevention, detection and remediation of environmental pollution. It is shown that biotechnology can provide a large number of technical options helping to achieve the essential characteristics that industrial technologies should exhibit in future, i.e.:

- to be based on renewable resources;
- to use mild production processes;
- to produce goods and services compatibles with the environment;
- to generate recyclable wastes.

More than focussing on genetically modified organisms the report emphasizes the scarcely exploited potential of naturally occurring organisms for the restoration and the maintenance of the environment, and the need of in-situ application of genetically modified organisms to more recalcitrant pollutants. Although nowadays biotechnologies are mostly applied for remediation of pollution, future priorities - which they have to be addressed to - are prevention and reduction of pollution as well as early detection and monitoring. The long term market potential for biotechnologies and their impact on the employment and on industrial growth are clearly stressed. The report consists of a first part - intitled State of the Art - where options offered by biotechnologies for the prevention, detection and remediation of pollution of different environmental compartments are comprehensively reviewed, and of a second part - intitled Industrial and Economic Aspects - dealing with industrial strategies and economic perspectives. Of particular interest is the collection of information on the governmental initiatives in the OECD countries. In spite of the scientific/technical nature of the matter dealt with, the report is not intended as a reference text for the specialists nor for scientists and engineers in general. As a matter of fact the very comprehensive review is presented in a form easily accessible to the wide audience of public and private administrators, policy makers and industrialists to whom the reading of this report is strongly recommended.

For further information, please contact:

OECD Biotechnology Unit; Directorate for Science, Technology and Industry  
2, rue André Pascal, 75775 Paris CEDEX 16 (F)  
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## EUROSURVEY Report

The report of the "EUROSURVEY: a study of schoolchildren's attitudes towards the environment in countries members of the Council of Europe" undertaken by the European Research and Training Centre on Environmental Education (ERTCEE) of the University of Bradford, is now available. The report, which summarises the results of a survey involving over 20,000 schoolchildren from 16 European countries, provides a rough profile of the level of awareness of pupils on global and local environmental issues, as well as sources of information on environmental matters.

For further information and copies of the EUROSURVEY report, please contact:

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## Methods and testing strategies for evaluating the genotoxic properties of chemicals

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Published by the European Commission

Directorate General XIII

Telecommunications, Information Market and Exploitation of Research

L-2920 Luxembourg

EUR 15945 ISBN 92-820-0081-X

This report EUR 15945 EN is a joint publication of Directorate-General XI Environment, Nuclear Safety and Civil Protection and of Directorate-General XII Science, Research and Development of the European Commission

In this document, current methods and testing strategies for evaluating the genotoxic effects of chemicals are reviewed. Following an overview of both somatic and germ cell mutagenesis, model organisms and tests in current use are described. Correlations of short-term tests with carcinogenicity and germ cell mutagenicity data are assessed and the two main genotoxicity testing strategies—the tier approach and the battery approach—are described. Guidelines currently recommended at international (CEC and OECD), national (the UK, Italy, Japan, Canada, and the USA), and industry (European Chemical Industry Ecology and Toxicology

Centre) levels are described. It is concluded that, given technological progress, there is scope for improvement of current practices and methodologies. Recommendations for future research and development are given both for *in-vitro* and *in-vivo* genotoxicity tests and for ecosystems and environmental compartments.

Further information can be obtained from:

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## Books

### 11 New Books on Bioremediation Released by Battelle Press

11 new books on bioremediation have been made available by Battelle Press. The first 10 books collect 380 articles contributed by specialists from all over the world in this fast growing discipline, and represent a more complete version of the lectures given at the 3rd International In-situ and On-line Bioreclamation Symposium held in San Diego (USA) on April 24-27 1995. Thus, these books are an essential reference bibliography for bioremediation professionals more than just conference proceedings. The 11th book is the cumulative index for the 10 books as well as for the 7 books which had been edited as the issue of the two preceding symposia in 1991 and 1993. The titles of the 10 books are:

- Intrinsic Bioremediation;
- In-situ Aeration: Air Sparging, Bioventing and Related Bioremediation Processes;
- Bioaugmentation for Site Remediation;
- Bioremediation of Chlorinated Solvents
- Monitoring and Verification of Bioremediation;
- Applied Bioremediation of Petroleum Hydrocarbons;
- Bioremediation of Recalcitrant Organics;
- Microbial Processes for Bioremediation;
- Biological Unit Process for Hazardous Waste Treatment
- Bioremediation of Organics.

For further information please contact:

Battelle Press, 505 King Avenue, Columbus  
Ohio 43201-2693 (USA)  
Tel +1-614-4246393 - Fax +1-614-4243819

### Environmental Analytical Chemistry

Edited by F.W. Fifield and P.J. Haines,

Blackie Academic & Professional, an imprint of Chapman & Hall, London, UK (1995).

ISBN Hb075140052 1

A book dealing with a theoretical and practical description of several important analytical techniques and methodologies employed for environmental research and monitoring is undoubtedly welcome. In this respect, the title of this book is particularly attractive and catches immediately the attention of the readers. In fact, it emphasises directly the central role played by analytical chemistry in gaining a deeper insight of the interaction between the human activities and the environment. The word "analytical" is used here in its broadest meaning, since the challenges of chemical analysis in the study of the environment are extremely severe and deal with complex methodologies aimed at detecting both inorganic and organic species (atoms and molecules), at widely different concentration levels and with widely different degrees of precision and accuracy.

In spite of the fact that this is a multi-authored book, about 70% of the material has been written by the Editors, which therefore

favours uniformity of style and easy reading. The book has a tutorial, introductory section in which the theoretical principles and the foundations of several different analytical methods are presented. After two chapters on the assessment and interpretation of environmental data and on basic chemical principles, specific analytical techniques such as titrimetry and gravimetry, chromatography, atomic and molecular spectrometry, radioactivity, electrothermal and thermal analysis are discussed. In a complex and vast scenario such as that of environmental analytical chemistry, a choice had to be made on both the number of techniques chosen and the level of their presentation. The choice made in this book to keep the presentation of the different concepts and methodologies on a concise, elementary level was probably dictated by the necessity of addressing a large number of readers (including those not involved in chemical analysis) with different skills and competencies rather than a relatively small group of specialists. In all chapters, sufficient basic information is given to indeed appreciate the essential benefits and difficulties of any given method. Unavoidably, in some cases, due to the rapid developments occurring in the field (e.g., Inductively Coupled Plasma Mass Spectrometry) the analytical sensitivity presented has nowadays been improved considerably; however, this lack of updated information does not detract from the general usefulness and validity of the conclusions presented.

Specific applications deal with important topics like speciation, analysis of atmospheric samples and waters, radiogenic dating and contaminated landsites, and finally the analysis of trace amounts of organic compounds (pesticides, aromatic hydrocarbons, etc). In most cases, reference is given to more specific literature where the interested reader, in particular the analyst looking for detailed "cookbook" procedures, is referred to for more detailed information. A notable exception, which can be considered a minor oversight, is represented by chapter 15 on Trace Elements, where no reference to further readings or to specific literature is found.

In conclusion, this book can be recommended as a general tutorial overview to those involved, for different reasons and with different goals, in the use and applications of analytical chemistry to environmental problems.

### Chemistry of Waste Minimization

Edited by J.H. Clark

Blackie Academic & Professional, an imprint of Chapman & Hall, London, UK (1995) ISBN: Hb 075140220 6

Political and public pressure have provoked increasingly tight environmental legislation, obliging the chemical industry to reduce waste by introducing innovative and clean technologies. As a consequence "enviro-economics" will continue to encourage industry to seek new processes. This book provides an overview of the chemistry of waste minimization at source. In this context the book covers pertinent chemical methods, including techniques relevant to clean synthesis. The volume comprises sixteen chapters. After an introductory chapter, chapter two examines industrial aspects of waste minimization including costs and benefits. These are illustra-



ted through actual examples from manufacturing. The third chapter gives an overview of the UK, European and US legislation reviewing impact on chemical manufacturing. Therefore, the chapter might be considered as a response of chemical industries to regulatory pressure. Six chapters are devoted to catalysis and to its role in waste minimization linked to process selectivity. Chapters 4-6 examine some of the recent developments in catalysis. In particular the merits of solid support and supported reagents in liquid phase are discussed. The methods replace stoichiometric processes with phase transfer catalysis. For example, interaction between substances of different polarities is possible using polymer-supported catalysts. Subsequent opportunities for industrial applications are numerous.

Chapter 7 is devoted to synthesis of optically active compounds including catalytic asymmetric synthesis.

Chapter 8 evaluates current procedures for minimization of chlorine and bromine originating from chlorofluorocarbons or perhalogenocarbons. Emphasis is placed on new catalytic methods of synthesis. Finally chapter 16 highlights the importance of catalysis in clean synthesis for manufacturing fine chemicals and chemical intermediates.

Chapter 9 surveys the use of hydrogen peroxide in clean processes. Applications of hydrogen peroxide are also considered with

reference to organic synthesis, hydrometallurgy, metal finishing, and effluent treatment. The reagent has an increasing role because the only inorganic by-product is water.

Chapters 10 and 11 are devoted to sonochemistry and electrochemistry, regarding waste minimization, including chemical synthesis and treatment processes.

The importance of solvents in chemical processes is recognized. Solvent effects on reactions rates, key parameters related to solvent power, solvent recovery, and some alternatives to the more used solvents are considered in chapter 12.

Chapters 13 and 14 are devoted respectively to reuse and recycling of polymers, and to the various methods of metal capture from effluents.

Finally chapter 15 deals with chemical destruction using supercritical water which offers remarkable possibilities for the total oxidation of chemical waste. In the same chapter the properties of supercritical water are also considered, with reference to related reactions and processes, and including technological aspects such as corrosion.

In conclusion, the book gives a rather comprehensive overview of the chemistry of waste minimization at source. By considering important chemical methods and techniques currently in use the book presents the point of view of chemical industries regarding the present environmental legislation.

#### **Note from the Editor**

The information contained in this Newsletter has been drawn from material supplied by the same persons indicated in each chapter as possible correspondants for further information.

Text have been checked and apologies are given for omissions or erros.