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INTERNATIONAL CENTRE FOR SCIENCE
AND HIGH TECHNOLOGY

in collaboration with the

Institute of Marine Sciences and Technology, Izmir, Turkey

and the

UNEP Coordinating Unit for the Mediterranean Action Plan
(MED POL Programme)

FINAL REPORT

*Workshop on Industrial Pollution Assessment and Prevention in Mediterranean Coastal
Areas*

*Izmir, Turkey
18-20 November 1998*

INTERNATIONAL CENTRE FOR SCIENCE
AND HIGH TECHNOLOGY

Area Science Park, Padriciano, 99 - Building L2, 34012 Trieste, Italy
Tel: + 39-040-9228108, Fax: +39-040-9228136

Institute of Marine Science and Technology

Haydar Aliev Bulvarı Nr, 10, 35340 İnciraltı, Izmir, Turkey
Tel: +90-232-2785112, fax +90-232-2785082, E-mail: director@imst.deu.edu.tr

BACKGROUND

Recent national and international policy and legislation, both related to Environmental Impact Assessment (EIA) and to the adoption of Agenda 21, require that controls have to be continuously undertaken and in so called "real time" at different scale levels: within industrial plant, within industrial areas and within the landscape.

As to the Mediterranean Sea region, a new phase II of the UNEP-coordinated Mediterranean Action Plan (MAP) for the protection of the marine environment and sustainable development of coastal areas was adopted in Barcelona in 1995, together with a newly revised Barcelona Convention. Furthermore, in 1996, in Syracuse, Italy, a new revised Protocol for the protection of the Mediterranean Sea against Pollution from Land-Based Sources and activities (LBS Protocol) was signed; this takes into account the Global Programme of action for the protection of the marine environment. Closer to-date, the Contracting Parties to the Barcelona Convention adopted, in 1997, a Strategic Action Programme to address pollution against land-based activities. In parallel, the Contracting Parties to the Barcelona Convention established, in 1996, a Mediterranean Commission for sustainable Development and created a task team to deal with industry and sustainable development.

The ICS Subprogram 2.2 deals with the sustainable industrial development of coastal areas, and among its activities the Subprogramme foresees to foster the creation of a network of Mediterranean institutions and specialist individuals dealing with this theme. The programme would facilitate Mediterranean developing countries in formulating plans or monitoring industrial development as well as pollution caused by industry. The programme endeavours to identify synergies with other international and national initiatives cooperation has already been established with the Mediterranean Action Plan of UNEP, in particular, with that component of MAP dealing with the assessment and control of marine pollution (MED POL Programme). It is envisaged that this collaboration will, indeed, be extended to future related activities.

The development of monitoring systems is particularly needed in developing countries where the industrialization process is new and, in some cases, very fast. Field observations and other direct measurements of activities taking place on the earth's surface should also be correlated with results of analytical interpretations of remote sensed data. This could be of guidance in subsequent image processing for image enhancement and information extraction. Particularly important for efficient monitoring systems would be the development of a networking framework of monitoring stations suitable for registering atmospheric and aquatic pollution. Monitoring is essential to establish protocols for risk assessment and plans for mitigation and response to emergencies. The complementary nature of remote-sensed data and of ancillary data gathered from data acquisition with suitable monitoring instrumentation, ground verification and other maps, is the key to computer modeling for environmental control and protection. It has been recognized that the development of monitoring systems is essential in order to support the following actions and processes:

- 1) Environmental impact assessment;
- 2) Planning remediation of industrial pollution;
- 3) Integration of research and the effective transfer of technology.

JUSTIFICATION

Considering that:

- in the Mediterranean sea there are several problems concerning industrial pollution, and that integrated plans for the monitoring of industrial development and pollution, mostly side-lined until now, have to be fully considered in view of new regional legislation which will soon come into force;
- industrial development, nowadays, is no more related to heavy or large-scale industries only, but also to a wide variety of small and medium enterprises;
- industrial development is bound up to the application of cleaner technologies; to risk assessment procedures; and, to the "responsible care principle";
- it will be necessary to re-assess national industrial plans with the aim of reducing the spread of industrial plant location and, concurrently, sparing coastal areas from such development;
- industries are not clustered according to their affinity or complementarity, but it often happens that the distribution is almost random. The concentration of industrial estates is, in some cases, very high and, in other cases, mixed with residential, agricultural, or, tourist areas, especially in coastal regions;
- there is an urgent need to develop programmes for monitoring industrial development, and its pollution, a also industrial risk assessment.

The Workshop will contribute towards the transfer of technology with the aim of enabling developing countries to apply techniques for:

- identifying optimal sites for the development of new industrial areas;
- evaluating the technological level of production systems; and
- developing networks suitable for monitoring the state of the environment, to assess risk and, eventually, to plan for mitigation, remediation and recovering actions in case of disaster.

OBJECTIVES

- To evaluate the applicability of available technology for monitoring industrial development and pollution in industrialized urban-coastal areas.
- To avail the role of production process simulation techniques to chemical industries.
- To present case studies from the Mediterranean region, particularly those concerning "hot spots" as already identified by the Mediterranean states.

- To strengthen the network of institutions, from Mediterranean developing countries, working on the industrial development of coastal areas.
- To develop a project concept for monitoring industrial pollution in specific Mediterranean areas to be submitted to donors.
- To elaborate case studies for planning remediation of industrial pollution due to inadequate process management as well as to disaster.

OUTPUTS

- Review of national and international projects concerning the monitoring of industrial development in coastal areas of the Mediterranean basin
- Review of case studies related to the application of the technological framework for monitoring industrial development and industrial pollution by integrating remote sensing and by in-situ observations.
- Identification of common activities, goals and priorities, within the ambit of cooperation with the Mediterranean Action Plan, for monitoring industrial development and industrial pollution, and, for planning of future related activities.

CONCLUSIONS AND RECOMMENDATIONS

The participants were briefly informed about the structure of the activities implemented within the framework of the Mediterranean Action Plan (MAP) and the Priority Actions Programme (PAP). Particular stress was put on the importance and role of the Mediterranean Commission for Sustainable Development (MCSD) as new organisation for the management in the Mediterranean with the aim to carry out sustainable development of the region. Such an approach is considered innovative, because it is the first regional example of that kind in the world. The importance of this approach is in the fact that the representatives of the Mediterranean countries are gathered around the same table with the representatives of NGOs, other IGOs, professional institutions and associations, local authorities, etc. However, MAP still remains the basic tool in the implementation of the provisions of the Barcelona Convention, offering a unique professional and organizational support to MCSD. The Integrated Coastal Zone Management (ICZM) is one of the priority themes of MCSD in the framework of which PAP is playing a referential role.

The further presentation was focused on the future development of ICZM in the Mediterranean and the topics which would dominate in the following years. These experiences have partially resulted from a recently completed METAP/PAP study on the assessment of ICAM initiatives in the Mediterranean. Lessons learned during the last ten years of ICAM implementation in the Mediterranean, as well as the recommendations for the further development of the activities were presented to the participants

The development of ICAM activities has been directed towards three main targets, namely: gaining scientific knowledge on particular natural and socio-economic coastal zone systems; a set of technical solutions, and planning and management tools and techniques; and management policies and a set of instruments for their implementation. This division is still actual, and each of its components should be developed either separately, or within the

framework of the integrated approach directed towards, sustainable development of coastal zones in the Mediterranean.

The enlargement of scientific knowledge on natural and socio-economic coastal zone systems will remain one of the priorities of ICAM. Although, on one side, there is the need to gather as fast as possible the necessary information to come to management decisions, it is, however, impossible to come to a better long-term understanding of coastal systems without scientific research. The development of techniques to optimise the objectives of short and long-term needs will remain a priority also in the future. Or, in other words, the need remains for large and long-term research project, as well as for short-term techniques enabling a fast gathering of information. However, the integration of the various coastal information systems, even at the meta level is of the utmost importance. Also, the PAP initiative is being developed in that direction and an attempt will be made in Izmir to carry it out in the framework of the National Training Workshop on Integrated Coastal Zone Systems as an instrument to provide support in the decision making on ICAM.

In the framework of the other group, there is, nowadays, a certain consensus in the planning of coastal zones to create smaller homogeneous zones, which would, then, be surveyed using simple methods, and in that way the planning process would be carried out much faster. Furthermore, there is the need to elaborate the criteria for defining the use of coastal zones, or coastal zoning, being still one of the most efficient tools in the implementation of coastal zone plans, and the protection of coastal zones, either as areas of particular values (ESAS or Environmentally Sensitive Area listed in the IUCN nomenclature on specially protected areas), as well as the areas outside of these zones, which are not always distinguished by their natural characteristic. The objectives of the development of coastal zones are being directed to should always be the starting point, and the techniques for optimising the objectives, conflict resolutions, etc. would remain one of the priorities in the integrating tools in the planning process. The third direction which should be further developed in the immediate future is environmental assessment with particular stress put on the technique of the Strategic Environmental Assessment (SEA) for the needs of ICAM. This concerns a technique, which has not yet been clearly defined, as it is the case with EIA, and which is sometimes difficult to define as a practical technique, but the need for which is so evident. From my point of view, in the further development of this technique the basic fact is that cumulative environmental effects of developmental decisions in coastal zones should be determined in many instances. Finally, very important are the techniques for economic valuation of coastal resources and the relevant economic instrument. Besides the set of "classic" instrument, being in use for a long time, it is only the efficient techniques for the evaluation of coastal zone resources, which will result in a practical set of economic instruments. The other possible issues to be elaborated and developed in ICAM are those dealing with coastal legislation and the means for their successful implementation, the coastal GIS, carrying capacity of natural systems, assimilative carrying for residuals, etc.

AIDE-MEMOIRE

See attached Aide-Memoire

PROGRAMME

See attached.

LIST OF PARTICIPANTS

See attached List of Participants

ANNEXES

Copies of submitted materials and presentations are attached.

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AND HIGH TECHNOLOGY**

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AIDE-MEMOIRE

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Haydar Aliiev Bulvari Nr. 10, 35340 Inciralti, Izmir, Turkey
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The development of monitoring systems is particularly needed in

developing countries where the industrialization process is new and, in some cases, very fast. Field observations and other direct measurements of activities taking place on the earth's surface should also be correlated with results of analytical interpretations of remote sensed data. This could be of guidance in subsequent image processing for image enhancement and information extraction. Particularly important for efficient monitoring systems would be the development of a networking framework of monitoring stations suitable for registering atmospheric and aquatic pollution. Monitoring is essential to establish protocols for risk assessment and plans for mitigation and response to emergencies. The complementary nature of remote-sensed data and of ancillary data gathered from data acquisition with suitable monitoring instrumentation, ground verification and other maps, is the key to computer modeling for environmental control and protection. It has been recognized that the development of monitoring systems is 'essential in order to support the following actions and processes:

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reducing the spread of industrial plant location and, concurrently, sparing coastal areas from such development;

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STRUCTURE OF THE WORKSHOP

The structure of the Workshop includes: lectures by experts and presentations by participants on the following subjects: review of on-going programmes; industrial processes and pollution; remote sensing (satellite and data acquisition instrumentation); GIS, sampling techniques and data analysis (multivariate and spatial data analysis), and open discussions on the role of these technologies in on-going projects.

PARTICIPATION

The Workshop is addressed to institutions of Mediterranean developing countries dealing with coastal management problems related to industrial development and involved in activities related to the recommendations of the Thematic Working Group on Industry and Environment of the Commission for Sustainable Development of the Mediterranean Action Plan.

Up to fifteen participants from Mediterranean countries will be invited to the Workshop. The participants should be involved in their countries at the technical or the managerial levels in issues related to industrial development and its environmental implications. The workshop will be conducted in English. (It is envisaged to organize a similar workshop in French, in 1999).

CONTACT PERSON

For additional information, please contact:

At ICS:

Mrs. Elisa S. de Roa, Earth, Environmental and Marine Sciences and Technologies, ICS-UNIDO, Area Science Park, Padriciano 99, 34012, Trieste, Italy, Tel.: +39-040-9228108, Fax: +39-040-9228136, E-mail: roa@ics.trieste.it.

At the Institute of Marine Science and Technology

*Prof. Dr. Nihat Taspinar, Haydar Aliev Bulvari Nr. 10, 35340 Inciralti, Izmir,
Tel.: +90-232-278 51 12, Fax: +90-232-278 50 82,
E-mail: director@neptune.imst.deu.edu.tr.*

Further details about the training course and travel instructions will be provided upon request.

**WORKSHOP ON INDUSTRIAL POLLUTION ASSESSMENT AND PREVENTION
IN MEDITERRANEAN COASTAL AREAS**

Izmir, Turkey
18 - 20, November, 1998

PROGRAMME

Wednesday, 18 November

- 09:00-09:20 Registration
- 09:20-10:00 Opening
Welcome speech and presentation of IMST, Izmir, by Mr. O. Uslu, Managing Director of IMST.
Words of welcome by Mr. G. Kamizoulis, on behalf of MAP; and, Mr. E. Feoli, on behalf of ICS/UNIDO.
- 10:00-10:30 Coffee break
- 10:30-11:00 *Environmental problems in the Mediterranean coastal areas as a result of industrial pollution:* Mr. N. Taspinar, IMST.
- 11:00-11:30 *Coordinated regional action for the reduction of industrial pollution in the framework of the Mediterranean Action Plan:* Mr. G. Kamizoulis, MAP, Athens.
- 11:30-12:00 *Industrial ecology - a framework for sustainable development:* Mr. E. Feoli, Scientific Coordinator - Earth, Environmental and Marine Sciences and Technologies, ICS/UNIDO, Trieste.
- 12:00-12:30 *Some case-studies relating to Izmir Bay:* Mr. B. Cihangir, IMST.
- 12:30-14:30 Lunch.
- 14:30-15:00 *The importance of stakeholder involvement in development planning in coastal areas:* Mr. L.F. Cassar, ICS/UNIDO.
- 15:00-16:00 *The role of Strategic Environmental Assessment (SEA) in Mediterranean coastal areas:* Mr. B. Clark, University of Aberdeen.
- 16:00-16:20 Coffee break.
- 16:20-16:40 *Indicators of sustainability as applied to the coastal zone:* Ms Ilkden Talay, University of Ankara.
- 16:40-17:10 Discussion.

Thursday, 19 November

- 09:00-10:00 *Process simulation as a tool for evaluating environmental impact:* Mr. A. Bertucco, Istituto di Impianti Chimici, University of Padova.
- 10:00-10:30 *The role of production process simulation to limit industrial pollution:* Mr. O. Uslu, IMST.

- 10:30-10:50 Coffee break
- 10:50-11:30 *Data acquisition and processing, and the use of GIS for integrating information:* Joint presentation by Mr. E. Saner and Mr. H. Eronat, IMST.
- 11:30-12:00 *Guidelines, methodology and content of a pre-investment study in a hot-spot:* Mr Dimitrios Tsotsos, Athens.
- 12:00-12:30 Discussion.
- 12:30-14:30 Lunch.
- 14:30-15:00 *Planning monitoring systems, including the assessment of industrial landscape patterns:* Mrs. E. Ucuncuoglu, IMST.
- 15:00-15:30 *'Hot spots' in Lebanon*
- 15:30-16:00 *'Hot spots' in Syria*
- 16:00-16:20 Coffee break.
- 16:20-17:00 Discussion.

Friday, 20 November

- 09:00-09:30 *The role of bio-monitoring and bio-indicators:* Mr. H. Avni Benli, IMST.
- 09:30-10:40 *Dealing with 'hot spots' - some practical examples:* discussion led by Mr. E. Feoli and Mr. L.F. Cassar, ICS/UNIDO, Trieste.
Inputs by: Mr. A. Chouiki, IMS, Izmir;
Mr. D. Ouazar, Ecole Mohammadia d'Ingeniers, Rabat;
Mr. N. Taspinar, IMST, Izmir.
- 10:40-11:00 Coffee break
- 11:00-12:30 General discussion.
- 12:30-14:30 Lunch.
- 14:30-15:40 *Round-Table discussion on networking:* Mr. E. Feoli, Mr. G. Guerrieri, and Mr. I. Trumbic.
- 15:40-16:00 Coffee break
- 16:00-16:30 Evaluation and Closure of Workshop.

LIST OF PARTICIPANTS

Name - Surname	Adress	Telephone	Fax
Mr. George Kamizoulis	WHO/ MED POL Officer MAP Vassileos Konstantinou, 48 11635 Athens-Greece	301-7273100	+301 7253196-7
Prof. Alberto Bertucco	Istituto di Impianti Chimici University of Padova, Via Marzolo, 9 35131 Padova-Italy	+39-49-8275457	+39-49-8275461
Prof. Driss Ouazar	Ecole Mohammadia d'Ingenieurs Universite Mohammed V Avenue Ibn Sina 765 Rabat-Agdal / Morocco	+212-7-670579	+212-7- 778853
Dr. Giovanni Guerrieri	Ministero dell'Ambiente Via della Serratella in Laterano 33 00184 Rome-Italy	+39-06-70362219	+39-0677257012
Mr. Ivica Trumbic	Regional Activity Centre Priority Actions Programme UNEP – Mediterranean Action Plan Kraj sv.	+385-8-34 34 99 / 59 11 71	+385 21 36 16 77
Mr.Dimitrios Tsotsos	MAP Consultant Athens-Greece	+301-8643210	+301-6773334
Mr.Hratch Kouyoumjian	National Council for Scientific Research Marine Research Center (MRC) Haret Sakhr P.O.Box 123	+961 9 918570 / 934763	+961 9 943166
Mr. Mohammed Moscef Sarbarji	Ecole Nationale d'Ingenieurs de Sfax Sfax-Tunisia	+216 4274088	+ 216 4275595
Dr. Louis F. Cassar	Executive Coordinator International Environment Institute Old University Building St. Paul Street, Valletta VLT	+356 240741	+356 230551
Prof.Dr. Enrico Feoli	Scientific Coordinator-Earth, Environmental and Marine Sciences and Technologies ICS/UNIDO-Trieste	+390 409228108	+390 409228136
Çiğdem GENCEL	Middle East Technical University 06531 Ankara, Turkey	+90 312 2105429	+90 312 2101412
Dr Ilkden TALAY	Research Associate Ankara Universitesi Ziraat Fakultesi Peyzaj Mimarligi Bolumu Diskapi Ankara.	+90-312-317 0550/1728(ext.)	+90 312 3176467
Prof.Dr. Orhan USLU	(Director) Institute of Marine Sciences and Technology (IMST) Haydar Aliev Bulvari No. 10, 35340 Izmir-Turkey	+90 232 2785112	+90 232 2785082
Prof.Dr. Nihat TASPINAR	Institute of Marine Sciences and Technology (IMST) Haydar Aliev Bulvari No. 10, 35340 Izmir-Turkey	+90 232 2785112	+90 232 2785082
Prof.Dr. Abdelouahab CHOUIKI	Institute of Marine Sciences and Technology (IMST) Haydar Aliev Bulvari No. 10, 35340 Izmir-Turkey	+90 232 2785565	+90 232 2785082
Assoc.Prof.Dr. Hüseyin Avni BENLİ	Institute of Marine Sciences and Technology (IMST) Haydar Aliev Bulvari No. 10, 35340 Izmir-Turkey	+90 232 2785565	+90 232 2785082

Name - Surname	Adress	Telephone	Fax
Assoc.Prof.Dr. Bülent CIHANGIR	Institute of Marine Sciences and Technology (IMST) Haydar Aliev Bulvari No. 10, 35340 Izmir-Turkey	+90 232 2785565	+90 232 2785082
Dr. Erol SANER	Institute of Marine Sciences and Technology (IMST) Haydar Aliev Bulvari No. 10, 35340 Izmir-Turkey	+90 232 2785565	+90 232 2785082
Dr. A. Hüsnü ERONAT	Institute of Marine Sciences and Technology (IMST) Haydar Aliev Bulvari No. 10, 35340 Izmir-Turkey	+90 232 2785565	+90 232 2785082
Esin ÜÇÜNCÜOĞLU	Institute of Marine Sciences and Technology (IMST) Haydar Aliev Bulvari No. 10, 35340 Izmir-Turkey	+90 232 2785565	+90 232 2785082
Engin GÜREL	Izmir Ticaret Odasi (Chamber of Commerce in Izmir) Atatürk Caddesi No. 126, 35210 Izmir-Turkey	+90 232 4417777	+90 232 4461360
Vildan GÜNDOĞDU	Director Izmir Çevre İl Müdürü (Provincial Director, Ministry of Environment) Talatpaşa Bulvari No.	+90 232 4220512	+90 232 4221972
Nezih ÖZTÜRE	Ege Bölgesi Sanayi Odasi (Aegean Chamber of Industries) Öztüre Holding A.S. Sehit Nevres Bulvari	+90 232 4250362	+90 232 4633007
Seniz Uçkaç	Institute of Marine Sciences and Technology (IMST) Haydar Aliev Bulvari No. 10, 35340 Izmir-Turkey	+90 232 2785565	+90 232 2785082
Sevil Tüzmen	Institute of Marine Sciences and Technology (IMST) Haydar Aliev Bulvari No. 10, 35340 Izmir-Turkey	+90 232 2785565	+90 232 2785082
Aycan Şahinler	Institute of Marine Sciences and Technology (IMST) Haydar Aliev Bulvari No. 10, 35340 Izmir-Turkey	+90 232 2785565	+90 232 2785082
Abd El Rahman Abd El Razek Salama	Institute of Marine Sciences and Technology (IMST) Haydar Aliev Bulvari No. 10, 35340 Izmir-Turkey	+90 232 2785565	+90 232 2785082

FINANCIAL STATEMENT
for the
ICS-UNIDO Workshop on Industrial Pollution Assessment and Prevention in
Mediterranean Coastal Areas

Izmir, Turkey, 18-20 November 1998

Following expenditures have been made according to the budget lines as approved in the contract. The receipts of all expenditures have been filed. The summary is as follows:

Nr.	Item	Approved US\$	Spent US\$	
1	Air tickets			
	Participants from (Greece, Italy, Morocco, United Kingdom, Egypt, Croatia, Syria and Lebanon)	8,500.00	5,931.83	5,931.83
	Participants from Turkey	300.00	198.60	198.60
	Subtotal	8,800.00	6,130.43	
2	Perdiem			
	Foreign Participants and participants from outside Izmir	4,944.00	3594.00	3594.00
	Meals (local participants)	480.00	681.87	681.87
	Subtotal	5,424.00	4,275.87	
3	Local transportation	800.00	517.76	517.76
4	Workshop materials	1,500.00	1,454.29	1,454.29
5	Utilities	2,000.00	2,000	2,000.00
6	Miscellaneous	Remuneration to lecturers	1,500.00	1,500.00
		Preparation of the final workshop and financial reports	1,676.00	1,721.65
	Subtotal		3,176.00	
	TOTAL		22,000.00	17,600.00

The received advanced payment (80 %) has been spent. There is no need for the final payment.

Prof.Dr. Orhan Uslu

Director

