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Consultation Meeting on the identification of Mediterranean environmental and pollution emerging issues

Rome, Italy, 31 May - 1 June 2000

REPORT

CONSULTATION MEETING ON THE IDENTIFICATION OF MEDITERRANEAN ENVIRONMENTAL AND POLLUTION EMERGING ISSUES

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Introduction

1. During the implementation of the MED POL Programme, the need was stressed to create a mechanism which could provide the MED POL Programme with a continuous and virtually real-time link between the identification of the actual pollution problems of the region and their managerial aspects, i.e. a mechanism which would provide the necessary information to establish a concrete bridging between the major pollution issues and the managerial action to be taken for their possible remedy.

2. Recognising this need, the Contracting Parties adopted the 2000-2001 MED POL Programme with the provision of launching a process which would include the convening of small scientific meetings with Mediterranean experts with a view at identifying newly emerging pollution issues as well as those that had not been given enough attention in the past. Subsequently, such issues, in cooperation with MED POL National Coordinators and the competent UN Agencies, would be the subject of possible more in depth assessments, research and, as appropriate, suggestions to the Contracting Parties for action.

3. At the invitation of MAP/MED POL, the first Consultation meeting on the identification of Mediterranean pollution emerging issues was held at ENEA in Rome, from 31 May to 1 June 2000, with the assistance of ENEA and FEM.

Attendance

4. The Consultation was attended by seventeen scientists from ten Mediterranean countries, as well as by experts from IAEA, IOC, WHO, and RAC/SPA and Blue Plan. The full list of participants is attached in Annex 1.

Agenda item 1. Opening of the Meeting

5. The Consultation meeting was opened by Mr Davide Morante, Head of Environment Department, Italian Ministry of Foreign Affairs, Mr L. Chabason, MAP Coordinator, Mr M. Peronaci, Director of EEA/ETC at ENEA and Mr. S. Illuminato, President of F.E.M.

6. The speakers welcomed the participants and stressed on the importance of the meeting for the Mediterranean region and the willingness of the Italian environment authorities to collaborate actively with the MAP for the improvement of the marine Mediterranean environment. They finally addressed their hopes for the success of the meeting.

Agenda item 2. Election of Officers and organization of work

7. After consultations, the Meeting elected Mr M. Peronaci from ENEA as Chairman and Mr A. Cruzado as Vice-Chairman. It was agreed that the Secretariat would cover the function of Rapporteur.

Agenda item 3. Scope and purpose of the Meeting

8. Mr Civili, MED POL Coordinator, thanked the participants for their written contributions prepared before the consultation and recalled the main elements and the status of implementation of the MED POL programme. He also stressed the importance that the MED POL Secretariat was giving to the meeting for creating a more dynamic mechanism

which could maintain MED POL in timely contact with possible pollution emerging issues and in close contact with the Mediterranean scientific community. He also recalled the objectives of the Meeting which were:

a) to discuss emerging issues and those which have not been given enough attention in the past;
b) to identify a number of priority issues regarding marine environmental and pollution risks either as direct risks (e.g. adverse effects on ecosystems and human population) or as indirect risks to socio-economic activities (e.g. eutrophication and tourism) in the Mediterranean region that should be taken into consideration by MED POL in its short-, medium- and long-term planning; and
c) to evaluate the relative importance of identified priority issues in a more general context of environmental pollution.

9. He finally invited Mr Peronaci to give the Meeting an overview of the new report entitled "State and pressures of the marine and coastal Mediterranean environment" published by EEA with the cooperation of UNEP/MAP, which was considered a very valid basis for discussion and very relevant to the objectives of the meeting.

10. Mr Peronaci introduced the summary report that was distributed to the participants and mentioned that it was prepared by EEA on the basis of the available information and data received by MAP. The report is dealing with driving forces and pressures such as population, urbanization, tourism, agriculture, the state of the marine environment and impact, such as eutrophication, pollution land use and erosion, health and biodiversity and with the related responses focusing in particular on MAP and E.U. activities.

Agenda item 4. Review of the contribution received and proposals for the identification of Mediterranean pollution emerging issues

11. Before presenting the paper prepared by the Secretariat for discussion under this Agenda item, the Secretariat proposed to the Meeting to allow Mr M. Batisse, Chairman of Blue Plan, to briefly introduce his written contribution. His paper was in fact an overview of the impacts of the socio-economic development of the Mediterranean region on the Mediterranean marine environment, and was therefore considered useful for the over all understanding of the emerging environmental problems of the region.

12. Mr Batisse, in introducing his paper, described the expected socio-economic development occurring in the region and in particular the possible effects of the establishment of the Mediterranean Free Trade Zone (FTZ) on the marine environment. Five issues were identified which would have high negative impacts on the marine environment, namely: tourism, agriculture, population and urbanization, maritime transport and road transport. He concluded that a similar experience (FTZ between american states (NAFTA)) had shown considerable side effects on the environment and should be taken into account for the Mediterranean region.

13. The Chairman thanked Mr Batisse for the useful contribution.

14. Mr. F. Abousamra, MED POL programme officer, introduced the paper UNEP(OCA)/MED WG.168/Inf.2. The document was a digested summary of the written contributions of the invited experts and was intended to describe the major issues as identified by them.

15. He gave the participants an overview of the identified issues:

- eutrophication
- marine and health risk assessment of metals and organics
- emerging marine diseases - climate links and anthropogenic factors
- impact of human activities on marine environment
- improving the monitoring programme methodology

16. He stressed that the activities proposed to be carried out would have a direct link with the management of MAP and MED POL. The identified emerging issues were not all new, but that they also included those that needed more attention by MED POL and Mediterranean scientific institutions and that they were based on the suggestions made in the written contributions by the experts.

17. Regarding the eutrophication issue the experts expressed divergent opinions. Some supported the need to have more reliable data and to focus on modelling activities while others stressed that eutrophication was no longer an emerging issue in the Mediterranean and that there were enough published data. However, they all agreed on the lack of data from the southern and eastern part of the region. Although the discussion was somehow conflicting, the participants finally agreed on the need to give more attention to the gathering of information and recognized the need for a multidisciplinary approach in the assessment of eutrophication.

18. Regarding marine and health risk assessment of metals and organics, the participants also had divergent opinions. Some considered that it was a managerial issue and a tool and that therefore it should not be included for discussion, while others considered the subject appropriate since it represented a scientific approach for setting regulations. The application of the ecotoxicity concept, which is a step in risk assessment approach, would enable scientists to differentiate between effects of different pollutants on the ecosystem. The participants considered that high priority should be given to this issue especially as IMO is currently negotiating a global ban on the use of TBT as an antifouling agent in marine paints. It was therefore expected that new groups of chemicals would be used with potential harmful effect on the Mediterranean environment.

19. Considering the emerging marine diseases - climate links and anthropogenic factors, some participants did not consider the term "climate change" appropriate in the case of the Mediterranean. They proposed to use the term "climate variability" and stressed on the fact that there is no warming of the deep layer of the Mediterranean (as confirmed by scientific papers and reports). They also recalled the need to investigate the possible impact of the climate variability on the Mediterranean ecosystems. The study of the Mediterranean benthic environment could detect the impacts of this phenomenon on the Mediterranean marine environment. In this context, the participants stressed the importance of atmospheric deposition of substances of natural and anthropogenic origins in the geochemical cycles of nutrients and pollutants.

20. As far as the impact of human activities on marine environment is concerned, the participants' discussion was focused on human activities such as fisheries, coastal development, etc., which could cause habitat destruction and coastal erosion. More attention should be allocated to "hot spots" areas and the development of environmental management tools in the implementation of coastal project.

21. Finally, regarding the improvement of the monitoring programme methodology, the experts expressed some doubts as to the need to discuss issues which were not strictly scientific. Mr Civili stressed that managerial issues had been put for discussions to assist the

Secretariat in tackling in the appropriate way the scientific aspects of MED POL and therefore were considered very relevant.

22. During the discussion which followed the experts indicated the need to further develop ecotoxicological tools for monitoring purposes. They also agreed that MED POL should work towards an extension of its coverage to be able to deal with river basin monitoring and management in view of the expanded geographical coverage of the new LBS Protocol as well as the content of the SAP.

23. At the end of the discussion, the experts agreed on the identification of six issues which would be suggested as priorities for the region. They were: micropollutants, marine biocides, endocrine disruptors; habitat destruction and coastal erosion; biodiversity changes; coastal eutrophication (super production of biomass); atmospheric deposition; and climate change and variability.

24. As a result, the experts prepared some short texts describing the identified issues and indicating the type of work needed to be carried out for each of them.

Agenda item 5. Conclusions

25. On Thursday 1st of June, the Chairman opened the meeting at 09:30 hrs in order to discuss and agree on the draft texts prepared by the experts. After a discussion, the meeting agreed on the text "Proposed Emerging Issues" which is presented as Annex III of this report.

26. In this context, the Meeting prepared a summary table which indicated the pressure sectors for each identified environmental issue (see Annex IV).

Agenda item 6. Closing of the Meeting

27. The Chairman, on behalf of ENEA, thanked MAP/MED POL and the participants for their efforts devoted to the success of the meeting and announced the closure of the meeting at 13:00 hrs on Thursday, 1st of June.

ANNEX I

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ANNEX II

AGENDA

1. Opening of the Meeting
2. Election of Officers and organization of work
3. Scope and purpose of the Meeting
4. Review of the contribution received and proposals for the identification of Mediterranean pollution emerging issues
5. Conclusions
6. Closing of the Meeting

ANNEX III

PROPOSED EMERGING ISSUES

1. Micropollutants: marine biocides, endocrine disruptors

The IMO is currently negotiating a global ban on the use of tributyltin as an antifouling agent in marine paints. This will necessitate the use of alternative biocides which by definition must be toxic to be effective. All Mediterranean countries will be affected by this ban. The challenge is to permit replacement compounds that are effective but exert the least harmful effect on the Mediterranean environment. Currently there is only limited information about the pattern of use of alternative products and their impact on Mediterranean marine species.

Core biocides that merit attention are in diuron, irgarol 1051, dichlorofuranil, chlorothalonil, seanine-211 and zinc pyrithione. A possible project design, which could serve as a model for other micropollutants, comprises:

1. Collection and compilation of data relating to antifouling paint and biocide booster usage.

2. Development of analytical capacity (technology transfer for the analysis of some compounds, regional centre for more challenging analytes)

3. Environmental surveys to reveal current distribution.

4. Experiments in environmental chemistry to define behaviour and fate under Mediterranean conditions.

5. Ecotoxicological investigation to elucidate effects, including sub-lethal e.g. endocrine disruption, effects on indigenous Mediterranean species.

6. Integration of biological and chemical results and assessment will allow the development of models to predict environmental distributions and risks.

Such a project will respond to a developing threat to the Mediterranean sea. Prompt action will facilitate a good data base, in some cases defining the state before expected impacts. This also focuses attention on a global problem manifested at local scales with the possibility to have regional action.

2. Habitat destruction and coastal erosion

Mediterranean marine and coastal areas have undergone fast and ever-growing pressure from human activities in the last decades. Coastal development (urbanisation, infrastructures, tourism industry facilities) is very intensive in the region. Tourism in particular constitutes a major source of income for most Mediterranean countries. Such developments are leading in many cases to the often-irreversible destruction of coastal and shallow water natural habitats. Severe impacts leading to the physical destruction of marine benthic habitats are also connected to certain fishing practices which are widespread in the Mediterranean (e.g. bottom trawling; date mussel fisheries). Pollution in “hot-spots” can also cause the destruction of natural habitats (e.g. anoxia in distrophic crises). Habitat alteration or destruction in marine and coastal areas can sometimes be related to activities taking place

far inland. The management of watersheds represents a particularly important example in the Mediterranean region. The flow (waters and sediments) of most rivers is controlled or blocked. This results in disruption of natural sediment transport, negative sediment balance in littoral areas, coastal erosion and physical alteration of habitats.

Proposed activities to face these problems include:

1. The development of decision support information systems on coastal changes (data, models, forecasting systems).

2. The integration of marine/coastal habitat conservation in coastal area/watershed management.

3. The assessment of the impact of fishing gear and practices on benthic habitats.

4. The development of research on the modification of fishing gear to reduce their impact on natural habitats.

5. The application of EIA to all coastal development projects.

3. Biodiversity changes

The Mediterranean Sea is characterised by a rich biodiversity (about 12,000 marine species recorded, i.e. about 8% of world marine species, compared to a surface of only 0.7% of the world oceans). A high diversity is also recorded at the habitat/community level. This biodiversity is undergoing important changes more of less directly related to human activities.

Major changes in natural populations are related to the settlement of alien species in the Mediterranean. While a certain number of them are natural immigrants (Lessepsian and Gibraltar migration), others are introduced, incidentally or not, through human activities, in particular intensive shipping from all over the world (ballast water + fouling on ship hulls) and aquaculture.

Climatic change and variability might favour the settlement and spreading of alien species.

High diversity and complexity characterize several Mediterranean communities. These communities, while normally remaining stable in their species composition, can undergo important changes in the relative abundance of these species (quantitative composition) as a response to environmental change. Phenomena such as mass mortalities and blooms are being recorded with increased frequency lately. These aspects are until now very little studied for the Mediterranean communities, in particular on hard bottoms.

Proposed activities to face these problems include:

1. The preparation of inventories of marine habitats.

2. The development of monitoring and data management techniques for marine benthic communities, particularly for their quantitative composition, using Marine Protected Areas as a monitoring network.

3. The enhancement of research on hard bottom communities.

4. The enhancement of research on little studied phenomena such as mass mortalities and blooms.

5. The enhancement of expertise on taxonomy.

6. The development of research on techniques to protect marine communities.

4. Coastal eutrophication (super production of biomass)

Peculiarities of the Mediterranean sea:

1. Eutrophication is mainly localized in a few "hot spots" areas

2. Because of the limited tides, the hydrology of the areas is dominated by river plumes.

3. In some areas the particular morphology and/or bathimetry should be considered, as they could affect the nutrient contents in the extensive coastal areas.

4. Because of the oligorophic conditions of the open sea and most coastal waters, a small increase in the nutrient concentration could have an immediate and visible impact.

5. The ratio P/N could influence the predominance of particular species of phytoplankton

6. In some cases the increase of the productivity could cause blooms of different types of planktonic species such as toxic dioflagellates, jelly fish, gelatinous plankton; these phenomena could occur on a larger geographical scale and for short periods of time (days).

7. Trace metals could play a significant role in the development of algal bloom.

Proposed activities:

1. To improve the gathering of data and information from the National Institutions Organization; both experimental data and historical information should be considered.

2. Baselines (related to specific areas where eutrophication occurs) could then be evaluated on the basis of the data and information gathered.

3. Conceptual models to evaluate and assess eutrophication should then be developed; they should be site-dependent, but a comparison at the regional/global scale should be made.

4. It is recognized that the assessment of eutrophication and related phenomena requires a multidisciplinary approach; as an example, the mucilage and marine snow could be related to planktonic blooms; in order to understand their causes monitoring programmes of gelatinous plankton and effect of trace metals should be desirable in order to relate these blooms to particular environmental situations.

5. Atmospheric deposition

It has become evident that atmospheric deposition is an important pathway by which substances of natural and anthropogenic origins are transported from continents to coastal and open seas.

These substances include mineral dust, plant residues, heavy metals, radionucleides, nitrogen, fertilizers, pesticides and a wide range of synthetic organic compounds from industrial and domestic sources. There are strong indication that the atmospheric deposition have impacts on the biogeochemistry of the Mediterranean sea, on the productivity and could accelerate the propagation of pollutants and other key elements to deep layers. The effect of this could also be related to bioconcentration and biomagnification of the organic pollutants in organisms and have at final step, effects on human health. The effects of the entire cycle of deposition of substances from atmosphere to the sea and through the water column to the sediments must be explored and MED POL must promote research in this field as well as of the atmospheric deposition on marine living resources.

6. Climate change and variability

Climate variability and /or climate change occur at various timescales which go from interannual and multiannual to decadeal and secular. This variability mostly due to changes in atmospheric forcing may affect seriously the water mass properties and distribution as well as the general circulation patterns inside the Mediterranean. These in turn are expected to impact the marine ecosystem, the coastal zone and possibly could be extended to human health. A very pertinent such example is the eastern Mediterranean transient which occurred during the last decade and which among other effects has uplifted the nutricline by almost 500 meters and changed the circulation patterns in the Ionian. The human health is profoundly affected by various natural systems such as the ecology of pestes and pathogens, food supplies, water supplies, climatic conditions and weather patterns. In addition, climate change will also affect in combination with other ecological and demographic changes. Further, climate variability could increase the vulnerability of high values areas (wetlands, islands...).

MED POL and MAP in general should promote research efforts to better understand the mechanisms involved and interrelationship between climate variability and its effects on ecosystem and human health.

7. Improve the monitoring programme methodology

Monitoring is an effective tool for environmental management since it reflects the impacts of anthropogenic activities on coastal marine environment and ecosystems. Different procedure arrangements already exist and are applied by different Mediterranean institutions. According to records, many Mediterranean countries could not afford the full implementation of effective, reliable and productive monitoring programmes due to technical and economical reasons. In fact, the proposed programmes are sometimes expensive to perform, must be carried out by highly trained scientists and necessitate, in most cases, the use of sophisticated sampling and analytical techniques.

There is a need to develop:

- Cost effective monitoring technologies. In fact, the market is offering a wide range of chemical and biological analytical techniques to be used in monitoring programmes. This could be ranged from the ultra sophisticated analytical tools to the simplest ones. The main questions to be answered in this contest is what is the accuracy needed for monitoring programmes. Do the analytical tools give the necessary reliability, frequency to meet the objectives requirements? What types of tools are preferable, those based on chemical or biological concepts? Could tracers be useful?

- The link between the monitoring programme and the managerial issues related to these programmes. In fact MED POL has launched a trend (including biomonitoring) and compliance monitoring programme to be implemented by the countries under MED POL Phase III and a full scale quality assurance programme with the collaboration of IAEA Monaco Laboratory. These programmes, if properly implemented, could generate a set of high quality of data. The question that needs to be answered is how to ensure that these scientific programmes become a full management tool at the national and regional levels.

ANNEX IV

SUMMARY TABLE: HUMAN PRESSURES ON ENVIRONMENT ISSUES

Pressures / Environment issues	Population	Agriculture	Energy	Industry	Transport	Fisheries Mariculture	Tourism Yatch cruises & leisure activities
Eutrophication	XX	XX	X	X	X	X	X
Habitat destruction and coastal erosion	XX	X	XX	X	XX	X	XX
Climate change and variability		X	XX	X	XX		
Atmospheric inputs to the sea	X	XX	XX	XX	XX		
Marine biocides Organic micropollutants	X	XX	X	X	XX	X	XXX
Biodiversity change	X	X	X	X	X	XX	X

Note: number of X's should be reviewed and completed.